Appendix F

Environmental & Permitting Documents

Bound Separately

- *Washington State Joint Aquatic Resources Permit Application (JARPA) Form*
- *Biological Evaluation and EFH Assessment*
- *Fish and Aquatics Habitat Report*
- *Wetland and Stream Delineation Report*
- *Cultural Resources Assessment*

AGENCY USE ONLY
Date received:
Agency reference #: ________
Tax Parcel #(s): ________

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form[1,2]

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

Part 1–Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help]
Mill Creek Park Dam Improvements Project

Part 2–Applicant

The person and/or organization responsible for the project. [help]

2a. Name (Last, First, Middle)			
Raines, Darrin			
2b. Organization (If applicable)			
City of Cosmopolis			
2c. Mailing Address (Street or PO Box)			
PO Box 2007			
2d. City, State, Zip			
Cosmopolis, WA 98537			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
(360) 533-4280	( )	( )	draines@cosmopolis.us.com

[1]Additional forms may be required for the following permits:

- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- If your project might affect species listed under the Endangered Species Act, you will need to fill out a Specific Project Information Form (SPIF) or prepare a Biological Evaluation. Forms can be found at http://www.nws.usace.army.mil/Missions/CivilWorks/Regulatory/PermitGuidebook/EndangeredSpecies.aspx.
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

[2]To access an online JARPA form with [help] screens, go to http://www.epermitting.wa.gov/site/alias__resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx.

For other help, contact the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@ora.wa.gov.

Part 3–Authorized Agent or Contact

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b of this application.) [help]

3a. Name (Last, First, Middle)			
Danielski, Lisa C			
3b. Organization (If applicable)			
HDR Engineering			
3c. Mailing Address (Street or PO Box)			
500 108th Avenue NE, Suite 1200			
3d. City, State, Zip			
Bellevue, WA 98004			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
(425) 450-6390	( )	( )	lisa.danielski@hdrinc.com

Part 4–Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [help]

☒ Same as applicant. (Skip to Part 5.)

☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)

☐ There are multiple upland property owners. Complete the section below and fill out JARPA Attachment A for each additional property owner.

☐ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete JARPA Attachment E to apply for the Aquatic Use Authorization.

4a. Name (Last, First, Middle)			
4b. Organization (If applicable)			
4c. Mailing Address (Street or PO Box)			
4d. City, State, Zip			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail
( )	( )	( )	

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☐ There are multiple project locations (e.g. linear projects). Complete the section below and use JARPA Attachment B for each additional project location.

5a. Indicate the type of ownership of the property. (Check all that apply.) [help]

- ☐ Private
- ☐ Federal
- ☒ Publicly owned (state, county, city, special districts like schools, ports, etc.)
- ☐ Tribal
- ☐ Department of Natural Resources (DNR) – managed aquatic lands (Complete JARPA Attachment E)

5b. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) [help]

No street address for Mill Creek Park. The entrance to Mill Creek Park is located just west of the intersection of C Street and 5th Street in Cosmopolis, WA

5c. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]

Cosmopolis, WA 98537

5d. County [help]

Grays Harbor County

5e. Provide the section, township, and range for the project location. [help]

¼ Section	Section	Township	Range
NW	23	17N	9W

5f. Provide the latitude and longitude of the project location. [help]

- Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)

46.95111111N Lat -123.77166666 W Long

5g. List the tax parcel number(s) for the project location. [help]

- The local county assessor's office can provide this information.

417092321009

5h. Contact information for all adjoining property owners. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
See JARPA Attachment C		

5i. List all wetlands on or adjacent to the project location. [help]

The following wetlands are located in Mill Creek Park. Wetland 1 extends offsite to the south.

Wetland Name	Wetland Size in study area (total acres)	Western WA Wetland Rating	Hydrogeomorphic (HGM) Classification	Cowardin Classification
1	2.86 (6.88)	III	Depressional	PEM1/PSS1/ PFO1
2	0.14	III	Slope	PSS1
3	1.09	III	Slope	PFO4/PSS1/ PEM1
4	0.02	IV	Slope	PSS1

5j. List all waterbodies (other than wetlands) on or adjacent to the project location. [help]

Mill Creek, a fish-bearing stream, flows through the park parcel. No other waterbodies adjoin the project.

5k. Is any part of the project area within a 100-year floodplain? [help]

☒ Yes ☐ No ☐ Don't know

5l. Briefly describe the vegetation and habitat conditions on the property. [help]

Reed canarygrass is predominant in the former Mill Creek Pond area; red alder saplings and small-fruited bulrush is also present in the pond area. Surrounding uplands consist predominantly of second-growth deciduous and coniferous forest comprised of red alder, western hemlock, salmonberry, and sword fern. Just downstream of the Mill Creek Dam, Mill Creek provides spawning habitat for Coho salmon. Wetlands and uplands in Mill Creek Park provide breeding habitat for herptiles including tree frogs, northern red-legged frogs, and Larch mountain salamanders. Mill Creek Park is adjoins managed timberlands to the south, providing habitat connectivity for larger mammals such as deer and cougars.

5m. Describe how the property is currently used. [help]

Mill Creek Park provides active passive recreational opportunities for the City of Cosmopolis including trails, covered picnic areas, restrooms, tennis courts, parking areas and park landscaping. Historically, Mill Creek Pond provided recreational fishing opportunities.

5n. Describe how the adjacent properties are currently used. [help]

Single-family residences adjoin the Mill Creek Park to the west, Highland Golf Course adjoins to the east, and managed timberlands adjoin to the south. C Street adjoins the north side of the property.

5o. Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. [help]

The portion of Mill Creek Dam that was not damaged in the 2008 dam breach is still standing. There is also a playground, tennis court, picnic shelter, and restroom on the property.

5p. Provide driving directions from the closest highway to the project location, and attach a map. [help]

From Highway 12 in Aberdeen, head west on US-12 W toward Aberdeen Lake Rd/Brenton Ln/Central Park Dr/ Montesano-Aberdeen Rd. Turn left onto S H St. Continue onto US-101 S. Take a slight right onto Northwest Blvd. Continue onto US-101 S/Southwest Blvd. Turn right onto C St. The main entrance to Mill Creek Park is just west of the intersection of C St and 5th St, on the left side of C St.

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]

The City of Cosmopolis proposes to replace the damaged Mill Creek Dam, located in Mill Creek Park in Cosmopolis, Washington, which was breached during an intense storm in November 2008. The breach was caused by a large alder tree that fell from the hillside above the dam after several days of heavy rain. The fallen alder caused the hillside to become unstable and to slide into the sheet piling of the dam, breaching the structure. As a result, the dam was no longer operational, and the upstream impoundment was drained.

The overall purpose of the proposed project is reduce flood hazards in the Mill Creek watershed, and re-establish fish passage on Mill Creek and recreational opportunities for the public in Mill Creek Park.

6b. Describe the purpose of the project and why you want or need to perform it. [help]

The basic purpose of the proposed project is flood hazard reduction. Currently there is no flood hazard reduction for residences/businesses along Mill Creek in Cosmopolis WA since the breach of the existing Mill Creek Dam in November 2008. Thus, the City plans to replace the dam to restore flood hazard reduction function.

6c. Indicate the project category. (Check all that apply) [help]

☐ Commercial ☐ Residential ☐ Institutional ☐ Transportation ☐ Recreational
☒ Maintenance ☒ Environmental Enhancement

6d. Indicate the major elements of your project. (Check all that apply) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Retaining Wall (upland)
☐ Bank Stabilization	☒ Dam / Weir	☐ Floating Home	☐ Road
☐ Boat House	☐ Dike / Levee / Jetty	☐ Geotechnical Survey	☐ Scientific Measurement Device
☐ Boat Launch	☐ Ditch	☐ Land Clearing	☐ Stairs
☐ Boat Lift	☐ Dock / Pier	☐ Marina / Moorage	☐ Stormwater facility
☐ Bridge	☐ Dredging	☐ Mining	☐ Swimming Pool
☐ Bulkhead	☐ Fence	☐ Outfall Structure	☐ Utility Line
☐ Buoy	☐ Ferry Terminal	☐ Piling/Dolphin	
☐ Channel Modification	☒ Fishway	☐ Raft	

☒ Other: Re-grading of wetlands

6e. Describe how you plan to construct each project element checked in 6d. Include specific construction methods and equipment to be used. [help]

- Identify where each element will occur in relation to the nearest waterbody.
- Indicate which activities are within the 100-year floodplain.

The proposed project consists of three elements: (1) replace the breached dam with a mass-concrete gravity dam of like structure, (2) construct new fish passage around the dam structure, and (3) re-grade the impoundment area and plant with native wetland vegetation in order to improve wetland and aquatic habitat. Construction of these project elements would also require construction staging, in-water work area isolation and dewatering. It is anticipated that construction of the proposed project would occur over a period of 7 months beginning in April 2016 through October 2016. The USACE established in-water work window for the Chehalis River and its tributaries from the mouth upstream to Porter Creek is June 1 through October 31. Per consultations with WDFW, the in-water work window of June 1 through September 30 would be used for this project (Amy Spoon pers. comm. December 2014).

These project components and the construction processes required to build them would take place within wetlands, below the OHWM of Mill Creek, and in the 100-year floodplain of Mill Creek.

Site Preparation and Construction Staging

Construction equipment would make use of existing access roads that connect to the gravel footpath that surrounds the pond area (See Permit Plan Attachment). These access roads may need to be improved with the addition of some gravel in order to accommodate use by project equipment and vehicles and would also be completed prior to the June 1 in-water work window. Improving and developing these access roads and the gravel footpath would involve the use of dozers, trucks, and front end loaders and the addition of gravel to the road surface and existing footpath. BMPs such as silt fencing or similar measures would be implemented to prevent any increased sedimentation to the creek during preparation of these access roads from rains and hillside runoff. An off-site staging area would also likely be required due to the limited space available at the site. This would be established at the beginning of the project and make use of existing roads to move equipment and workers from the construction yard to the project site. Access to the project site includes ingress and egress from C Street, Mill Creek Drive (Holly Lane) and 5th Avenue.

In-water Work Area Isolation and Dewatering

Prior to demolition of the existing dam and construction of the new dam, fish passage, and regrading of the pond, the work area would be de-watered. An approximately 1,100 linear foot stream bypass system would be installed to convey Mill Creek around the work area during construction to allow all work to occur "in the dry." The bypass would consist of a piped conveyance that captures the stream flow just upstream of the footbridge and return flow downstream of the dam construction area. The stream bypass pipe system would be assembled and placed in upland areas and along an existing gravel pathway prior to being connected to the stream channel (which would occur at the start of the in-water work window).

Additional dewatering may be necessary within Wetland 1 during excavation and grading activities. Small sump holes would be excavated to hold seepage water near the downstream end of the work area. Settled water would be routed to an upland area to a Baker Tank or similar settling and filtration facility (e.g., vegetation swale, straw matting, sediment trap, etc.). The settled material would then be transported off site to an approved location as part of the contract. Any water that may be contaminated with harmful materials such as raw concrete or petroleum products would not be allowed to enter the creek.

Fish salvage would be implemented during the de-watering of the work site; details of the fish salvage protocol are detailed in the *Biological Evaluation and EFH Assessment* (HDR 2015).

Dam Replacement

Prior to the in-water work window, initial clearing and grubbing of the upland right and left abutment areas and excavation of the right abutment within the footprint of the fishway structure would begin. This would provide additional area for the contractor to work from while constructing the concrete dam structure. Demolition of the existing dam would begin once the area is dewatered during the in-water work window. Demolition would not require blasting, and would be accomplished with the use of a hydraulic hammer on an excavator that would break up the concrete dam into pieces that can be loaded into dump trucks and hauled to an off-site disposal area. Upon completion of the demolition, excavation of the foundation and abutments for the new dam would begin. It is likely that materials excavated from the foundation area would be suitable for use as backfill in the right abutment and would therefore be loaded into dump trucks and hauled from the site. Next, a base slab for the dam would be formed and placed. The second lift of the dam would bring the structure to above the OWHM. Once the third lift of concrete is placed, the installation of the gate structures on the upstream face of the dam would occur.

A sheetpile retaining wall would be installed along the right bank from the dam and around the fishway exit. This would be installed using vibratory methods and would not require proofing. This work would occur during dam installation in the dewatered work area and during the in-water work window.

Fish Passage

<u>Fishway</u>

It is anticipated that much of the fishway would be excavated and graded prior to the in-water work window, and the fishway concrete structures could be completed within the same timeframe as the construction of the new dam. Work above OHWM within the fishway could occur before and after the in-water work period, but construction of the entrance and exit structures that connect the fishway to the stream need to be installed during in-water work.

After the new dam is completed and the cross vane weirs are installed, the stream bypass would no longer be needed and stream flow would resume through the channel and pass through the low level outlets in the dam. The fishway would remain above the OHWM and any remaining construction within or along the fishway could be completed if necessary. It is anticipated that the majority of the fishway construction and concrete pours would occur concurrently and following dam construction and would also be completed within the four month in-water work window.

<u>Instream Cross-Vein Weirs</u>
Concrete cross-vane weirs would be installed in the stream channel downstream of the dam during the in-water work window. These would be anchored in the stream channel with dowels. These weirs are designed to provide fish passage upstream during low flow periods when the creek flows are passing through the gates in the dam and the fishway is not operational. These weirs would act as grade controls, while establishing gradient drops that would meet NOAA Fisheries and WDFW fish passage criteria.

Pond Grading and Recontouring and Replanting

Once the pond area is dewatered, excavators would begin grading the area and developing new contours. Due to the wet nature of the site, additional dewatering may be required as described above. Vegetation within the pond grading footprint would be stripped and removed, and soil would be moved and removed as necessary to accomplish the grading plan. The existing channel location would be preserved in the newly graded pond area. Some excavated material would be redistributed to create habitat features such as the elevated margins for wetland plants and the island. The remaining excavated material including cleared vegetation would be hauled off site and disposed of in an approved location.

Temporary Stream Bypass Removal

Following the completion of all in-water work, the piped bypass would be removed and Mill Creek would be returned to its channel. Initially, the “pond” cofferdam would be removed after completion of dam construction while the upstream and downstream cofferdams remain in place. Removal of the upstream, downstream cofferdams would be accomplished over several hours during the in-water work window to allow streamflow to be reduced and re-watered gradually. The cofferdam locations would be restored to pre-construction conditions. All temporary bypass and work area isolation materials, except the washed gravels used for flow dissipation at the downstream flow return site, would be removed at the completion of construction. These gravels would be retained in the stream channel and contribute to the gravel substrate in the reach.

Wetland Creation and Enhancement

Excavation of the wetland mitigation area near Wetland 2 would occur during construction. Both the newly created wetland area and the pond area would be planted with native wetland vegetation appropriate to the anticipated hydrologic regimes in each area. Planting would occur during the winter following construction when the stream flow is drawn down to within the banks of the channel and when soil moisture availability is sufficient to allow plants to establish without supplemental irrigation. The operation of the dam would not commence in the spring following construction, but wait until the next year to allow a full growing season for the newly planted plants to establish.

6f. What are the anticipated start and end dates for project construction? (Month/Year) [help]

- If the project will be constructed in phases or stages, use JARPA Attachment D to list the start and end dates of each phase or stage.

Start date: Spring 2016 End date: Fall 2106 ☐ See JARPA Attachment D

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

$2.4 million

6h. Will any portion of the project receive federal funding? [help]

- **If yes**, list each agency providing funds.

☐ Yes ☒ No ☐ Don’t know

Part 7–Wetlands: Impacts and Mitigation

☒ Check here if there are wetlands or wetland buffers on or adjacent to the project area.
(If there are none, skip to Part 8.) [help]

7a. Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. [help]

☐ Not applicable

Several efforts were made during the site development to avoid and minimize wetland impacts. Biologists delineated wetlands and streams on the park parcel prior to commencement of project design so the engineers were aware of sensitive areas on the parcel. The biologists then worked together with the designers to steer disturbance activities to upland areas of the site, where practicable. The proposed dam has been designed to be sited within the existing dam footprint while maintaining required dam safety design standards. The proposed fish passage was sited on the east side of the dam because the existing topography and geology favor construction of the fish passage to meet WDFW design standards; the left bank of Mill Creek in the vicinity of the dam consists of very steep bedrock and is not practicable for siting fish passage. The fish passage has been sited to minimize impacts to Wetland 2.

7b. Will the project impact wetlands? [help]

☒ Yes ☐ No ☐ Don't know

7c. Will the project impact wetland buffers? [help]

☐ Yes ☒ No ☐ Don't know

7d. Has a wetland delineation report been prepared? [help]

- **If Yes**, submit the report, including data sheets, with the JARPA package.

☒ Yes ☐ No

7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? [help]

- **If Yes**, submit the wetland rating forms and figures with the JARPA package.

☒ Yes ☐ No ☐ Don't know

7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? [help]

- **If Yes**, submit the plan with the JARPA package and answer 7g.
- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☒ Yes ☐ No ☐ Not applicable

7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

The on-site, in-kind wetland mitigation plan would create approximately 2,800 square feet of wetland that connects to Wetland 2 as compensatory mitigation for permanent impacts to Wetlands 2 and 4. Wetland creation would be at 2-to-1 and 1.5-to-1 ratios for Category III and IV wetlands, respectively. Uplands adjoining Wetland 2 were chosen to because excavation of soils in this area are expected to intercept groundwater and thus create hydrologic conditions needed to develop wetland soils and vegetation communities that correspond to existing condition within Wetland 2.

Wetland Name	Wetland Category	Wetland Impact Area in acres (s.f)	Proposed mitigation type (ratio required[a])	Area Needed for Wetland Creation in acres (s.f.)
2	III	0.02 (1,000)	Creation (2-to-1)	.05 (2,000)
4	IV	0.01 (500)	Creation (1.5-to-1)	0.02 (750)
Total		0.035 (1,550)		**0.065 (2,750)**

[a] Mitigation ratios from *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version*

1)(Washington State Department of Ecology et al. 2006)

7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a similar table, you can state (below) where we can find this information in the plan. [help]

Activity (fill, drain, excavate, flood, etc.)	Wetland Name[1]	Wetland type and rating category[2]	Impact area (sq. ft. or Acres)	Duration of impact[3]	Proposed mitigation type[4]	Wetland mitigation area (sq. ft. or acres)
Site prep and dewatering	Wetland 1	III	2500 sq. ft	Temporary	N/A	N/A
Dam: Clearing and Grubbing	Wetland 1	III	2000 sq. ft	Temporary	N/A	N/A
Dam: Clearing and Grubbing	Wetland 4	IV	800 sq. ft	Temporary	N/A	N/A
Dam: Excavation for dam demolition and new dam foundation	Wetland 1	III	50 sq. ft	Temporary	N/A	N/A
Dam: Excavation for dam demolition and new dam foundation	Wetland 4	IV	500 sq. ft	Permanent	N/A	N/A
Dam: Fill for Foundation/Lifts	Wetland 4	IV	500 sq. ft	Permanent	Creation (1.5-to-1)	750 square feet
Fish passage: Clearing and grubbing	Wetland 1	III	200 sq. ft.	Temporary	N/A	N/A
Fish passage: Clearing and grubbing	Wetland 2	III	2400 sq. ft	Temporary	N/A	N/A
Fish passage: Excavation for fish ladder	Wetland 2	III	400 sq.ft	Temporary	N/A	N/A
Fish passage: Fill for fish ladder	Wetland 2	III	1000 sq.ft	Permanent	Creation (2-to-1)	2,000 square feet
Pond: Clearing and grubbing	Wetland 1	III	2 acres	Temporary	N/A	N/A
Pond Regrading	Wetland 1	III	1.25 acres	Permanent	N/A	N/A

[1] If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report.
[2] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.
[3] Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.
[4] Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)

Page number(s) for similar information in the mitigation plan, if available: JARPA Sheet 12

7i. For all filling activities identified in 7h, describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. [help]

Fill Location	Material Source	Type Material	Estimated Amount of Material (CY)	How Placed
Wetland 1: Site prep and dewatering	Off-site	Gravel filled bulk bags	15 CY	Machine placed with smaller, lighter types of equipment such as excavators and backhoes.
Wetland 4: Fill for dam foundation/lifts	Off-site	Structural Fill	80 CY	Machine placed with smaller, lighter types of equipment such as excavators, backhoes, and dump truck.
Wetland 2: Fill for fish ladder and gravel trail	Off-site	Gravel base and Reinforced Concrete	100 CY	Machine placed with smaller, lighter types of equipment such as excavators, backhoes, and dump truck.
Wetland 1: pond regrading	Excavated wetland soils from other areas of the pond	Wetland soils	200 CY	Articulated front end loader, excavator, and dozer.

7j. For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

Excavation Location	Method	Type Material	Estimated Amount of material	How and where placed
Wetland 1: Site prep and dewatering	Excavator	Wetland Soils	8 CY	Machine excavated and temporarily stored on site
Wetland 4: Excavation for dam demolition and new foundation	Excavator and hydraulic hammer	Wetland soils	100 CY	Excavators and hydraulic hammer used to break apart old dam and excavate foundation for new dam. Hauled to approved off-site location with dump truck.
Wetland 2: Excavation for fish ladder and gravel trail in Wetland 2	Excavator	Wetland soils	50 CY	Excavators and backhoes used to excavate to foundation elevation of fish ladder. Hauled to approved off-site location with dump truck.
Wetland 1 : pond regrading	Excavator and dozer	Wetland soils	2500 CY	Articulated front end loader, excavator, dozer, and dump truck. Hauled off-site to approved location.

Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, “waterbodies” refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [help]

☒ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

8a. Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. [help]

☐ Not applicable

The primary impact minimization measure used to avoid direct effects to aquatic species is the scheduling of in-water work during the WDFW-recommended in-water work period for Mill Creek (June 1 – September 30). The work area would be dewatered and isolated behind cofferdams that divert the stream flow around the site, bypassing the work area to prevent turbidity downstream during construction activities in the channel and banks. Any fish that may occur within the work area would be salvaged by qualified fish biologists during de-watering and released downstream of the project. All construction cofferdams would be removed from the channel by September 30, and all bed and bank restoration activities would be completed by that time.

To prevent downstream effects from sedimentation, turbidity, and potential contaminants, a Stormwater Pollution Prevention Plan (SWPPP), including an Erosion Prevention and Sediment Control Plan, and a Spill Prevention, Control, and Countermeasures (SPCC) Plan would be prepared prior to construction. The pollution and erosion control plan would be prepared and carried out by the Contractor to prevent pollution related to construction activities. The pollution and erosion control plan would contain specific information regarding emergency spill and preventative measures. The plan would address equipment and materials storage sites, fueling operations, staging areas, hazardous materials, spill containment and notification, and debris management.

Overnight parking of vehicles, storage of fuels and other hazardous materials, and refueling activities would take place in the main upland staging areas established for the project (refer to staging area discussion in Section 2.3). Additional measures to reduce the potential for hazardous material release include:

- Washing of heavy equipment that may work below OHWM before it is delivered to the job site.
- Inspection of construction equipment before accessing instream work areas to remove vegetation and dirt clods that may contain noxious weed seeds.
- Daily inspection of machinery for fuel or lubricant leaks

8b. Will your project impact a waterbody or the area around a waterbody? [help]

☒ Yes ☐ No

8c. Have you prepared a mitigation plan to compensate for the project’s adverse impacts to non-wetland waterbodies? [help]

- **If Yes**, submit the plan with the JARPA package and answer 8d.
- **If No, or Not applicable,** explain below why a mitigation plan should not be required.

☐ Yes ☐ No ☒ Not applicable

There will be no net loss of lineal feet of stream channel or overall habitat in Mill Creek. The new fish passage will re-establish connectivity along Mill Creek upstream and downstream of the dam.

8d. Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [help]

Not applicable

8e. Summarize impact(s) to each waterbody in the table below. [help]

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name[1]	Impact location[2]	Duration of impact[3]	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Site prep and dewatering	Mill Creek	In	Temporary	18 CY in 5 CY out	2500 sq. ft
Site prep and dewatering	Mill Creek	Adjacent	Temporary	--	2000 sq. ft
Dam: Excavation for demolition and new dam foundation	Mill Creek	In (and in floodplain)	Permanent	225 CY out	1000 sq. ft
Dam: Excavation for demolition and new dam foundation	Mill Creek	Adjacent	Permanent	--	200 sq. ft
Dam: Fill for dam foundation/lifts	Mill Creek	In (and in floodplain)	Permanent	90.7 CY in	1200 sq. ft
Dam: Fill for dam foundation/lifts	Mill Creek	Adjacent	Permanent	--	1800 sq. ft
Fish passage: Excavation for fish ladder	Mill Creek	In (and in floodplain)	Permanent	10 CY out	100 sq. ft
Fish passage: Excavation for fish ladder	Mill Creek	Adjacent	Permanent	--	8000 sq. ft
Fish passage: Fill for fish ladder	Mill Creek	In (and in floodplain)	Permanent	2 CY in	100 sq. ft
Fish passage: Fill for fish ladder	Mill Creek	Adjacent	Permanent	--	8000 sq. ft
Fish passage: Fill for in-channel weirs	Mill Creek	In (and in floodplain)	Permanent	50 CY in	3100 sq. ft
Fish passage: Fill for in-channel weirs	Mill Creek	Adjacent	Permanent	---	600 sq. ft
Pond: Regrading of channel	Mill Creek	In (and in floodplain)	Permanent	320 CY in 130 CY out	7000 sq. ft

[1] If no official name for the waterbody exists, create a unique name (such as "Stream 1") The name should be consistent with other documents provided.
[2] Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.
[3] Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

8f. For all activities identified in 8e, describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [help]

Fill Use	Source	Nature	Amount of material	How and where placed
Site prep and dewatering	Off-site	Gravel filled bulk bags	18 CY	Machine placed with smaller, lighter types of equipment such as excavators and backhoes.
Dam: foundation/lifts	Off-site	Reinforced concrete	90 CY	Placed via pump truck and in formwork constructed with hand tools.
Dam: gates	Off-site	Steel	0.7 CY	Gates installed by hand on upstream face of dam.
Fish passage: Fish ladder	Off-site	Structural fill and Reinforced concrete	2 CY	Placed via pump truck and in formwork constructed with hand tools.
Fish passage: in-channel weirs	Off-site	Reinforced Concrete	50 CY	Placed via pump truck and in formwork constructed with hand tools.
Rock-slope protection at fish ladder entrance	Off-site	Rock	10 CY	Hauled to site with dump truck and placed with excavator.
Sheet pile cutoff wall	Off-site	Steel	0.33 CY	Crane with vibratory hammer, front end loader, excavator. Cherry picker with man basket to help facilitate positioning of the sheet pile
Pond: Regrading of stream channel	Excavated streambed material from other areas of the pond and in-channel weirs.	Streambed	320 CY	Articulated front end loader, excavator, and dozer.

8g. For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

Excavation Location	Method	Type Material	Estimated Amount of material	How and where placed
Site prep and dewatering	Excavator	Streambed	5 CY	Machine excavated and temporarily stored on site
Dam: Excavation for demolition and new dam foundation	Excavator and hydraulic hammer	Streambed and bedrock	225 CY	Contractor to haul off site via dump truck and dispose of in approved location.
Fish Passage: Excavation for fish ladder	Excavator	Streambed	10 CY	Contractor to properly store on site and reinstall after fish ladder constructed
Fish Passage: Excavation for in-channel weirs	Excavator and hydraulic hammer	Streambed and bedrock	30 CY	Contractor to haul off site via dump truck and dispose of in approved location.

Excavation Location	Method	Type Material	Estimated Amount of material	How and where placed
Pond: Regrading channel	Excavator	Streambed	130 CY	Excavator and articulated front end loader. Contractor to haul off site via dump truck and dispose of in approved location.

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

9a. If you have already worked with any government agencies on this project, list them below. [help]

Agency Name	Contact Name	Phone	Most Recent Date of Contact
USACE	Ron Wilcox	(206) 316-3893	June 11, 2014
WDFW	Amy Spoon	(360) 249-1228	December 16, 2014
WDNR	Rick Schwartz	(360) 740-6806	September 3, 2014

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA on the Washington Department of Ecology's 303(d) List? [help]

- **If Yes,** list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: http://www.ecy.wa.gov/programs/wq/303d/.

☐ Yes ☒ No

9c. What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [help]

- Go to http://cfpub.epa.gov/surf/locate/index.cfm to help identify the HUC.

HUC 171001040305 - Lower Chehalis River

9d. What Water Resource Inventory Area Number (WRIA #) is the project in? [help]

- Go to http://www.ecy.wa.gov/services/gis/maps/wria/wria.htm to find the WRIA #.

WRIA 22 - Lower Chehalis

9e. Will the in-water construction work comply with the State of Washington water quality standards for turbidity? [help]

- Go to http://www.ecy.wa.gov/programs/wq/swqs/criteria.html for the standards.

☒ Yes ☐ No ☐ Not applicable

9f. If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? [help]

- If you don't know, contact the local planning department.
- For more information, go to: http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/211_designations.html.

☐ Rural ☐ Urban ☐ Natural ☐ Aquatic ☐ Conservancy ☒ Other N/A

9g. What is the Washington Department of Natural Resources Water Type? [help]

- Go to http://www.dnr.wa.gov/BusinessPermits/Topics/ForestPracticesApplications/Pages/fp_watertyping.aspx for the Forest Practices Water Typing System.

☐ Shoreline ☒ Fish ☐ Non-Fish Perennial ☐ Non-Fish Seasonal

9h. Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? [help]

- **If No**, provide the name of the manual your project is designed to meet.

☐ Yes ☐ No Not applicable

Name of manual:

9i. Does the project site have known contaminated sediment? [help]

- **If Yes**, please describe below.

☐ Yes ☒ No

9j. If you know what the property was used for in the past, describe below. [help]

Mill Creek Park was formally established as a park with the Recreation and Conservation Funding Board in 1973. It has been an active completed park project since 2009.

9k. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If Yes**, attach it to your JARPA package.

☒ Yes ☐ No

9l. Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [help]

There are no ESA- listed aquatic or terrestrial species documented in Mill Creek Park or the action area for this project. Marbled murrelets have been documented to occur approximately 2 miles to the southwest of the project site, and therefore the project may effect, but is not likely to adversely affect individuals of this species. Due to the lack of occurrence in Mill Creek, the project will have no effect on listed fish species. Coho salmon (*Oncorhynchus kisutch*), which belong to the Southwest Washington ESU not listed under the ESA, do inhabit Mill Creek, and documented spawning occurs in the park reach downstream of the dam and proposed construction.

9m. Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [help]

Mill Creek provides spawning and rearing habitat for Coho salmon (described above). Construction of the proposed project may affect stream habitat. However, these effects will be temporary, and the addition of fish passage past the new dam will provide an overall benefit to coho salmon habitat by increasing access to upstream spawning and rearing habitat.

Part 10–SEPA Compliance and Permits

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at http://apps.ecy.wa.gov/opas/.
- Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@ora.wa.gov.
- For a list of addresses to send your JARPA to, click on agency addresses for completed JARPA.

10a. Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [help]

- For more information about SEPA, go to www.ecy.wa.gov/programs/sea/sepa/e-review.html.

☐ A copy of the SEPA determination or letter of exemption is included with this application.

☒ A SEPA determination is pending with City of Cosmopolis (lead agency). The expected decision date is Spring/Summer 2015.

☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [help]

☐ This project is exempt (choose type of exemption below).

☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt?

____

☐ Other: ______________________________

☐ SEPA is pre-empted by federal law.

10b. Indicate the permits you are applying for. (Check all that apply.) [help]

LOCAL GOVERNMENT

Local Government Shoreline permits:

☐ Substantial Development ☐ Conditional Use ☐ Variance

☐ Shoreline Exemption Type (explain): ______________________________

Other City/County permits:

☒ Floodplain Development Permit ☐ Critical Areas Ordinance

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

☒ Hydraulic Project Approval (HPA) ☐ Fish Habitat Enhancement Exemption – Attach Exemption Form

Effective July 10, 2012, you must submit a check for $150 to Washington Department of Fish and Wildlife, unless your project qualifies for an exemption or alternative payment method below. **Do not send cash.**

Check the appropriate boxes:

☐ $150 check enclosed. Check #______________________________

Attach check made payable to Washington Department of Fish and Wildlife.

☐ Charge to billing account under agreement with WDFW. Agreement #______________________________

☐ My project is exempt from the application fee. (Check appropriate exemption)

☐ HPA processing is conducted by applicant-funded WDFW staff.
Agreement #______________________

☐ Mineral prospecting and mining.

☐ Project occurs on farm and agricultural land.
(Attach a copy of current land use classification recorded with the county auditor, or other proof of current land use.)

☐ Project is a modification of an existing HPA originally applied for, prior to July 10, 2012.
HPA #______________________

Washington Department of Natural Resources:

☐ Aquatic Use Authorization **Project Reach of Mill Creek is not a State Owned Aquatic Land**

Complete JARPA Attachment E and submit a check for $25 payable to the Washington Department of Natural Resources. **Do not send cash.**

Washington Department of Ecology:

☒ Section 401 Water Quality Certification

FEDERAL GOVERNMENT

United States Department of the Army permits (U.S. Army Corps of Engineers):

☒ Section 404 (discharges into waters of the U.S.) ☐ Section 10 (work in navigable waters)

United States Coast Guard permits:

☐ Private Aids to Navigation (for non-bridge projects)

Part 11–Authorizing Signatures

Signatures are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [help]

11a. Applicant Signature (required) [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. D.R. (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. D.R. (initial)

Darrin C. Raines	[signature]	3/17/15
Applicant Printed Name	Applicant Signature	Date

11b. Authorized Agent Signature [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

Lisa Danielski	[signature]	4/3/15
Authorized Agent Printed Name	Authorized Agent Signature	Date

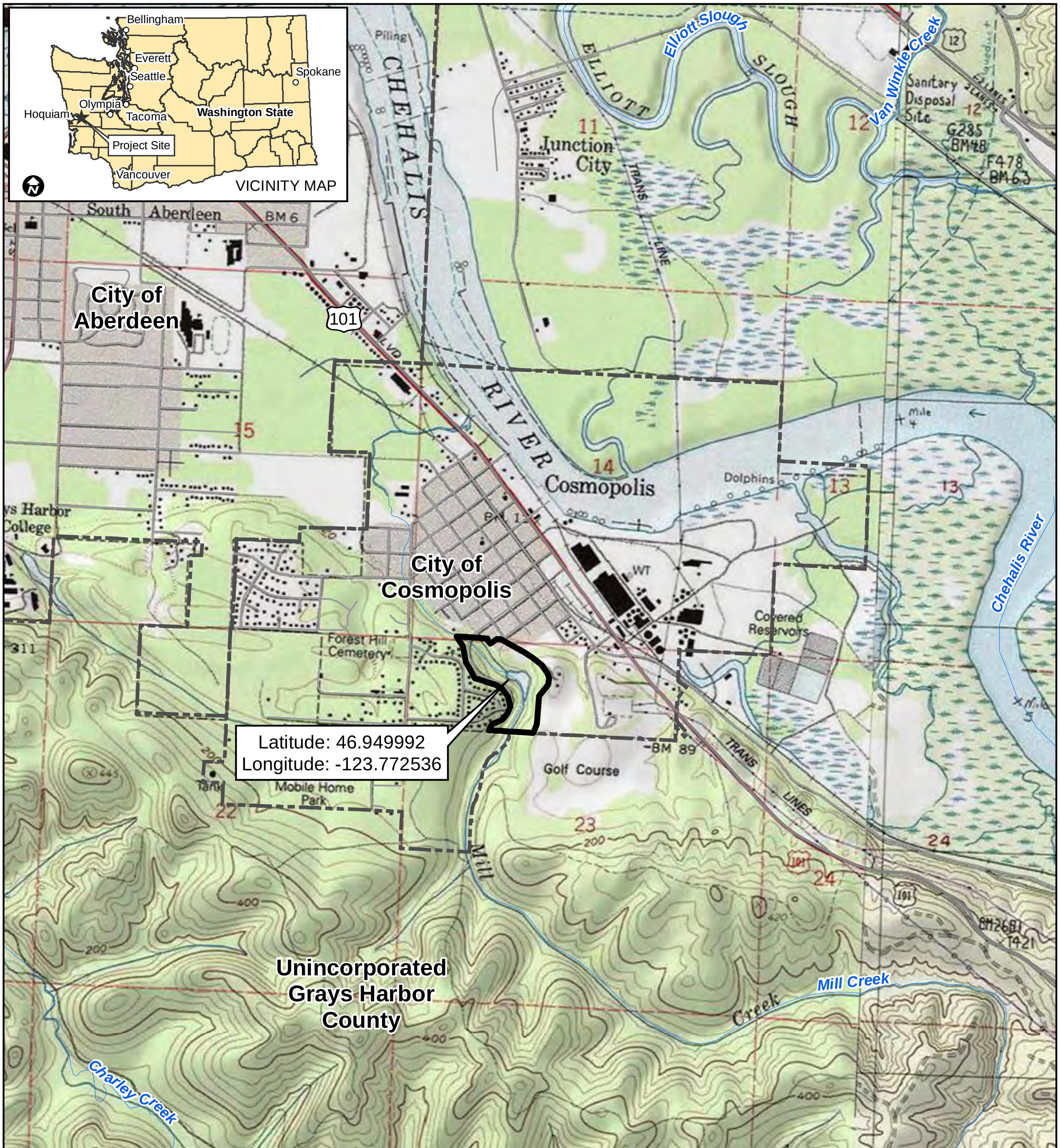
11c. Property Owner Signature (if not applicant) [help]

Not required if project is on existing rights-of-way or easements.

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

Property Owner Printed Name	Property Owner Signature	Date

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.



1:24,000

0 500 1,000 2,000 3,000 Feet

Legend
Project Area
Municipal Boundary
Stream
Road
Highway

Project Vicinity

PURPOSE: Flood Hazard Reduction DATUM: North American Datum 1983 ADJACENT PROPERTY OWNERS: See JARPA Attachment C	Mill Creek Park Dam Improvements REFERENCE #: SITE LOCATION ADDRESS: No Situs Address - Parcel Number 417092321009	PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond IN: T17N/R9W/Sec 23 NEAR/AT: Grays Harbor COUNTY: Grays Harbor STATE: WA SHEET: 1 of 12 DATE: **4/3/2015**

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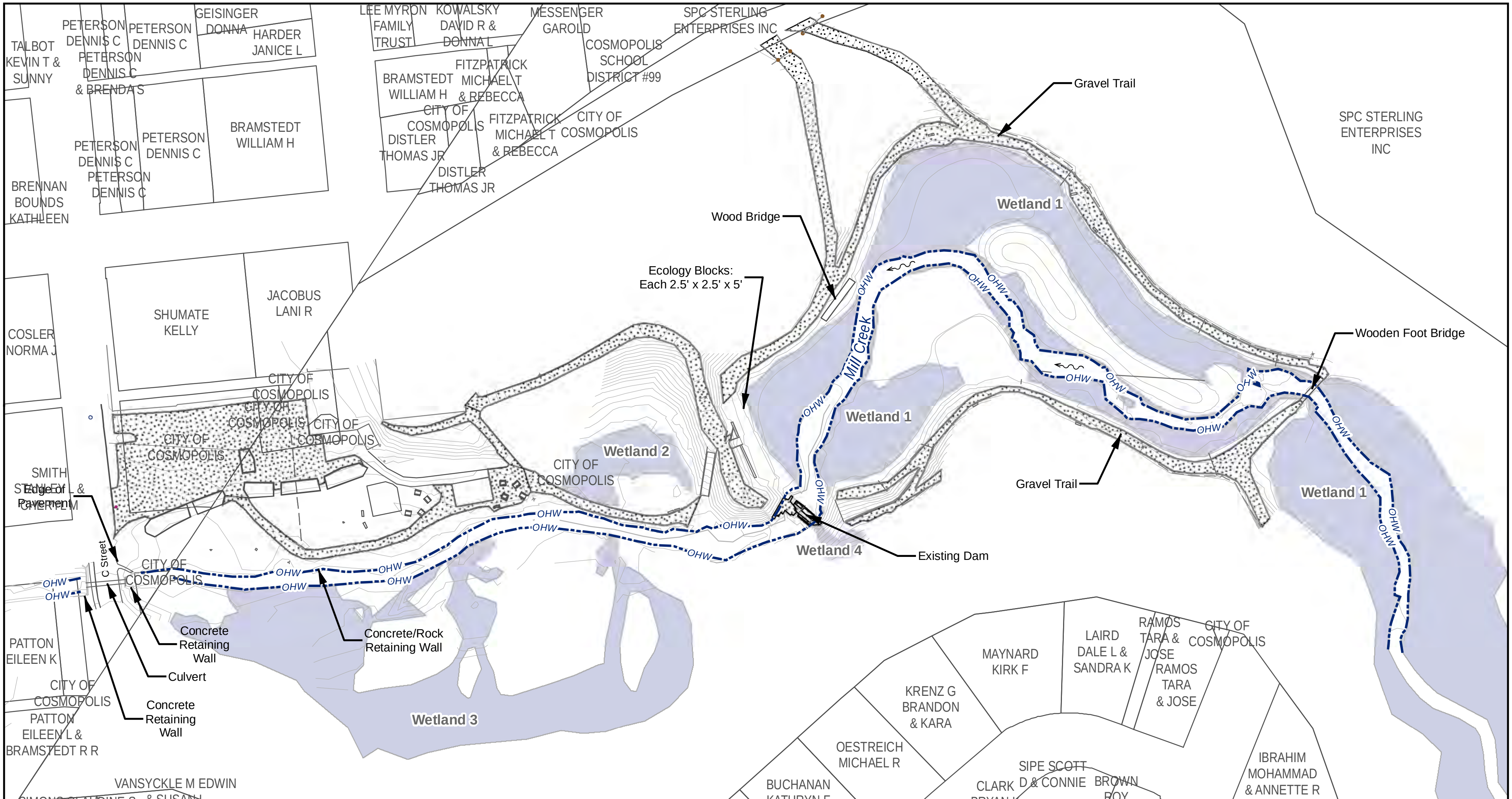

0 50 100 200 Feet

Legend

- Ordinary High Water Mark
- Existing Gravel Area
- Delineated Wetland
- Parcel

Existing Conditions

PURPOSE: Flood Hazard Reduction

DATUM: North American Datum 1983

ADJACENT PROPERTY OWNERS:
See JARPA Attachment C

Mill Creek Park Dam Improvements

REFERENCE:

SITE LOCATION ADDRESS:
No Situs Address - Parcel Number 417092321009

PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond

IN: T17N/R9W/Sec23

NEAR/AT: GRAYS HARBOR

COUNTY: GRAYS HARBOR STATE: WA

SHEET: 2 of 12

DATE: **4/3/2015**

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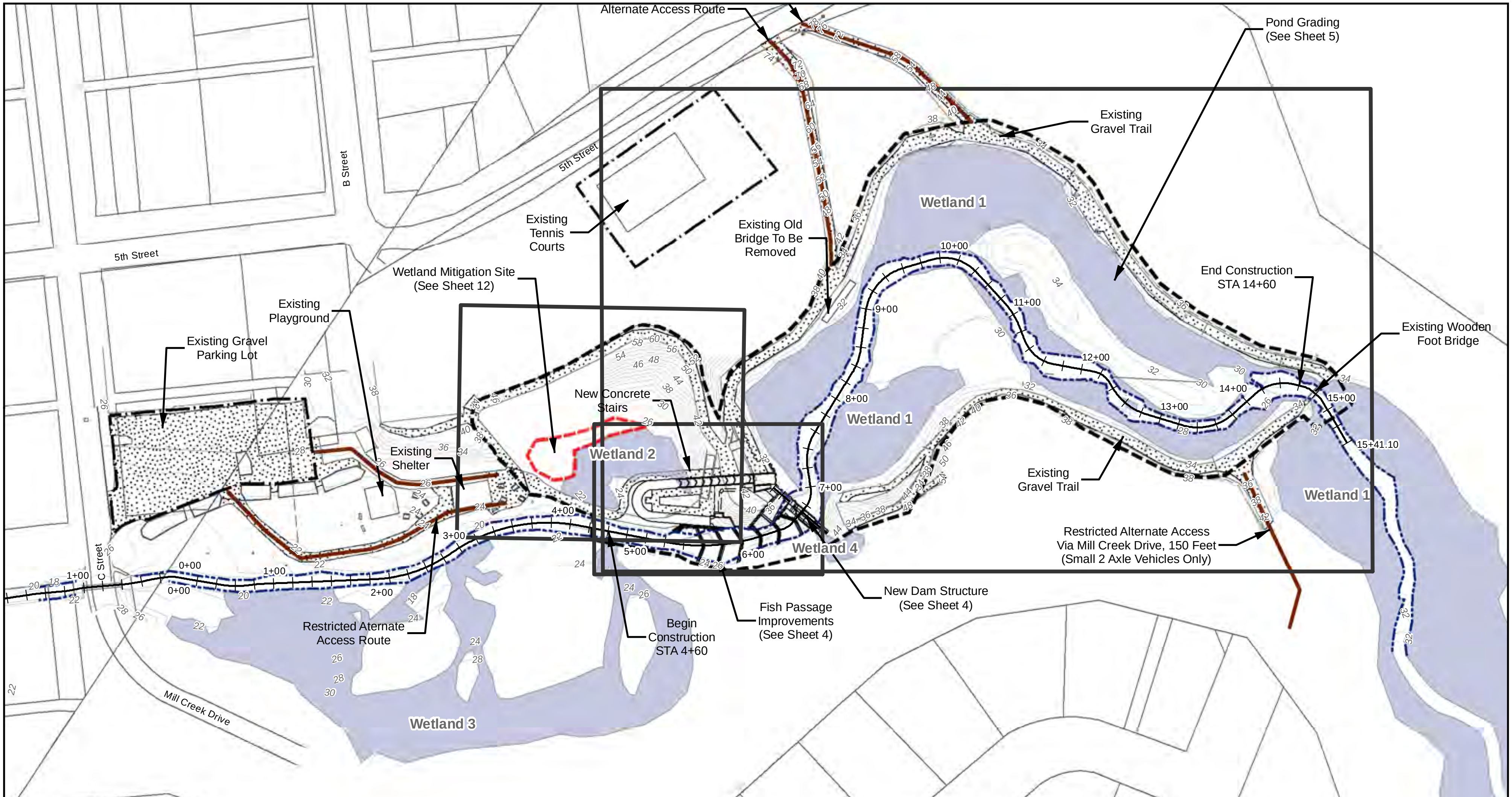


0 50 100 200 Feet

Legend

Limits of Construction	Construction Access Route	Delineated Wetland	Wetland Mitigation Area
Staging Area	Ordinary High Water Mark	Gravel Area	Parcel

Overall Site Plan/ Key Map

PURPOSE: Flood Hazard Reduction

DATUM: North American Datum 1983

ADJACENT PROPERTY OWNERS:
See JARPA Attachment C

Mill Creek Park Dam Improvements

REFERENCE:

SITE LOCATION ADDRESS:
No Situs Address - Parcel Number 417092321009

PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond

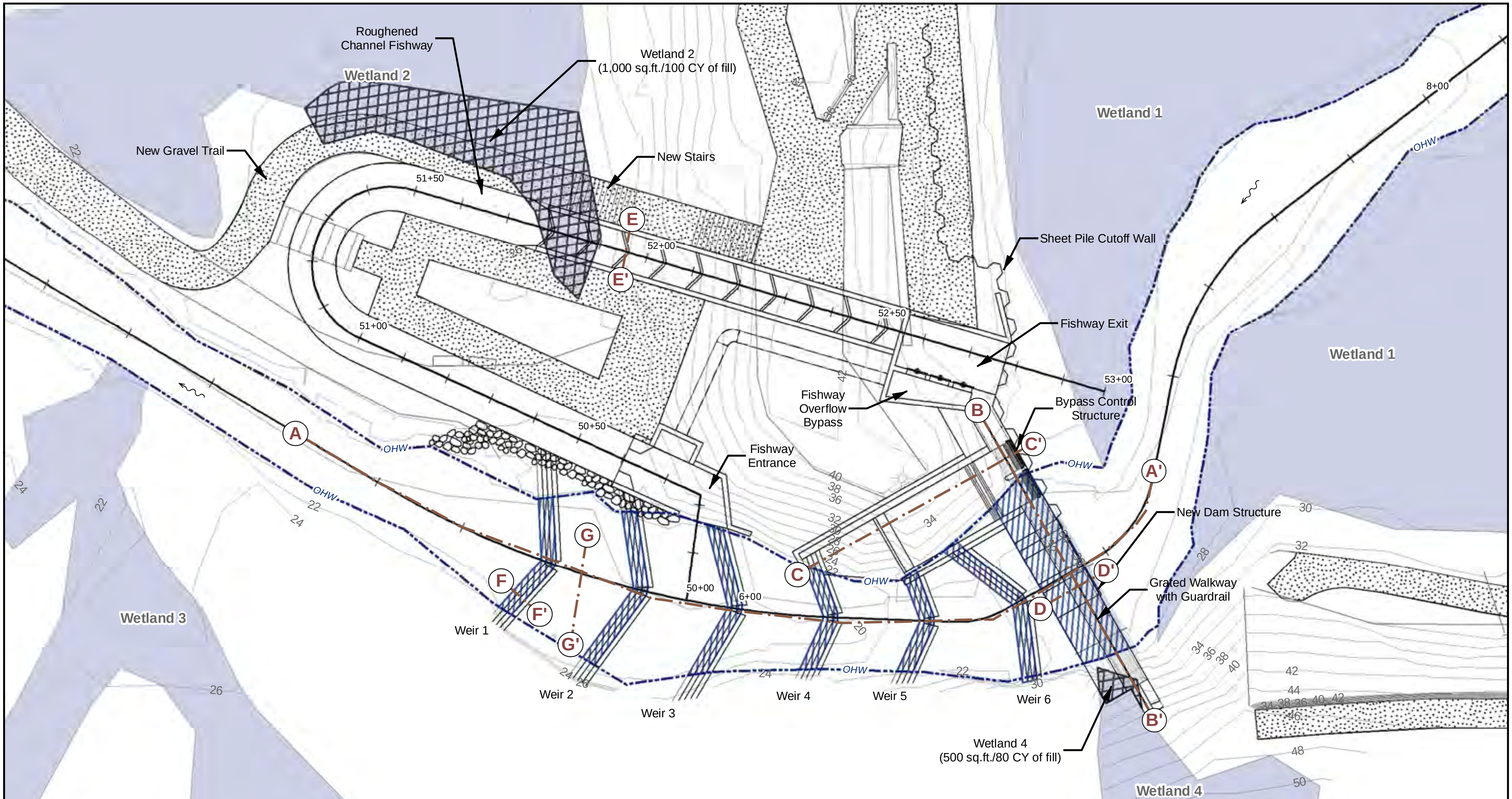
IN: T17N/R9W/Sec23

NEAR/AT: GRAYS HARBOR

COUNTY: GRAYS HARBOR STATE: WA

SHEET: 3 of 12

DATE: **4/3/2015**



0 5 10 20 Feet

Legend

- Mill Creek Impact
- Wetland Impact Area
- Delineated Wetland
- Gravel Area
- Ordinary High Water Mark
- Cross Section Line

Dam Replacement/ Fish Passage Plan

PURPOSE: Flood Hazard Reduction

DATUM: North American Datum 1983

ADJACENT PROPERTY OWNERS:
See JARPA Attachment C

Mill Creek Park Dam Improvements

REFERENCE:

SITE LOCATION ADDRESS:
No Situs Address - Parcel Number 417092321009

PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond

IN: T17N/R9W/Sec23

NEAR/AT: GRAYS HARBOR

COUNTY: GRAYS HARBOR STATE: WA

SHEET: 4 of 12

DATE: **4/3/2015**

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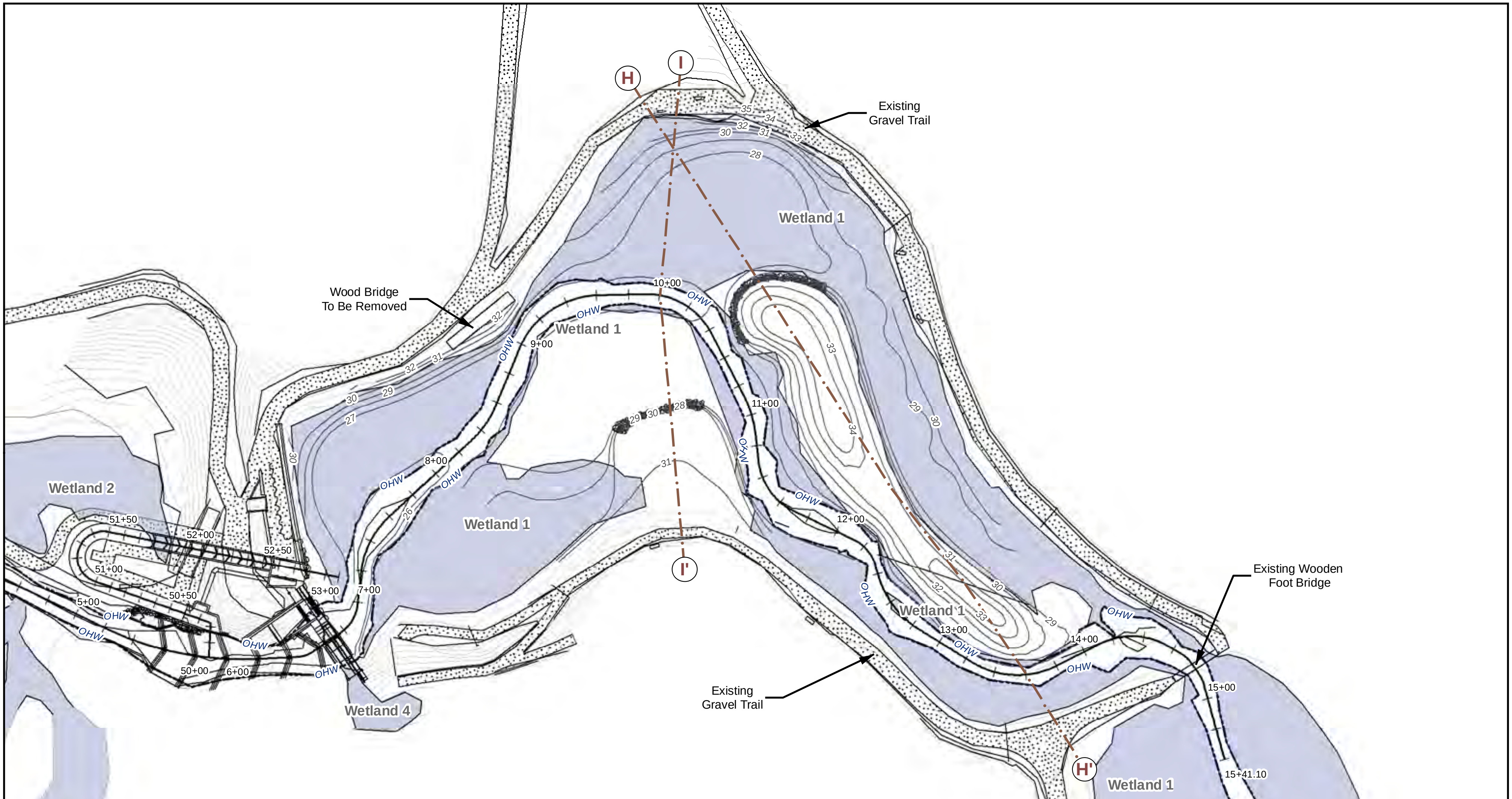

0 50 100 Feet

Legend

- Proposed Contour
- Ordinary High Water Mark
- Delineated Wetland
- Gravel Area
- Cross Section Line

Pond Grading Plan

PURPOSE: Flood Hazard Reduction

DATUM: North American Datum 1983

ADJACENT PROPERTY OWNERS:
See JARPA Attachment C

Mill Creek Park Dam Improvements

REFERENCE:

SITE LOCATION ADDRESS:
No Situs Address - Parcel Number 417092321009

PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond

IN: T17N/R9W/Sec23

NEAR/AT: GRAYS HARBOR

COUNTY: GRAYS HARBOR STATE: WA

SHEET: 5 of 12

DATE: **4/3/2015**

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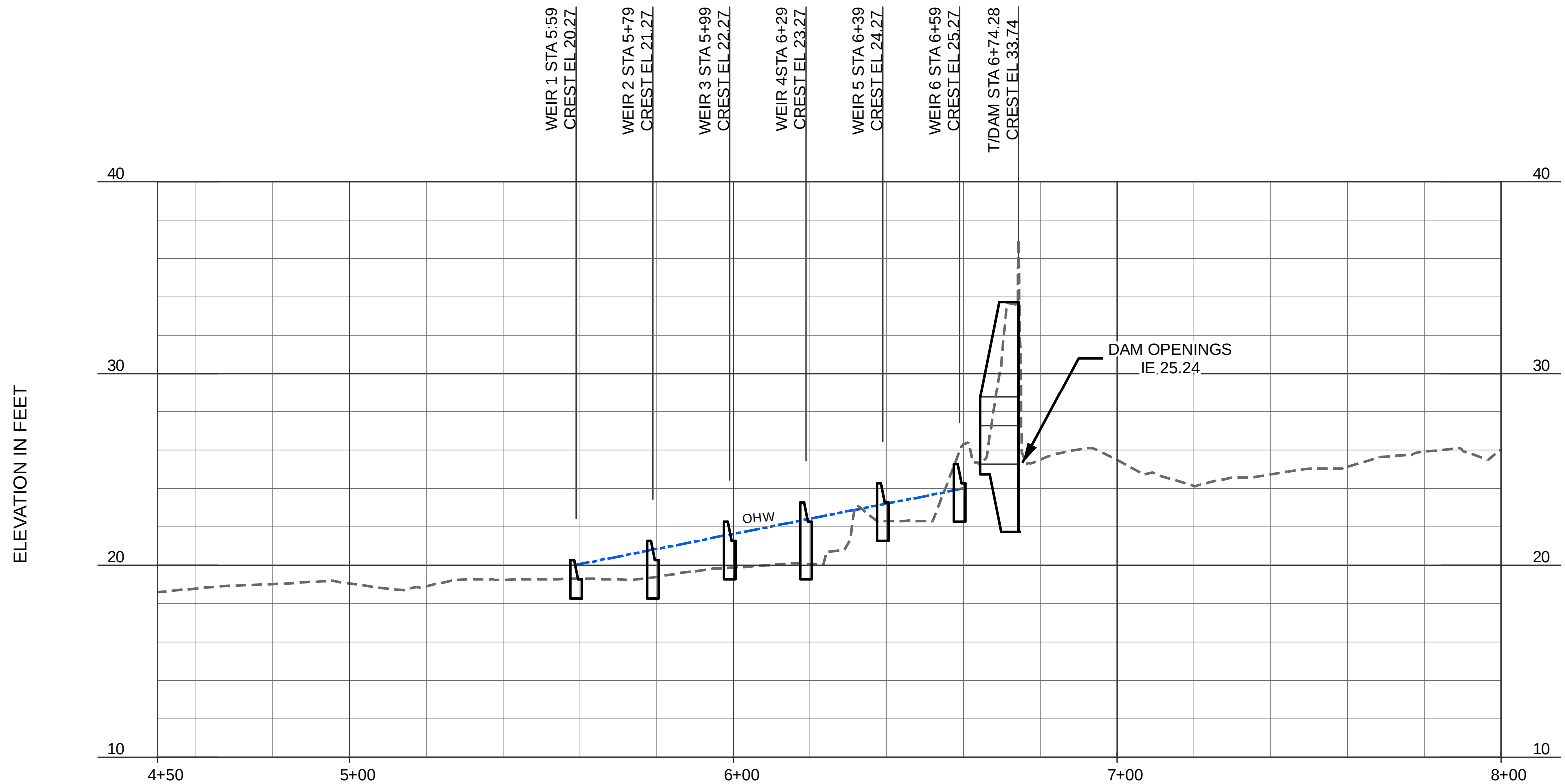
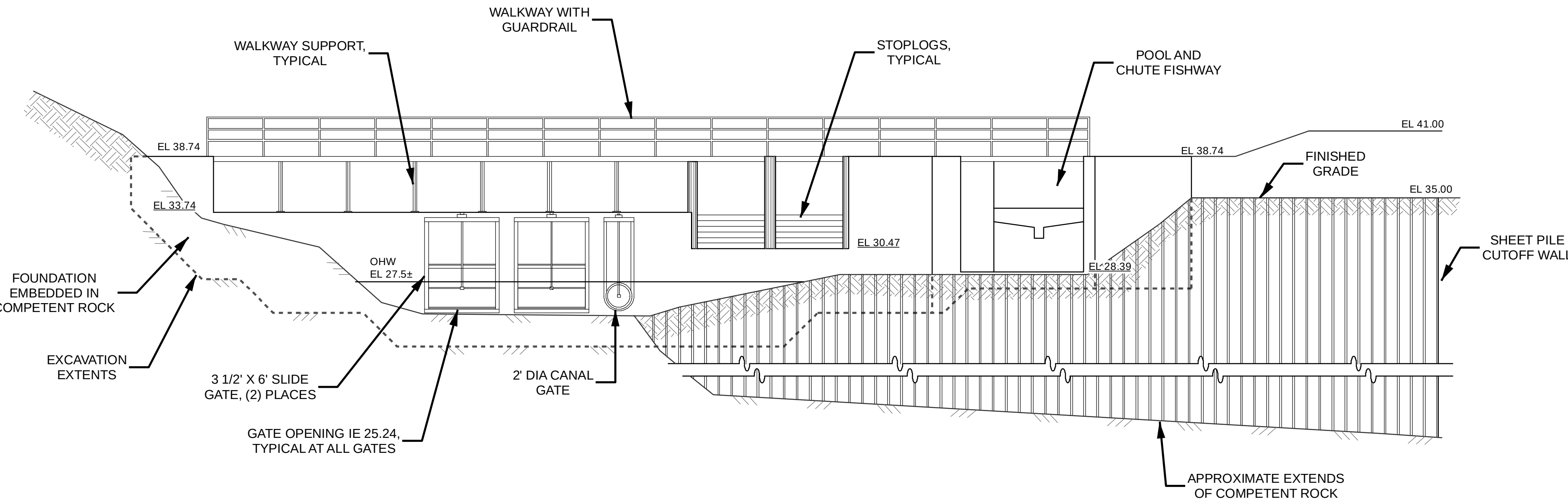


Profile A - A'

Mill Creek Profile

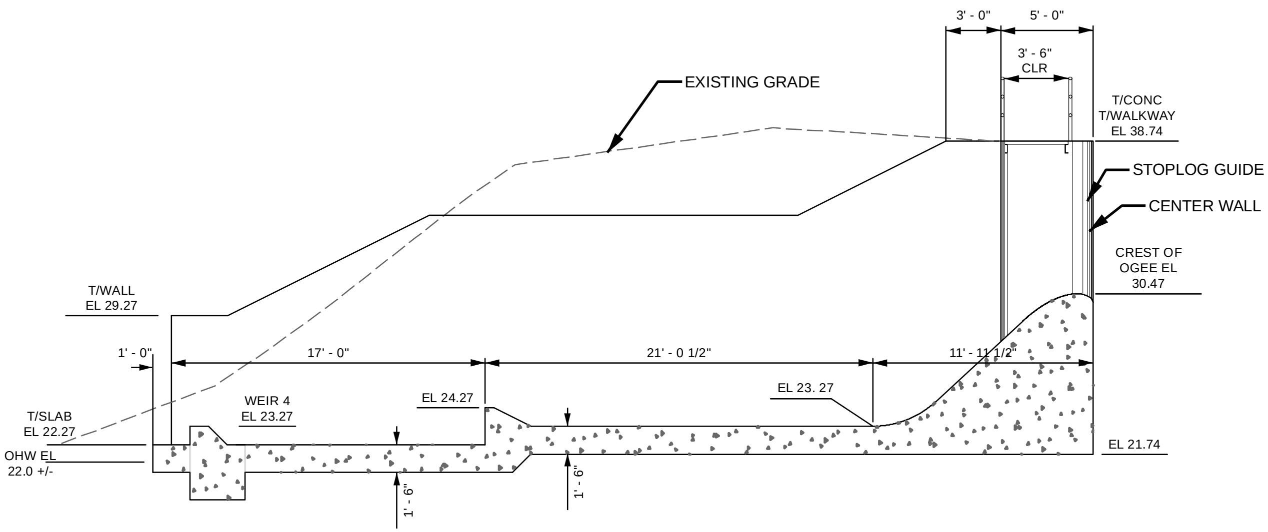
PURPOSE: Flood Hazard Reduction	Mill Creek Park Dam Improvements	PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond
DATUM: North American Datum 1983	REFERENCE:	IN: T17N/R9W/Sec23
ADJACENT PROPERTY OWNERS: See JARPA Attachment C	SITE LOCATION ADDRESS: No Situs Address - Parcel Number 417092321009	NEAR/AT: GRAYS HARBOR COUNTY: GRAYS HARBOR STATE: WA SHEET: 6 of 12 DATE: **4/3/2015**



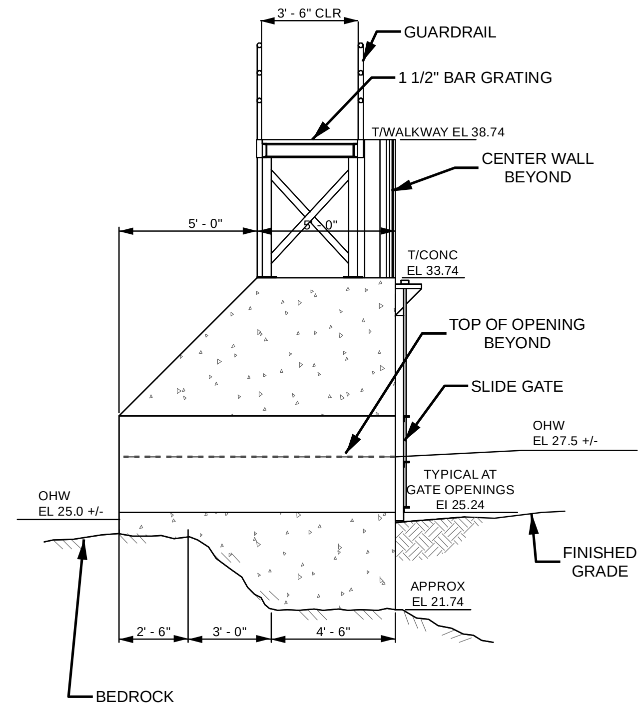
Section B-B'
Dam Elevation - Looking Downstream

Dam Elevation

PURPOSE: Flood Hazard Reduction DATUM: North American Datum 1983 ADJACENT PROPERTY OWNERS: See JARPA Attachment C	Mill Creek Park Dam Improvements REFERENCE: SITE LOCATION ADDRESS: No Situs Address - Parcel Number 417092321009	PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond IN: T17N/R9W/Sec23 NEAR/AT: GRAYS HARBOR COUNTY: GRAYS HARBOR STATE: WA SHEET: 7 of 12 DATE: **4/3/2015**



Section C - C'



Section D - D'

Dam Cross Sections

PURPOSE: Flood Hazard Reduction

DATUM: North American Datum 1983

ADJACENT PROPERTY OWNERS:
See JARPA Attachment C

Mill Creek Park Dam Improvements

REFERENCE:

SITE LOCATION ADDRESS:
No Situs Address - Parcel Number 417092321009

PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond

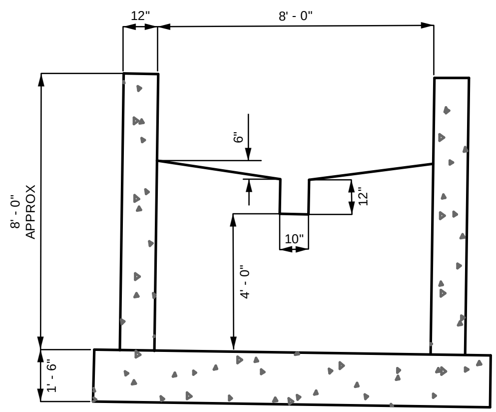
IN: T17N/R9W/Sec23

NEAR/AT: GRAYS HARBOR

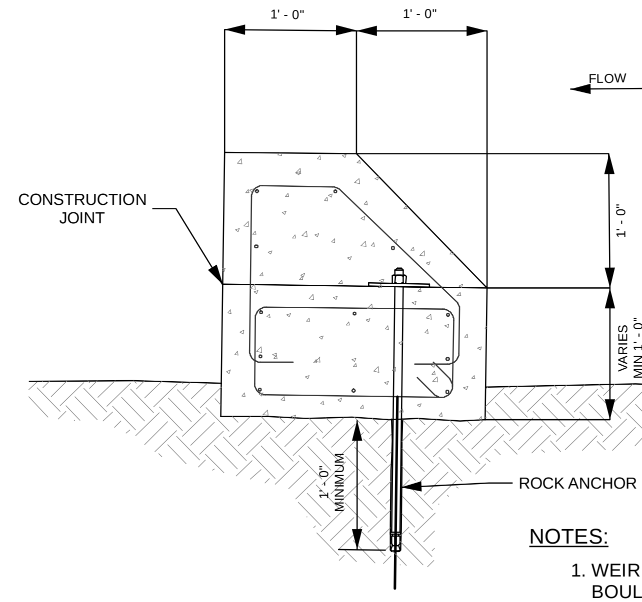
COUNTY: GRAYS HARBOR STATE: WA

SHEET: 8 of 12

DATE: **4/3/2015**



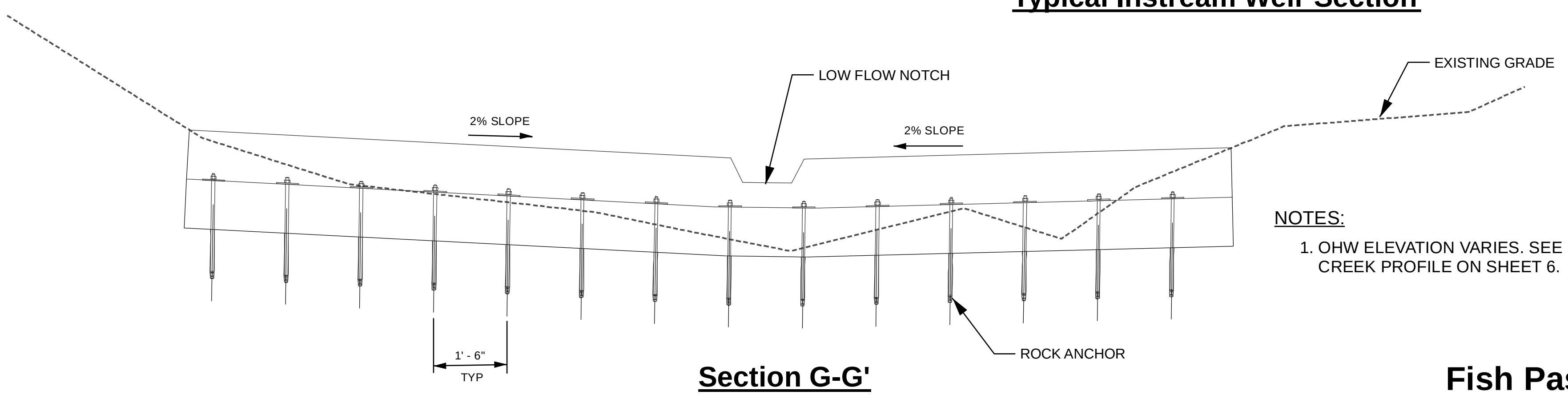
Section E-E'
Typical Pool and Chute Fishway Section



NOTES:

1. WEIR WILL BE MORE NATURALISTIC BOULDER SHAPED.

Section F-F'
Typical Instream Weir Section



NOTES:

1. OHW ELEVATION VARIES. SEE MILL CREEK PROFILE ON SHEET 6.

Section G-G'
Typical Instream Weir Elevation

Fish Passage
Sections and Details

PURPOSE: Flood Hazard Reduction DATUM: North American Datum 1983 ADJACENT PROPERTY OWNERS: See JARPA Attachment C	Mill Creek Park Dam Improvements REFERENCE: SITE LOCATION ADDRESS: No Situs Address - Parcel Number 417092321009	PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond IN: T17N/R9W/Sec23 NEAR/AT: GRAYS HARBOR COUNTY: GRAYS HARBOR STATE: WA SHEET: 9 of 12 DATE: **4/3/2015**

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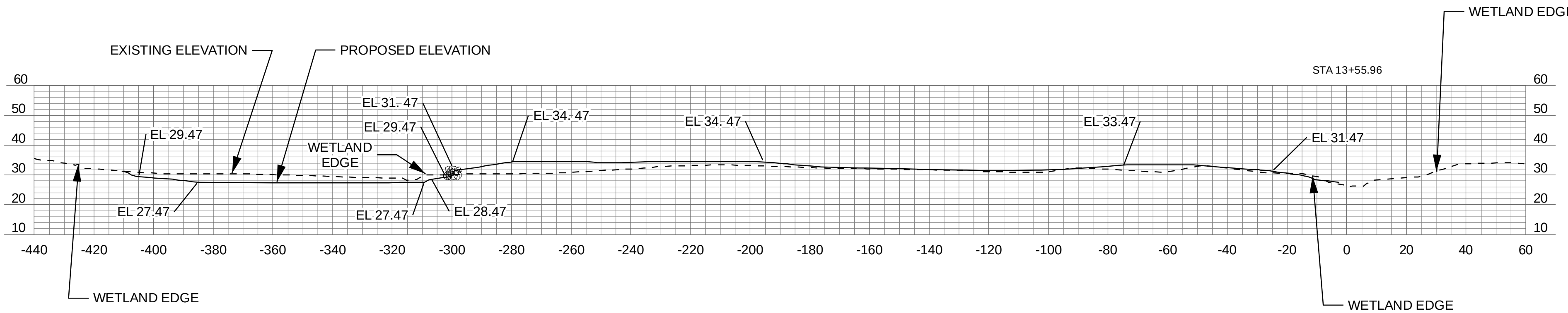
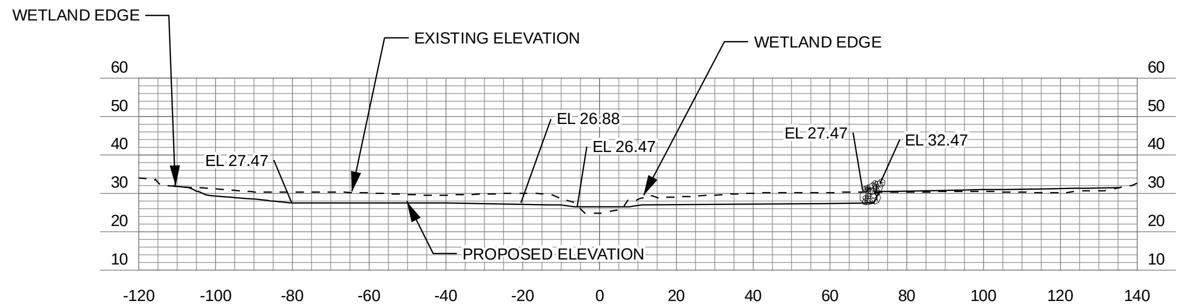


Section H-H'



Section I-I'

Pond Cross Sections

PURPOSE: Flood Hazard Reduction

DATUM: North American Datum 1983

ADJACENT PROPERTY OWNERS:
See JARPA Attachment C

Mill Creek Park Dam Improvements

REFERENCE:

SITE LOCATION ADDRESS:
No Situs Address - Parcel Number 417092321009

PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond

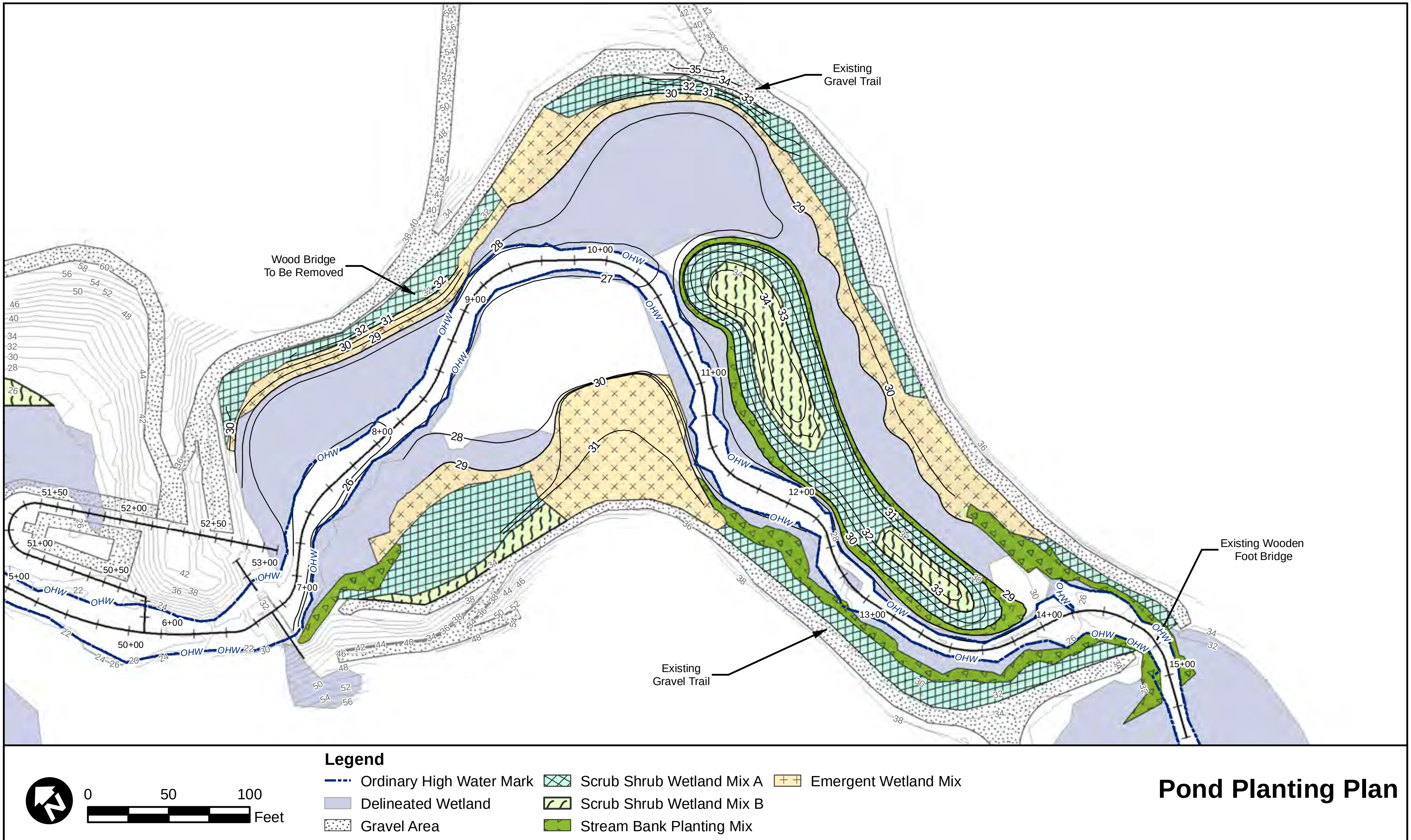
IN: T17N/R9W/Sec23

NEAR/AT: GRAYS HARBOR

COUNTY: GRAYS HARBOR STATE: WA

SHEET: 10 of 12

DATE: **4/3/2015**



Pond Planting Plan

PURPOSE: Flood Hazard Reduction

DATUM: North American Datum 1983

ADJACENT PROPERTY OWNERS:
See JARPA Attachment C

Mill Creek Park Dam Improvements

REFERENCE:

SITE LOCATION ADDRESS:
No Situs Address - Parcel Number 417092321009

PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond

IN: T17N/R9W/Sec23

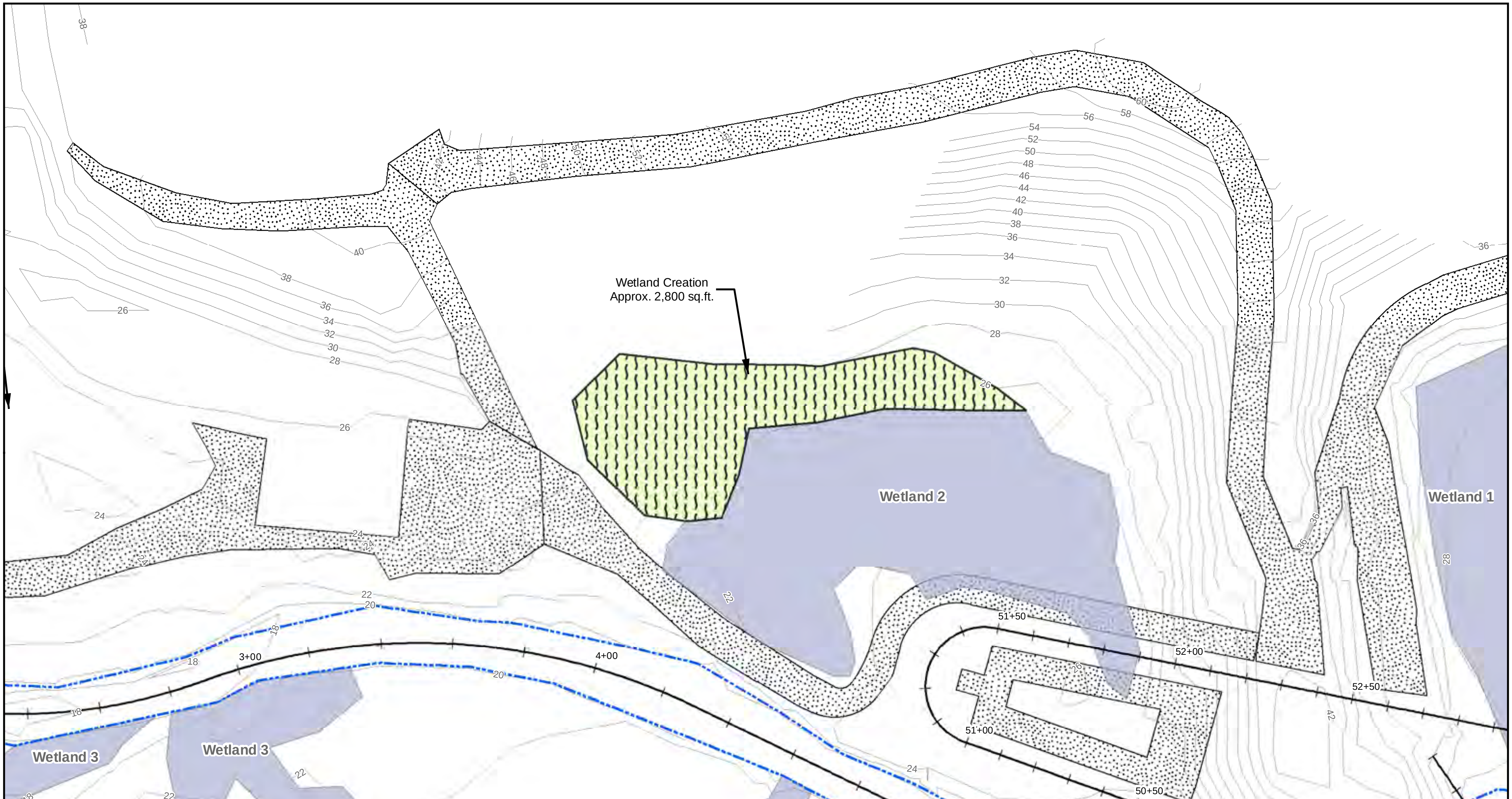
NEAR/AT: GRAYS HARBOR

COUNTY: GRAYS HARBOR STATE: WA

SHEET: 11 of 12

DATE: **4/3/2015**

Document Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelm_171201\Map_Docs\JARPA\JARPA_Planting_Plan.mxd



0 25 50 Feet

Legend

- Ordinary High Water Mark
- Delineated Wetland
- Wetland Mitigation Area
- Gravel Area

Wetland Mitigation Plan

PURPOSE: Flood Hazard Reduction DATUM: North American Datum 1983 ADJACENT PROPERTY OWNERS: See JARPA Attachment C	Mill Creek Park Dam Improvements REFERENCE: SITE LOCATION ADDRESS: No Situs Address - Parcel Number 417092321009	PROPOSED/RETAIN: Replace Dam, Construct New Fish Passage, and Regrade Pond IN: T17N/R9W/Sec23 NEAR/AT: GRAYS HARBOR COUNTY: GRAYS HARBOR STATE: WA SHEET: 12 of 12 DATE: **4/3/2015**

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers
Seattle District

AGENCY USE ONLY

Date received:

Agency reference #: ____________________

Tax Parcel #(s): ____________________

____

TO BE COMPLETED BY APPLICANT [help]

Project Name: ____________________

Location Name (if applicable): ____________

____

Attachment C:
Contact information for adjoining property owners. [help]

Use this attachment only if you have more than four adjoining property owners.

Use black or blue ink to enter answers in white spaces below.

1. Contact information for all adjoining property owners. [help]

Name	Mailing Address				Tax Parcel # (if known)
ARMENTA HEIDI M & CRISTHIAN	PO BOX 808	COSMOPOLIS	WA	98537	34500101500
BARRIO EDDIE V & JULIE A	PO BOX 164	COSMOPOLIS	WA	98537	34700000004
BORDIN JEFFREY T	KAIA IJC INFO OPS	APO	AE	9320	417092321010
BUCHANAN KATHRYN F	BONNIE K COZZETTO	SEATTLE	WA	98126	34500101700
CITY OF COSMOPOLIS	PO BOX 2007	COSMOPOLIS	WA	98537	417092321009
CITY OF COSMOPOLIS	PO BOX 2007	COSMOPOLIS	WA	98537	417092321008
CITY OF COSMOPOLIS	PO BOX 2007	COSMOPOLIS	WA	98537	34500102301
CITY OF COSMOPOLIS	PO BOX 2007	COSMOPOLIS	WA	98537	33600000001
DUFFY ANDREW B & NATALIE A	PO BOX 155	COSMOPOLIS	WA	98537	34500101600
FROST REBECCA R & CHASE KARLA R	143 MCCLEARY RD	MCCLEARY	WA	98557	34500101201
GREEN CROW PROPERTIES LLC	PO BOX 2469	PORT ANGELES	WA	98362	33700001300
IBRAHIM MOHAMMAD & ANNETTE R	PO BOX 1141	COSMOPOLIS	WA	98537	34700000006
IBRAHIM MOHAMMAD & ANNETTE R	PO BOX 1141	COSMOPOLIS	WA	98537	34700000005
KRENZ G BRANDON & KARA	PO BOX 1132	COSMOPOLIS	WA	98537	34500101901
LAIRD DALE L & SANDRA K	PO BOX 403	COSMOPOLIS	WA	98537	34500102101
LINDSEY TED R JR & DOROTHY TRUST	PO BOX 356	COSMOPOLIS	WA	98537	34700000003
MAYNARD KIRK F	PO BOX 616	COSMOPOLIS	WA	98537	34500102001
OESTREICH CAROLYN	PO BOX 432	COSMOPOLIS	WA	98537	34500101801
RAMOS TARA & JOSE	PO BOX 822	COSMOPOLIS	WA	98537	34500102201
RAMOS TARA & JOSE	PO BOX 822	COSMOPOLIS	WA	98537	34500102302
SIANO BRANDON & TIFFANY	PO BOX 53	COSMOPOLIS	WA	98537	34500101400
SIMONS CLAUDINE S	PO BOX 37	COSMOPOLIS	WA	98537	34500101000
SPC STERLING ENTERPRISES INC	STERLING PACIFIC LENDING INC	WATSONVILLE	CA	95076	417092312016

1. Contact information for all adjoining property owners. [help]		
Name	**Mailing Address**	**Tax Parcel # (if known)**
SPC STERLING ENTERPRISES INC	STERLING PACIFIC LENDING INC WATSONVILLE CA 95076	170923240010
TURNER BRITT M	PO BOX 81 COSMOPOLIS WA 98537	34500101300
VANSYCKLE M EDWIN & SUSAN L	PO BOX 52 COSMOPOLIS WA 98537	34500101101

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ENV-022-09 rev. 08/2013

City of Cosmopolis Mill Creek Park Dam Improvements Project

Cosmopolis, Washington
Biological Evaluation and EFH Assessment

April 2015

HDR
500 108th Avenue NE
Suite 1200
Bellevue, WA 98004
(425) 450-6200

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1.0 Executive Summary

The City of Cosmopolis (City) proposes to replace the Mill Creek Dam, located in Mill Creek Park in Cosmopolis, Washington, which was breached during an intense storm in November 2008. The new dam will include a fishway that will provide fish passage, and cross-vane weirs in the channel immediately downstream of the dam, to provide low flow passage. Mill Creek is a tributary of the Chehalis River. The dam is located approximately 1 mile upstream from the confluence. No Endangered Species Act (ESA) listed species are documented to occur; or were observed during field visits at the project site. Marbled murrelets have been documented to occur approximately 2 miles to the southwest of the project site, and therefore the project may effect, but is not likely to adversely affect, individuals of this species. Due to the lack of occurrence in Mill Creek, the project will have no effect on listed fish species. Coho salmon (Oncorhnychus kisutch), which belong to the Southwest Washington Evolutionary Significant Unit (ESU) not listed under the ESA, do inhabit Mill Creek, and documented spawning occurs in the park reach downstream of the dam and proposed construction. Due to coho presence, the project would affect Essential Fish Habitat (EFH). Effects are temporary and the addition of fish passage past the new dam will benefit EFH by providing increased access to habitat upstream.

2.0 Introduction

The City of Cosmopolis (City) proposes to replace the Mill Creek Dam, located in Mill Creek Park in Cosmopolis, Washington, which was breached during an intense storm in November 2008. The breach was caused by a large alder tree that fell from the hillside above the dam after several days of heavy rain. The fallen alder caused the hillside to become unstable and slide into the sheet piling of the dam, breaching the structure. As a result, the dam was no longer operational, and the upstream impoundment was drained. In addition to the dam, a former 100-foot-long footbridge located above the dam failed during the breach.

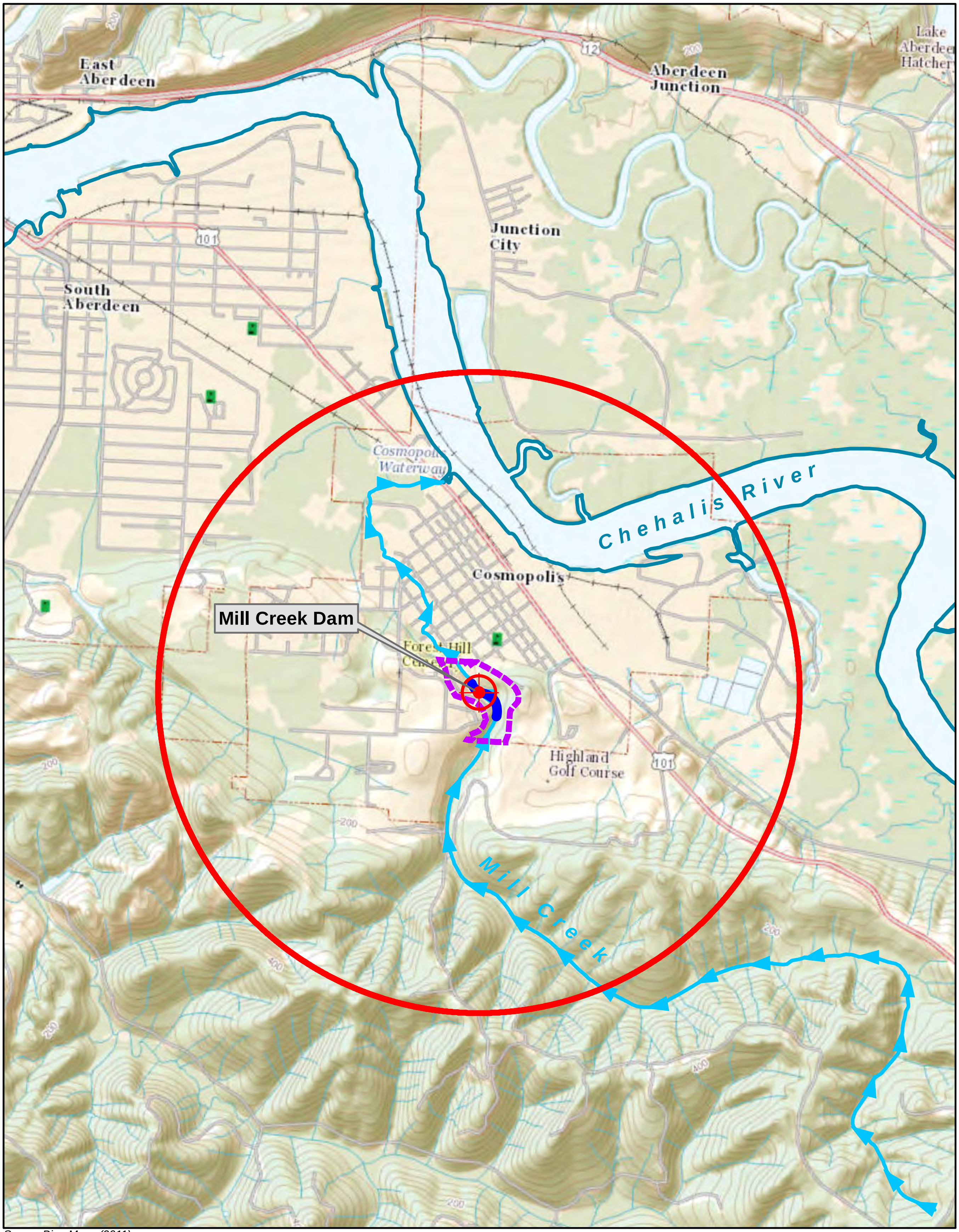
Prior to the breach, the 200-foot-wide by 20-foot-tall earth embankment and gravity concrete dam impounded approximately three to four acres within the Mill Creek Park and provided a recreational fishing pond (HDR 2012). The dam also attenuated downstream flooding during storm events. The footbridge provided access to the recreational pond and surrounding park.

The City plans to address the dam breach by assessing multiple objectives of the Mill Creek stream system and opportunities for improvements. Project elements associated with the proposed dam and pond improvements that require the placement of fill in Waters of the U.S. require federal authorization from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. The Endangered Species Act (ESA) of 1973, amended in 1988, requires that federal agencies ensure that any action they authorize, fund, or carry out does not jeopardize the continued existence of any endangered or threatened species, and does not adversely modify designated critical habitat of such species. When a federal action agency authorizes, funds, or carries out an action, it must consult with the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service (USFWS) if the agency determines that the action may affect ESA-listed species. In addition, the federal action agency (USACE) must comply with the requirements of the Magnuson-Stevens Act (MSA). The MSA requires an assessment of effects to designated EFH in the project area (in this case, for coho salmon (*Oncorhnychus kisutch*). This document is intended to fulfill the requirements of the ESA and MSA.

2.1 Project Setting

The proposed project is located in Mill Creek Park approximately 2 miles southeast of Aberdeen, within the City of Cosmopolis, Washington (Figure 1). Mill Creek Park is located between a residential housing community and the city's Highland Golf Course at the south end of 5th Street (Section 23, Township 17 North, Range 9 West). The park is located on a City-owned parcel (#417092321009) and is approximately 26 acres in size. The project site is centered at latitude 46.93026˚ North and longitude 123.74579˚ West. Topography of the site starting from the Mill Creek Dam is approximately 40 feet above sea level, and gently slopes down to the north to C Street. The park lies within a valley and drains surface water from surrounding hillslopes to the east and west.

Mill Creek is a perennial tributary to the Chehalis River and is the only stream in the project site. It originates from the surrounding hills south of the project area and is fed by runoff and groundwater seepage along the valley. Since the dam breach in 2008, the ponded area upstream of the dam has largely drained and the stream has formed a meandering channel through the park. Downstream of the dam, Mill Creek flows for approximately 1 mile to its confluence with the Chehalis River. The creek flows from the north end of the park through a culvert under C Street, and then it continues through a series of culverts under residential streets. Outside of culverts, Mill Creek is confined in many areas as it flows through residential properties with armored banks and little to no overhead cover. Downstream of the residential area, the stream retains more of its natural channel and continues through a tide gate at its confluence with the Chehalis River. The tide gates do not pose a passage barrier to fish moving to or from the Chehalis River during the majority of flow conditions. However, during extreme storm events, the water pressure and elevation causes the tide gates to close and therefore blocks access to Mill Creek.



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Source:Bing Maps (2011).

Figure 1
Vicinity Map

Legend

- Aquatic portion of Action Area
- Terrestrial portion of Action Area
- Mill Creek Park Parcel
- Chehalis River
- Mill Creek

N

0 625 1,250 2,500 Feet

Mill Creek Park Dam Improvement Project

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2.2 Consultation History

A meeting was conducted at the project site by HDR project leads with Darrin Raines, the City of Cosmopolis Public Works Director, and Amy Spoon, WDFW Area Habitat Biologist, at Mill Creek Park on July 18, 2013 to introduce the project and begin agency coordination. The key project element confirmed by WDFW during the site visit was that fish passage will be required as part of the dam improvements. Ms. Spoon indicated that WDFW preferred a bypass channel rather than a fish ladder. As described in Section 3.0, the current design includes a fishway bypass channel; WDFW has indicated that they will issue a permit provided that the current passage requirements are achieved. The proposed fish passage design complies with requirements of the 2013 Water Crossing Design Guidelines (Barnard et al. 2013) and supplemental guidelines specific to dam structures. Regarding fish passage requirements for the existing culverts downstream from the dam, Ms. Spoon indicated that the dam replacement could be permitted without addressing the culverts, as that may be triggered by other requirements in the future.

3.0 Description of Proposed Action

It is anticipated that the proposed dam replacement and pond improvement project will occur over a period of 7 months beginning in April 2016 through October 2016. The USACE established an in-water work window for the Chehalis River and its tributaries from the mouth upstream to Porter Creek June 1 through October 31. Consultations with WDFW area biologist resulted in their approval of an in-water window of June 1 through September 30 for this project (Amy Spoon pers. comm. December 2014).

Prior to the in-water work window in April or May, the selected contractor would prepare the site and conduct initial upland construction. This includes mobilizing and staging of construction equipment and development of the onsite and offsite staging areas. Surveying and construction staking and fencing outside the Ordinary High Water Mark (OHWM) may also be conducted prior to the start of the in-water work window.

Construction equipment would make use of existing access roads that connect to the gravel footpath that surrounds the pond area (Figure 2). These access roads may need to be improved with the addition of some gravel in order to accommodate use by project equipment and vehicles and would also be completed prior to the June 1 in-water work window. Improving and developing these access roads and the gravel footpath would involve the use of dozers, trucks, and front end loaders and the addition of gravel to the road surface and existing footpath. BMPs such as silt fencing or similar measures would be implemented to prevent any increased sedimentation to the creek during preparation of these access roads from rains and hillside runoff. An off-site staging area would also likely be required due to the limited space available at the site (Figure 2). This would be established at the beginning of the project and make use of existing roads to move equipment and workers from the construction yard to the project site. Access to the project site includes ingress and regress from C Street, Mill Creek Drive (Holly Lane), and 5th Avenue.

An approximately 1,100 linear foot stream bypass system would be installed to convey Mill Creek around the work area during construction to allow all work to occur “in the dry”. The bypass would consist of a piped conveyance that captures the stream flow just upstream of the footbridge and return flow downstream of the dam construction area (Figure 2). The stream bypass pipe system components would be assembled and placed in upland areas and along an existing gravel pathway prior to being connected to the stream channel (which would occur at the start of the in-water work window).

Grading of the pond area, demolition of the old dam, and construction of the new dam and fishway would all occur within the four month in-water work window. Final grading, fencing, and pathways could be completed after the end of the four month window if necessary as all work for these items would occur well outside the stream channel and stream banks.

3.1 In-Water Work Area Isolation

3.1.1 Temporary Stream Bypass Installation

Demolition of the existing dam and construction of the new dam, fishway entrance, and grading of the pond would require the work area to be de-watered during construction. As described above, this would be accomplished via a 1,100-feet piped diversion bypass that would carry the stream flow around the project work area. The objective of all flow bypasses is to totally isolate the construction site while diverting and maintaining stream flow around the project and back into the stream channel downstream.

To install the piped stream bypass, an upstream cofferdam would be installed just upstream of the footbridge at the south end of the park, and a downstream cofferdam at the flow return location, which is downstream of the dam construction area (Figure 2). Installation of the cofferdams would be accomplished over several hours during the in-water work window to allow streamflow to be reduced and de-watered gradually. The upstream cofferdam would likely consist of an ecology block/sandbag (or aqua bag or gravel super sack) structure across the channel. Thick plastic sheeting (e.g. 5mm visquene) would be placed atop the blocks/bags, which would be anchored with smaller gravel-filled bags to ensure a watertight seal. A small diversion with a vertical culvert intake would be excavated out of the stream bank immediately upstream of the cofferdam. The cofferdam materials and intake construction would likely be installed using an excavator on the bank. Intake pumps would be placed inside the culvert and the culvert would be screened with mesh or cloth. This would require cleaning maintenance throughout the operation of the bypass to maintain flows into the intake and pipe. The pump and bypass piping system has been designed to accommodate the maximum two year expected flows that could occur during the four month in-water work window.

After the upstream cofferdam and pipe has been placed, the downstream cofferdam would be constructed, including temporary erosion protection measures to prevent scour at the point of return flow. These measures would consist of a bed of washed gravel to dissipate the outlet flows from the bypass pipe.

Though not associated with the temporary stream bypass infrastructure, an additional cofferdam would also be installed just upstream of the dam and fishway exit (Figure 2). This “pond” cofferdam would further isolate these areas during construction of the concrete structures to prevent seepage water from the wetland area in the pond upstream of the construction site. This cofferdam would be installed after dewatering of the stream channel has occurred.

Additional dewatering may be necessary within the pond area during excavation and grading activities. Small sump holes would be excavated to hold seepage water near the downstream end of the work area (Figure 2). Settled water would be routed to an upland area to a Baker Tank or similar settling and filtration facility (e.g., vegetation swale, straw matting, sediment trap, etc.). The settled material would then be transported off site to an approved location as part of the contract. Any water that may be contaminated with harmful materials such as raw concrete or petroleum products would not be allowed to enter the creek.

3.1.2 Temporary Stream Bypass Removal

Following the completion of all in-water work, the piped bypass would be removed and Mill Creek would be returned to its channel. Initially, the “pond” cofferdam would be removed after completion of dam construction while the upstream and downstream cofferdams would remain in place. Removal of the upstream, downstream cofferdams would be accomplished over several hours during the in-water work window to allow streamflow to be reduced and re-watered gradually. The cofferdam locations would be restored to pre-construction conditions. All temporary bypass and work area isolation materials, except the washed gravels used for flow dissipation at the downstream flow return site, would be removed at the completion of construction. These gravels would be retained in the stream channel and contribute to the gravel substrate in the reach.

3.1.3 Fish Salvage

During the de-watering of the work site, fish that may occur within that area may become trapped. Upstream of the cofferdam site, block nets would be installed prior to any de-watering activities to prevent fish moving downstream into the cofferdam and bypass pipe entrance area during installation and operation of the bypass. Once the upstream block net is in place, biologists would use seine nets, and, if necessary, potentially electrofishing equipment, to flush fish downstream past the cofferdam installation site. A downstream block net would then be installed below the cofferdam site. Once the upstream cofferdam is in place, fish biologists would monitor the stream channel downstream of the cofferdam as the water recedes. It is anticipated that most fish in the dewatering area would volitionally move downstream with the outflowing water past the breeched dam; however, some fish may become trapped in standing pools. Again, biologists would work in a downstream direction using seine nets to flush fish out of the work area and allow them to move downstream. Fish remaining in any residual pools and backwater areas would be salvaged using electrofishing, and transported downstream of the isolated work area.

Qualified fish biologists with fish salvage experience would ensure that all fish are removed and handled safely following NMFS (2000) electrofishing guidelines. A WDFW scientific collection permit would also be obtained in order to conduct the fish salvage. Seining or electrofishing would not be used if water temperatures exceed 18°C. The capture team would use sanctuary nets to keep fish in water during transfer procedures to prevent the added stress of out-of-water handling. Once captured, fish would be placed into a 5-gallon bucket using small dip-nets. Captured fish would be released back into the stream channel a safe distance (approximately 100 feet) downstream of the work area. Fish biologists would record species and lengths of any fish mortalities encountered.

As the water drains from the work area, biologists would continue to monitor the channel for any remaining fish that may become stranded. Multiple electrofishing passes may be required. After the electrofishing passes are completed, block nets would be placed downstream of the dewatered area and bypass outlet to prevent any fish attempting to move back up into the site during construction activities.

3.2 Construction

Four elements are proposed to be constructed as part of the project (Figure 2; Appendix A):

1. The pond area upstream of the dam will be re-contoured and planted with native wetland vegetation around its perimeter.
2. The existing dam structure will be removed and the new dam installed in the same location.
3. A fishway bypass channel will be constructed on the right bank to connect the upstream pond area with the stream channel downstream of the dam (Appendix A: Sheet C-04).
4. Cross-vane weirs will be constructed in the stream channel immediately downstream of the dam to provide fish passage during low flows through the channel (Appendix A: Sheet C-04).

Each of these proposed project elements is described below.

3.2.1 Pond Grading and Recontouring

Once the pond area is dewatered, excavators will begin grading the area and developing new contours (Appendix A: Sheet C-13). Due to the wet nature of the site, additional dewatering may be required as described in Section 3.1. Vegetation within the pond grading footprint will be stripped and removed, and soil will be moved and removed as necessary to accomplish the grading plan. The existing channel location will be preserved in the newly graded pond area. Some excavated material will be redistributed to create habitat features such as the elevated margins for wetland plants and the island. The remaining excavated material including cleared vegetation will be hauled off site and disposed of in an approved location.

After the in-water work window, work in upland areas such as cleanup and landscaping would occur. This includes repairing the pedestrian trail around the park. Planting would occur in the newly graded pond area during the winter following construction when the stream flow is drawn down to within the banks of the channel. The areas to be planted are upland of the OHWM and are only inundated or partially inundated during full pool and would not constitute in-water work. The operation of the dam creating the pond would not commence in the spring following construction, but wait until the next year to allow a full growing season for the newly planted plants to establish.

3.2.2 Dam

Prior to the in-water work window, initial clearing and grubbing of the upland right and left abutment areas and excavation of the right abutment within the footprint of the fishway structure would begin. This would provide additional area for the contractor to work from while constructing the concrete dam structure.

Demolition of the existing dam would begin once the area is dewatered during the in-water work window. Demolition will not require blasting, and will be accomplished with the use of a hydraulic hammer on an excavator that will break up the concrete dam into pieces that can be loaded into dump trucks and hauled to an off-site disposal area. Upon completion of the demolition, excavation of the foundation and abutments for the new dam would begin. It is likely that materials excavated from the foundation area will be suitable for use as backfill in the right abutment and will therefore be loaded into dump trucks and hauled from the site. Next a base slab for the dam will be formed and placed. The second lift of the dam will bring the structure to above the OWHM. Once the third lift of concrete is placed the installation of the gate structures on the upstream face of the dam would occur.

A sheetpile retaining wall will be installed along the right bank from the dam and around the fishway exit (Appendix A: Sheet C-03). This will be installed using vibratory methods and will not require proofing. This work will occur during dam installation in the dewatered work area and during the in-water work window.

3.2.3 Fishway

It is anticipated that much of the fishway would be excavated and graded prior to the in-water work window, and the fishway concrete structures could be completed within the same timeframe as the construction of the new dam. Work above OHWM within the fishway could occur before and after the in-water work period, but construction of the entrance and exit structures that connect the fishway to the stream need to be installed during in-water work.

After the new dam is completed and the cross vane weirs are installed, the stream bypass would no longer be needed and stream flow would resume through the channel and pass through the low level outlets in the dam. The fishway would remain above the OHWM and any remaining construction within or along the fishway could be completed if necessary. It is anticipated that the majority of the fishway construction and concrete pours would occur concurrently and following dam construction and would also be completed within the four month in-water work window.

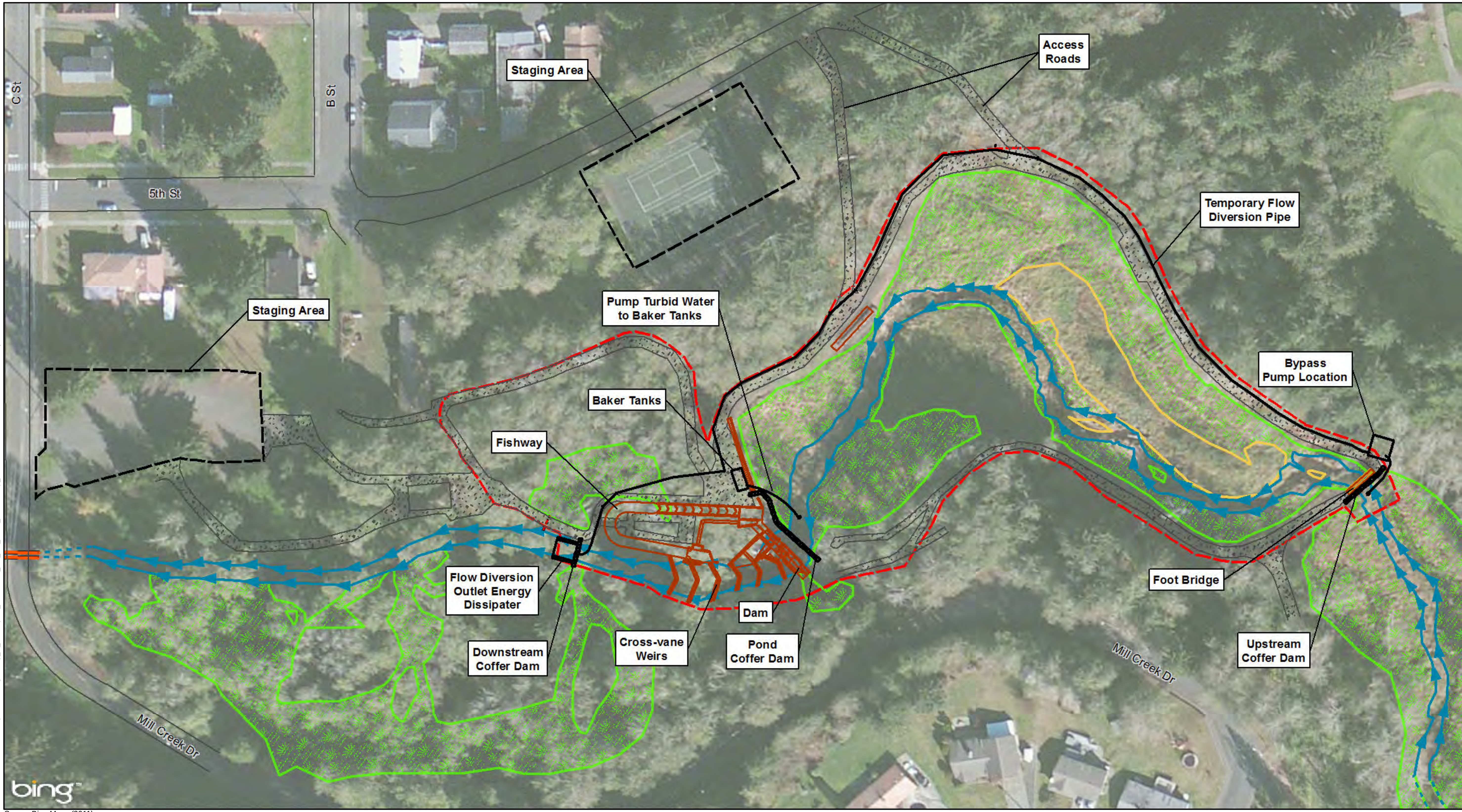
3.2.4 Instream Cross-Vein Weirs

Concrete cross-vane weirs will be installed in the stream channel downstream of the dam during the in-water work window (Figure 2). These would be anchored in the stream channel with dowels. These weirs are designed to provide fish passage upstream during low flow periods when the creek flows are passing through the gates in the dam and the fishway is not operational. These weirs would act as grade controls, while establishing gradient drops that would meet NOAA Fisheries and WDFW fish passage criteria.

3.3 Operations

Operation of the new dam and fishway would retain water in the pond area from May through September. From October through April, flows would be released through the slide gates, effectively converting the upstream pond to return to a natural channel through the winter months. During this period, the fishway would no longer be active as it would be above the surface water level. Flows and fish passage would continue through the slide gates in the lower level of the dam.

The upstream channel through the pond area would be low gradient and fairly uniform in width and similar to the existing conditions. Due to the seasonal ponding and low gradient of the stream upstream of the dam, sedimentation would continue and the substrates in this reach would remain as primarily silts and sand. Hydrology of the stream flow through the dam during the winter months when no pool is present would be similar to the existing flow conditions past the breached dam.



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Source:Bing Maps (2011).

Legend

- Limits of Construction
- Structure
- Culvert
- Wetlands
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Culvert Location
- Approximate Stream

N

0 25 50 100 Feet

Figure 2
Mill Creek Park Dam
Site Plan

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4.0 Impact Minimization Measures

The primary impact minimization measure used to avoid direct effects to aquatic species is the scheduling of in-water work during the WDFW-recommended in-water work period for Mill Creek (June 1 – September 30). The work area would be dewatered and isolated behind cofferdams that divert the stream flow around the site, bypassing the work area to prevent turbidity downstream during construction activities in the channel and banks. Any fish that may occur within the work area would be salvaged by qualified fish biologists during de-watering and released downstream of the project. All construction cofferdams would be removed from the channel by September 30, and all bed and bank restoration activities would be completed by that time.

To prevent downstream effects from sedimentation, turbidity, and potential contaminants, a Stormwater Pollution Prevention Plan (SWPPP), including an Erosion Prevention and Sediment Control Plan, and a Spill Prevention, Control, and Countermeasures (SPCC) Plan would be prepared prior to construction. The pollution and erosion control plan would be prepared and carried out by the Contractor to prevent pollution related to construction activities. The pollution and erosion control plan would contain specific information regarding emergency spill and preventative measures. The plan would address equipment and materials storage sites, fueling operations, staging areas, hazardous materials, spill containment and notification, and debris management.

Overnight parking of vehicles, storage of fuels and other hazardous materials, and refueling activities would take place in the main upland staging areas established for the project (refer to staging area discussion in Section 2.3). Additional measures to reduce the potential for hazardous material release includes:

- Washing of heavy equipment that may work below OHWM before it is delivered to the job site.
- Inspection of construction equipment before accessing instream work areas to remove vegetation and dirt clods that may contain noxious weed seeds.
- Daily inspection of machinery for fuel or lubricant leaks.

5.0 Action Area

The action area is defined as the area to be potentially affected directly or indirectly by a federal action (50 CFR §402.02). For the purpose of establishing baseline conditions from which to evaluate potential effects of the project, the project activities, as well as physical site conditions such as substrate composition, were examined and evaluated. For this project, the basis for defining the action area (Figure 1) takes into consideration the following activities that would occur in the vicinity of the construction activity:

- Installation of cofferdams and dewatering, which can result in temporary turbidity and the handling of aquatic species that may be present in the construction footprint.
- Terrestrial and overwater construction noise
- Grading of the pond/reservoir
- Construction staging areas and storage yards

5.1 Aquatic Portion of the Action Area

The aquatic portion of the action area is defined by the furthest extent of effects anticipated as a result of in-stream work. For this project, the aquatic action area consists of the banks and stream channel within the work area isolated between the upstream cofferdam south of the footbridge in the pond area, the downstream cofferdam below the dam, and the cross vane weir construction area (Figure 1). The aquatic action area also includes a 300-foot reach of the channel downstream of the isolated work area where the discharged bypass water is returned to the stream. The pond area upstream of the dam is bounded by embankments and a gravel path. Some of the work within this embankment occurs outside the current OHWM for the existing stream channel, but the entire area is wet and the stream banks are poorly defined. Therefore any work in this area is considered in-water work and would occur when the area is isolated and dewatered during the in-water work window and is included within the aquatic portion of the action area.

5.2 Terrestrial Portion of the Action Area

The terrestrial portion of the action area is defined based on the potential for noise associated with operation of construction equipment. The loudest equipment anticipated to be used for this project includes vibratory drivers for the sheet piles along the right bank at the dam, a hydraulic hammer to dismantle the existing dam, as well as excavators, cranes, and diesel generators to operate the pumps needed for dewatering the in-stream work areas. According to WSDOT (2014), vibratory drivers can produce peak decibels of 101 dBA (in-air) as measured 50 feet from the device. Decibel addition rules for additional equipment are not applicable in this case since noise associated with the next loudest noise-producing equipment anticipated to be used (impact hammer on an excavator at 90 dB), differs by more than 10 dB when compared to the vibratory driver (WSDOT 2014).

When vegetated ground cover exists between the noise source and receptor (soft site), the ground becomes absorptive of noise energy and results in an additional 1.5 dB reduction per doubling of distance as it spreads from the source, and dense vegetation may reduce noise levels a further 5 dB (WDOT 2014). In consideration of the fact that the vibratory driving would occur within the forested river valley and would therefore be buffered by vegetation, a conservative 5 dB reduction was applied to the vibratory hammer sound level, resulting in a source level of 96dBA. Using a point source sound attenuation model where a 6 dB noise reduction occurs per doubling distance from the activity, with an additional 1.5 dB of reduction due to soft site characteristics of the surrounding valley, noise should attenuate to baseline levels approximately 5,500 feet from the dam. At these locations, baseline noise levels were assumed to be about 45 dB based on the suburban character of the surrounding area. Therefore, the terrestrial portion of the action area extends feet 5,500 feet in all directions from the dam construction site (Figure 1).

6.0 Status of Species and Critical Habitat

HDR obtained lists and information on threatened and endangered species in the vicinity of the proposed project from the following sources:

- U.S. Fish and Wildlife Service, IPaC system, accessed December, 2014: http://ecos.fws.gov/ipac/wizard/chooseLocation!prepare.action
- USFWS county list (April, 2013), accessed December, 2014: http://www.fws.gov/wafwo/speciesmap/GraysHarborCounty0312.pdf
- National Marine Fisheries Service: http://www.nwr.noaa.gov/ESA-Salmon-Listings/Index.cfm
- Washington Department of Fish and Wildlife, PHS Mapper, December, 2014:http://apps.wdfw.wa.gov/phsontheweb/
- Washington Department of Fish and Wildlife, Salmonscape Online Mapper: http://apps.wdfw.wa.gov/salmonscape/map.html
- Washington State Department of Natural Resources (WDNR 2014b) Natural Heritage Information Request Self-Service System

To determine which species were relevant to the action area, a list of species for the entire county was obtained and NMFS listings were determined. WDFW PHS data specific to the action area (WDFW 2014a) were compared to the county lists. Table 1 summarizes the ESA-listed species identified to occur in Grays Harbor County based on these agency lists.

Table 1: Grays Harbor County ESA-listed species

Species	Scientific Name	Federal Status	Critical Habitat
Fish			
Bull trout Coastal-Puget Sound DPS	*Salvelinus confluentus*	Threatened (USFWS)	Designated, but not in action area
Green sturgeon Southern DPS	*Acipenser medirostris*	Threatened (USFWS/NMFS)	Designated, but not in action area
Eulachon Southern DPS	*Thaleichthys pacificus*	Threatened (NMFS)	Designated, but not in action area
Birds			
Northern spotted owl	*Strix occidentalis caurina*	Threatened (USFWS)	Designated, but not in action area

Species	Scientific Name	Federal Status	Critical Habitat
Streaked horned lark	*Eremophila alpestris strigata*	Threatened (USFWS)	Designated, but not in action area
Yellow-billed cuckoo Western U.S. DPS	*Coccyzus americanus*	Threatened (USFWS)	Proposed, but not in action area
Short-tailed albatross	*Phoebastria albatrus*	Endangered (USFWS)	None designated
Western snowy plover	*Charadrius alexandrinus nivosus*	Threatened (USFWS)	Designated, but not in action area
Marbled murrelet	*Brachyramphus marmoratus Marmoratus*	Threatened (USFWS)	Designated, but not in action area
Mammals			
Fisher West Coast DPS	*Pekania pennanti*	Proposed Threatened (USFWS)	None designated
Insects			
Oregon silverspot butterfly	*Speyeria zerene hippolyta*	Threatened (USFWS)	Designated, but not in action area

6.1 Species Not Present in Action Area and Excluded from Further Consideration

Many listed species that are described as potentially occurring within Grays Harbor County (Table 1) do not inhabit areas in or near the project action area. These species are described briefly below.

6.1.1 Bull Trout

Bull trout in the Chehalis River watershed are considered part of the Coastal-Puget Sound Distinct Population Segment (DPS), which was federally-listed as threatened in 1999. The status of bull trout in the Chehalis River and Grays Harbor is largely unknown. Limited records of bull trout exist for the area. Only 15 bull trout were captured in a total of 4,187 general fish sampling events conducted in the river between 1966 and 2000, with the majority (80 percent) of these between March and May (Jeanes et al. 2003). The stock status for the lower Chehalis is identified by WDFW (2004) as unknown and habitat conditions within the lower reaches are described as degraded due to industrial pollution and loss of riparian vegetation. The low gradients in the Chehalis drainage are not considered to be ideal habitat for bull trout, and while historically bull trout might have inhabited limited areas of the Chehalis drainage, their current existence within this region is questionable (Smith and Wenger 2001). Mill Creek also does not provide suitable habitat for bull trout, particularly during the summer in-water work windows when flows are extremely low and instream temperatures are high. The creek in the project area is low gradient with little cover or deep pools (HDR 2014a). Much of the lower reach passes through suburban areas with little to no riparian cover, and the low gradient make it prone to warm temperatures in low flow periods.

Although bull trout critical habitat is designated in the Chehalis River, Mill Creek is not included in the designation (FR Vol. 70, No. 185: 56304; USFWS 2010). Therefore, bull trout and bull trout habitat are not present in the action area or Mill Creek, and the project will have no effect on bull trout or bull trout critical habitat.

6.1.2 Green Sturgeon

The Southern DPS green sturgeon was federally listed as a threatened species in 2006. Green sturgeon are migratory, utilizing the open ocean to travel vast distances between freshwater rivers and are known to congregate during summer months in coastal estuaries such as Grays Harbor, Willapa Bay, and the Columbia River estuary (NMFS 2005). Biologists with WDFW investigated the Chehalis River as green sturgeon habitat and while it appears to possess suitable spawning habitat, there has not been evidence of actual spawning in the basin (NMFS 2005). Eggs and larvae from green sturgeon have not been observed in the Chehalis River or Grays Harbor (NMFS 2005) and the species is not known to utilize the lower Chehalis River at any time (Adams et al. 2002, Deschamps et al. 1971). Mill Creek is situated upstream of tide gates and does not provide suitable habitat and no forage species occur, precluding green sturgeon from occurring in the creek.

Green sturgeon critical habitat is designated within Grays Harbor and the lower Chehalis River and tributaries to the head of tide (NMFS 2009). The action area in Mill Creek is above the area of tidal influence; therefore, green sturgeon critical habitat does not extend into the project action area. Since they are not known to occur in the Chehalis River, and suitable habitat is not present in the Mill Creek action area, the project will have no effect on green sturgeon or green sturgeon critical habitat.

6.1.3 Eulachon

In March 2010, NMFS listed the Southern DPS of Pacific eulachon as threatened under the ESA. Eulachon are an anadromous species that inhabit coastal waters and tributaries from Northern California to Alaska. After spending 3 to 5 years in the ocean, adult eulachon return to freshwater in the lower reaches of rivers to spawn. NMFS (2006) reported that eulachon spawn in the following Grays Harbor tributaries: the Humptulips River, Aberdeen River, Chehalis River, and the Wynoochee River. The adult migration period can range from December through April, but peaks in February and March (Emmett et al. 1991, WDFW and ODFW 2001. Emmett et al. (1991) reported that eulachon are common in Grays Harbor, while Simenstad et al. (1993) reported that they are rare in the Chehalis River basin. Although Mill Creek is a tributary to the lower Chehalis, it does not provide suitable habitat for eulachon. Based on this information, and the fact that instream work would occur during the June 1 – September 30 instream work window, when eulachon life histories are not present in freshwater systems, eulachon will not be present in the project action area.

Therefore, the project will have no effect on eulachon. Critical habitat for eulachon was designated in October 2007 (FR76 65324). Grays Harbor and its associated tributaries were not included in the final designation.

6.1.4 Northern Spotted Owl

Northern spotted owls inhabit predominantly old growth forests (and selected second growth forests with remnants of larger trees) that have a closed canopy, large open spaces for flight beneath the canopy, many downed logs and woody debris that serve as prey habitat and old, hollow trees for nesting sites. The action area is within parkland in the City of Cosmopolis and is largely surrounded by residential areas and a golf course. A small portion of the action area encompasses some timber harvest areas upstream of the project. Therefore, large contiguous tracts of habitat are not present in or near the action area. Because the action area does not contain suitable nesting habitat, and no occupancy sites have been documented in the vicinity of the project (WDFW 2014a), spotted owls are not considered further in this evaluation. Critical habitat for spotted owls is not present in the action area as it occurs far north in Grays Harbor County approximately 23 miles from the action area (USFWS 2014).

6.1.5 Streaked Horned Lark

The streaked horned lark is endemic to the Pacific Northwest (historically found in British Columbia, Washington, and Oregon) and is a subspecies of the wide-ranging horned lark (*Eremophila alpestris*). The streaked horned lark is associated with bare ground or sparsely vegetated areas, particularly early successional habitats such as gravel bars, burned grasslands, and scoured or sediment- deposited floodplains with an open landscape. Breeding sites are often located in areas of remnant dry prairie, mudflats, or oak savannas. Foraging occurs in grassland habitat. In Washington, the streaked horned lark nests on grasslands and sparsely vegetated areas at airports, sandy islands and coastal spits (WDFW 2013). The current range of the streaked horned lark includes the Washington coast and lower Columbia River islands, including dredge spoil deposition sites near the Columbia River (FWS-R1-ES-2012-0080-0091).

Suitable habitat for these birds does not occur in the project action area. Due to the lack of habitat and potential presence of this species, it is not further considered in this document. Critical habitat for streaked horned lark was designated in 2013 (78 FR 61505-61589) and is located on the coast. No critical habitat is designated in the action area.

6.1.6 Short-Tailed Albatross

The short-tailed albatross is an extremely rare bird off Washington's coastline. Since the early 1990s, sightings have increased, and a few birds are reported annually off the West Coast of Washington. Short-tailed albatrosses nest on islands off Japan and spend most of their lives at sea. Although USFWS lists for Grays Harbor County indicate that the species may occur off the coastline, information regarding sightings along the coast of Grays Harbor is lacking. Due to the lack of documented occurrences of short-tailed albatrosses in or near the action area and the distance from the coastline, the species was eliminated from consideration in this assessment.

6.1.7 Western Snowy Plover

The northernmost wintering area for the western snowy plover is near Cape Shoalwater in Pacific County, Washington. Two breeding sites are located in the state of Washington, one at Leadbetter Point in Willapa Bay, and the other at Damon Point, in Grays Harbor (WDFW 2013). This small shorebird nests in coastal habitats such as sand spits, dune-backed beaches, vegetated beach strands, open areas around estuaries, and beaches at river mouths. Because these habitats do not occur within the action area, the western snowy plover is not further considered in this document. Critical habitat is not designated in or near the action area.

6.1.8 Yellow Billed Cuckoo

The western yellow-billed cuckoo has experienced a major decline in its breeding range since the 1800s and is now extirpated throughout most of its historical range except for small and widely dispersed nesting populations in California, Arizona, and New Mexico (WDFW 2013). Yellow-billed Cuckoos are considered extirpated in Washington, but they appear extremely rarely during summer (WDFW 2013; Birdweb.org). An observation was recorded in 1996 in Washington that was a single bird near Elma at Vance Creek County Park (Grays Harbor County) (Birdweb.org).

Western yellow-billed cuckoos breed in dense willow and cottonwood stands in river floodplains. Historically, the yellow-billed cuckoo bred throughout much of North America. Available data suggests that within the last 50 years the species' distribution west of the Rocky Mountains has substantially declined (WDFW 2013). Therefore, due to the lack of occurrence of this species throughout the region including the action area, the yellow-billed cuckoo is not further considered in this document.

6.1.9 Fisher – West Coast DPS

The USFWS proposed to list the West Coast DPS of fisher as threatened under the ESA. Fishers are light to dark brown cat-sized forest-dwelling mammals in a family that includes weasels, mink, martens, and otters. The fisher's range was reduced dramatically in the 1800s and early 1900s through trapping, predator and pest control, and alterations of forested habitats brought about by logging, fire, urbanization, and farming (WDFW 2013).

The Fisher is considered extirpated from Washington and is listed as endangered by the state. Reintroduction efforts began in Olympic National Park in 2008 (WDFW 2013). The fisher is therefore not present in or near the project action area and is not further considered in this document. Critical habitat has not yet been proposed.

6.1.10 Oregon Silverspot Butterfly

The known Washington populations of the Oregon silverspot butterfly are in Grays Harbor and other Pacific counties along the coast. The current distribution of the species includes three distinct (but in some cases co-occurring) ecosystem types including montane/grasslands, marine terraces and headlands, and stabilized dunes (WDFW 2013). Because these habitats do not occur within or in the vicinity of the action area, the Oregon silverspot butterfly is not further considered in this document.

6.2 Listed/Proposed Species Occurrence in the action area

No ESA-listed fish species are documented to occur in the aquatic portion of the project action area, or within Mill Creek. Chinook (*Oncorhynchus tshawytscha*), coho (*Oncorhynchus kisutch*), and chum salmon (*Oncorhynchus keta*), as well as steelhead trout (*Oncorhynchus mykiss)* are all documented to occur for at least some portion of their life cycle in the Chehalis River (WDFW 2014b; StreamNet 2014). However, none of these populations belong to any ESA-listed ESU or DPS, and consequently there is no critical habitat designated for these species in the Chehalis River or Mill Creek. As described in the previous section, ESA-listed eulachon and green sturgeon occur well outside the project action area in Grays Harbor, and eulachon may ascend the Chehalis River for spawning from December through April. However, neither species occurs in Mill Creek. Bull trout have been documented in the Chehalis River, but the extent of their presence is largely unknown (Smith and Wenger 2001). The Chehalis River is part of critical habitat designated for bull trout, but Mill Creek is not included in the designation.

The terrestrial action area, where project effects from construction noise would occur, does not contain any documented occurrences of listed birds, mammals, insects, or plants. A marbled murrelet occupancy site is documented outside the terrestrial action area, about 1.6 miles southwest of the dam site (WDFW 2014a). This site, and the adjacent forested habitat that could potentially provide suitable nesting trees, indicates that it is possible, though unlikely, that a marbled murrelet could potentially occur within the action area.

6.2.1 Marbled Murrelet

The marbled murrelet was listed as threatened in 1992 because of concerns regarding loss of nesting habitat in old-growth forests, and mortality at sea from gill nets and oil spills (USFWS 1997). Marbled murrelets feed on small fish and invertebrates in the ocean during the day and leave the ocean at dusk to attend their nest site. The marbled murrelet typically nests in coastal old growth forests, on large branches high in the canopy. They have been known to nest far from the ocean, sometimes as far as 40 or more miles.

A marbled murrelet occupancy site is documented about 1.6 miles southwest of the dam site (WDFW 2014a). Murrelets fly between foraging areas off the coast and inland nesting habitat. Consequently, it is unlikely these birds would be flying through the action area which is located further inland from their area of occurrence. It is highly unlikely that any of the trees along Mill Creek are utilized for nesting due to the lack of suitable large, contiguous blocks of nesting trees. The fragmentation of existing forested habitat from residential and industrial development and timber harvest may preclude use of trees within or near the project action area.

Marbled murrelet critical habitat is not present in the action area and occurs far to the north in Grays Harbor County approximately 23 miles away (USFWS 2014). Due to the lack of mature forest habitat and the proximity of the project site to residential development inland form areas used by murrelets, their presence in or near the action area is extremely unlikely. Because they are known to occur in the region, there is, however, a remote possibility that an individual may fly through the action area during project construction.

7.0 Environmental Baseline

The action area is located within Washington Water Resources Inventory Area (WRIA) 22. One stream, Mill Creek, was identified in the action area. Mill Creek is a tributary to the Chehalis River and flows through timber harvested land for approximately 3 miles then through Mill Creek Park and the City of Cosmopolis for another mile before entering the Chehalis River. Mill Creek is inventoried as a perennial stream with no natural barrier to the Chehalis River and is designated as a Type F stream (WDNR 2014). Mill Creek is not on the 303d list of impaired waterbodies in Washington (WDOE 2014).

A dam was constructed on Mill Creek just upstream from C Street in Cosmopolis in 1930. The pond created upstream of the dam was used for recreation and included stocking of rainbow trout for youth fishing in the park. A storm in 2008 damaged the dam and allowed the pond to drain and the dam has remained breached ever since. The breached dam still poses a partial barrier at high flows and a full barrier at low flows. Prior to the dam breach, rainbow trout were stocked in the pond upstream of the dam for recreational fishing.

Although the stream passes through 6 culverts between the park and the Chehalis River, no fish passage barriers were observed by HDR biologists during reconnaissance level surveys conducted in 2014. The mouth of the river is controlled by a tide gate which remains open outside of extreme storm events. During extreme storm events, the added water pressure and elevation causes the tide gates to close, blocking access to Mill Creek.

The only salmonid species documented to inhabit Mill Creek is coho salmon (WDFW 2014a, 2014b; StreamNet 2014). Coho typically spend 1 year (occasionally 2) rearing in freshwater before migrating out to the ocean in the spring between March and June. Backwaters, side channels, and small streams are preferred areas, particularly in shaded areas with overhead cover (Smith and Wenger 2001). Complex instream habitat composed of large rocks, large woody debris, and vegetation is important to rearing coho because production is limited by the number of suitable territories present (Smith and Wenger 2001, Bjorn and Raiser 1991). In winter, coho juveniles can move both upstream and downstream into pools and off-channel areas. Fingerlings move into off-channel habitat when fall freshets begin. Instream cover, side channels, small intermittent streams, and ponds provide shelter from winter storms that could sweep the fish out of the system (Smith and Wenger 2001). Coho smolts begin to migrate downstream in the spring with outmigration generally peaking in May. Coho remain in the ocean for 1 to 2 years before returning to spawn in September through November (Wydoski and Whitney 2003). Coho are highly tolerant of degraded habitat and are commonly found in residential areas and streams channeled through ditches (Wydoski and Whitney 2003).

Prior to the breach of the dam, the dam posed a passage barrier and marked the upstream extent of coho presence. Spawning gravel is present in the reach immediately downstream of the dam in Mill Creek Park, and several redds have been recorded and flagged in this reach by biologists from the Chehalis Tribe. This reach is characterized by overbank cover due to the presence of a mature tree canopy, as well as understory vegetation along its banks. There is also an area of open grass and access to the public to the stream on the northeast side of the reach in the park. The substrate is embedded with sand and some silt, but contains several areas of gravel that provide spawning habitat. Suitable spawning habitat for coho consists of flowing water at depths of 18 cm or more and gravel substrate with particle sizes in the range of 1 to 10 cm (Bjornn and Reiser 1991) depending on the size of the fish, with smaller fish using smaller sized substrates for redd construction.

In the park area upstream of the dam, Mill Creek has formed a single low gradient (<1% slope) main channel through the area where the pond formed by the dam was previously located. The majority of the streambed in the reach upstream of the dam is comprised of sand and silt substrate with some organic debris. This area would provide functional rearing habitat for juvenile salmonids such as coho, with pools interspersed in the reach along with the cover and structure provided by the LWD. Suitable spawning gravels are not present in the surveyed project reach upstream of the dam (HDR 2014a).

Figure 3: Photo of Mill Creek upstream of the dam through the former ponded area showing the existing channel, footpath, and pedestrian bridge at the south end of the park.

Riparian vegetation characteristics along Mill Creek differ among the reach downstream of the dam, the reach in the former impoundment, and the reach upstream of the south end of the park. The riparian vegetation downstream of the dam is predominantly deciduous forest cover with alder being the main component. There is a dense shrub understory along the left bank of the creek predominantly comprised of salmonberry (*Rubus spectabilis*) and willows (*Salix* spp.) along the bank. The right bank of the stream between the dam and the culvert under C Street contains areas of mowed lawn in the park and several mature conifers with little to no shrub understory and a few willows along the bank. Three small wetlands also occur in the forested riparian areas in the park downstream of the dam. Surface water from the wetland on the right bank discharges to Mill Creek via a culvert under the Mill Creek park trail; subsurface water from Wetland 2 also reaches Mill Creek under the trail (HDR 2014b).

Figure 4: Photo looking downstream form the dam at the reach of Mill Creek that flows through the park area

The former impoundment area where the pond was located remains wet and is vegetated primarily by sedges and reed canary grass (*Phalaris arundinacea*). Mill Creek currently provides some overbank flooding and interstitial flow to the wetland surrounding this reach. Some willows and alder saplings are present, but cover from mature trees is absent within the riparian wetland that currently occupies the former pond. After large storm events, overbank flooding typically inundates the wetland approximately 10 feet landward of the left and right banks of the creek; overbank flooding appears to continue upstream approximately 30 feet south of the footbridge before the creek becomes confined to a more incised channel with steep banks. Full descriptions of wetland characteristics in the project area are described in the wetland and stream report (HDR 2014b).

Upstream of the footbridge at the south end of the park, Mill Creek flows along the bottom of a forested valley with a mix of mature conifers and deciduous trees. The valley floor is fairly flat with willows and grasses in the areas that receive overbank flooding. Upslope riparian areas contain forest cover of alder, cedar, and hemlock that continues south along the stream corridor and consequently this part of Mill Creek contains a greater amount of LWD than the reaches in the park. Lands surrounding the valley and the park are developed as residential areas and a golf course is situated on the north side of Mill Creek just south of the park (Figure 1). These developments constrain the mature forest in the riparian areas along the creek to within the valley in the project action area. Riparian habitat is further constrained along the creek valley margins within the timber harvested lands upstream of the action area (Figure 1).

8.0 Effects Analysis

8.1 Construction Effects (Direct Effects)

Effects to habitat and species in the project action area during construction would result in the addition of noise to the surrounding area, and the temporary loss of in-stream habitat within the dewatered work area during construction activities. To minimize effects on aquatic species, particularly coho that occur downstream, all dewatering and construction activities would occur within the June 1 to September 30 in-water work window when the presence of adults and juveniles is least likely. During isolation and dewatering of the work area, fish salvage would remove any fish that may be present or become trapped in isolated pools as the water recedes downstream. No listed fish species occur in the project action area and therefore no ESA-listed individuals would be affected during salvage activities.

Blasting and impact pile driving are not proposed for this project. Vibratory driving for the sheetpiles along the right bank by the dam would occur during the in-water construction period in the dewatered channel, “in the dry”. This precludes any in-water noise effects to fish and the resulting noise from these installations would be restricted to in-air noise. Gravel-filled bulk bags or similar materials would be used for cofferdams for the temporary stream bypass dewatering.

Releases of diesel fuel, lubricants, hydraulic fluid, and other contaminants contained in construction equipment could potentially result in acute negative effects on fish, invertebrates, and instream habitat. In addition, long-term effects could result if a spill were not properly remediated. These potential effects would be greatly reduced with the implementation of a spill prevention, containment, and control plan to be included in the proposed project.

8.2 Post-Construction Effects (Indirect Effects)

Indirect effects are those that might result from the ongoing operation of the dam and fishway after initial construction, as well as any other later-in-time effects. Operation of the new dam would create a pond in the park during the months of May through September. Flow and fish passage would be maintained through the dam itself as well as the fishway on the right bank.

The pond and stream channel would become accessible to coho from downstream and could be used as migratory and rearing habitat. Upstream passage would likely be impeded or prevented during short durations of less than 1 day when operations are transitioning for flood attenuation when flows exceed 115 cfs through the slide gates.

During the winter months when the pond is drained, the upstream area would revert to the stream channel and hydrology would be similar to the existing flow conditions past the breeched dam. Open gates in the dam would maintain flows and fish passage, but the fishway would become inactive when water levels receded below its operational depth.

The upstream pond would allow sediment to settle and accumulate in the area upstream of the dam, resulting in the substrate consisting of fine grained and silty sediment. Drawdowns would occur gradually and not cause a flushing of this sediment onto gravel areas (e.g., coho spawning and rearing habitat) downstream of the dam. The drawn down condition would be similar to current conditions, where the breached dam acts to partially block downstream flows, and sediment remains fine upstream of the dam, but spawning gravels are maintained in the reach below the dam that are currently used by coho for spawning.

Planting of native wetland species along the banks of the ponded area upstream of the dam would improve habitat conditions from the current habitat dominated by reed canary grass.

The park area around the pond would be open for public recreation along the footpath which circumnavigates the impoundment area, as well as on the dock that projects out into the pond. The pond would also offer recreational fishing opportunities. While stocked fish in the pond could migrate downstream into habitat occupied by native fish species (e.g., non-listed coho salmon), species in the lower portions of Mill Creek (e.g., coho) would also benefit from new access to upstream rearing habitat in the pond, and potential spawning habitat upstream of the impoundment.

8.3 Effects to ESA-Listed Species

No ESA-listed species are documented to be present within the project action area; however, marbled murrelets are known to occur in areas to the SW of the project. The marbled murrelet occurrence is documented well outside the terrestrial action area defined by the temporary construction noise. The action area is located landward to the northeast of the murrelet occurrence, and as murrelets fly between nesting and roosting areas inland to the coast for foraging, the chance of a murrelet being present in, or flying through, the action area during construction activities is remote. Therefore, this project ***may affect*** marbled murrelets due to the possibility that an individual may be present within the terrestrial action area of the project. But the project is ***not likely to adversely affect*** marbled murrelets due to the high probability that no individuals would be present in the action area during the temporary construction noise. Marbled murrelet critical habitat is located far outside the project action area and vicinity, and therefore this project would have ***no effect*** on marbled murrelet critical habitat.

8.4 Interrelated and Interdependent Actions

Interrelated actions are those that are a part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Aside from flood control, one of the project goals is to promote recreation activities in the park, possibly including recreational fishing, particularly for youths. Future actions may include stocking of the pond with rainbow trout to provide these recreational opportunities. Introduction of rainbow trout into the system that is proposed to provide fish passage where none existed prior to the dam breach could impose competition and predation on naturally occurring fish in Mill Creek. However, no ESA-listed fish are present in Mill Creek. The anticipated increased presence of people would also produce greater disturbance than current levels to wildlife in the park during daytime use.

Future recreation facilities may be constructed at the site include a new footbridge to span the channel to connect the gravel footpath near the new dam, and a wooden dock structure that would project out into the ponded area. The construction and installation of these structures are yet to be determined and are beyond the scope of this document.

No other interrelated or interdependent actions have been identified for this project.

9.0 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NMFS regarding actions that may affect Essential Fish Habitat (EFH) for Pacific coast groundfish, coastal pelagic species, and Pacific salmon. The MSA defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” EFH is the habitat (waters and substrate) required to support a sustainable fishery and a managed species’ contribution to a healthy ecosystem. Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities.

In estuarine and marine areas, EFH for Pacific salmon extends from the nearshore and tidal submerged environments within state waters out to the full extent of the Exclusive Economic Zone (EEZ). The aquatic action area defined for this project is wholly contained within Mill Creek and does not extend to the confluence with the Chehalis River or into Grays Harbor. As such, it is appropriate to define the EFH for Pacific salmon in reference to freshwater habitats.

In freshwater, the salmon fishery EFH includes all streams, lakes, ponds, wetlands, and other currently viable waterbodies and most of the habitat historically accessible to salmon (except above certain impassable natural barriers) in Washington, Oregon, Idaho, and California. The action area defined for this project is located in an EFH area as defined for the Southwest Washington ESU of coho salmon. The project action area in Mill Creek contains EFH for coho spawning, rearing, and migration.

Freshwater EFH for coho salmon consists of four major components: 1) spawning and incubation; 2) juvenile rearing; 3) juvenile migration corridors; and, 4) adult migration corridors. Important features of essential habitat for spawning, rearing, and migration include adequate: 1) substrate composition; 2) water quality (e.g., dissolved oxygen, temperature, nutrients, etc.); 3) water quantity, depth and velocity; 4) channel gradient and stability; 5) food; 6) cover and habitat complexity; 7) space; 8) access and passage; and 9) habitat and floodplain connectivity (Pacific Fishery Management Council 2000).

During the in-water work period (June 1 – September 30), coho salmon eggs and incubating fry are not expected to be present in the action area. As shown in Table 2 coho do not begin spawning until October, following the closure of the instream work window. Although the instream work window overlaps with potential upstream migration timing of adult coho, September is at the start of typical upstream migration timing prior to the peak when most fish move upstream, and spawning typically begins later. If any adult coho do move up into the stream reach downstream of the dam, there is potential for some spawning habitat at the downstream end of the dewatered work area to be temporarily unavailable. Adult coho are documented to spawn in the reach below the dam just outside the proposed dewatered construction footprint, but this would not occur until at least October when in-water work will have been completed. The cross-vane weirs are located in a shallow bedrock area downstream of the dam that does not provide suitable spawning or rearing habitat.

Table 2: Timing presence of coho life stages in the vicinity of the project action area

Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Adult Migration												
Spawning												
Egg Incubation												
Juvenile Rearing												
Juvenile Migration												

Sources: WDFW 2010, Wydoski and Whitney 2003.

The exact location of the dewatering outlet has not been determined at this point in the project design, but will be situated downstream of the dewatered channel where the cross-vane weirs are located. During the field visit, coho redds were flagged at approximately 200 feet downstream of the dam. This is approximately 100 feet downstream of the weirs, but depending on the final construction configuration, this could overlap with the location of the dewatering outlet and flow dissipation gravels. Even if this is unavoidable, impacts to potential coho spawning sites will be avoided due to the fact that construction would be completed prior to the end of the September 30 in-water work window when no coho will be present and therefore prior to the potential presence of any redds.

9.1 Effects of the Proposed Action on EFH

EFH in the stream channel through the pond area is unoccupied and has been cut off from coho passage since 1930 when the dam was constructed. Since the dam breach in 2008, upstream passage has been intermittently possible during periods of adequate flow. The extent of passage and use by any coho is unknown, but likely limited, if at all. No fish were incidentally observed in the stream channel upstream of the dam during the aquatic habitat surveys in the winter of 2014, but fish sampling such as electrofishing was not conducted.

The following construction-related activities and changes to existing conditions could potentially result in direct effects on aquatic habitat and fish species:

- Fish salvage activities
- Physical habitat alteration, including temporary loss of benthic productivity
- Increases in turbidity and suspended sediments
- Impediments to fish passage
- Contamination of surface waters as a result of hazardous materials releases

During construction activities, the proposed project would result in a temporary loss of EFH within the 20,788 square feet (0.48 acres) of the stream channel in the dewatered work area. Upon completion of construction the stream channel would be restored resulting in no net loss to EFH. The fishway constructed alongside the new dam, as well as flow gates in the dam itself would provide year round fish passage and allow for increased use of EFH upstream of the dam, where passage was previously restricted.

Stream habitat within the 5,340 square feet of channel in the dewatered work area downstream of the dam would also be temporarily lost to fish use during construction. The stream habitat in this reach contains bedrock ledges and poor substrate for spawning (Figure 2). The end of the in-water work window is also prior to coho spawning, and construction activities would be completed and the stream channel restored to its original condition below the cross-vane weirs. Only the temporary loss of rearing and migratory habitat would result. The habitat in this short reach is poor rearing habitat in that it is comprised of a series of bedrock substrate ‘steps’ and provides little cover or flow refuge for rearing juvenile coho.

Due to in-water work being completed prior to September 30, it is unlikely that adult coho would be in or near the downstream end of the project area during construction. Late September is in the early part of coho migration. Adult coho beginning their upstream migration at this time may hold in areas downstream, likely in the Chehalis awaiting rains and increased fall flows before ascending the tributaries such as Mill Creek. Juvenile coho potentially rearing in the project area would be temporarily displaced.

9.1.1 Loss of Benthic Productivity

Instream isolation of the construction and grading areas would also result in an immediate and direct loss of benthic productivity within the approximately 0.2 acres of the dewatered stream channel. Benthic macroinvertebrates are an important component in the diet of juvenile salmonids. Many of the benthic invertebrates within the work area isolated by the dams would suffer mortality during dewatering and grading. However, invertebrate abundance is likely low within the dewatered reach. The sandy silt substrate and slow moving flows through the existing channel upstream of the dam provide poor habitat for many macroinvertebrate species that prefer faster flowing streams with gravel and cobble substrates. Effects from the dewatering would be temporary during one season of construction, and the benthic community would recolonize the following season (McCabe et al. 1998).

9.1.2 Increased Turbidity and Sediment Loading

Increased turbidity and sediment loading can result in the siltation of gravel streambeds (decreasing their suitability as spawning habitat for EFH species), filling of pool habitat, reduction in benthic macroinvertebrate prey organisms, and alterations in the behavior of juvenile salmonids. Moderate to high levels of suspended sediments and turbidity can reduce salmonid feeding efficiency, clog gill rakers, erode gill filaments (Bruton 1985; Gregory 1993), inhibit primary production, and cause any fish in the area to avoid the disturbed reaches of the creek. These impacts could result in a disruption to normal behavior, causing individuals to avoid available habitat, lose foraging opportunities near the project area, and delay or prevent movement into suitable habitat.

Isolation of the work area between the cofferdams would minimize turbidity effects downstream by dewatering the areas where construction would occur, and removing sediment laden water to settle out in upland areas as described in Section 2.1 above. State water quality standards would be met in the mixing zone downstream of the project work area in Mill Creek. Based on Ecology's antidegradation policy (WAC 173-201A-300), in areas where there is documented salmonid spawning, rearing, and migration, turbidity shall not exceed: 1) 5 nephlometric turbidity units (NTU) over background when the background is 50 NTU or less; or 2) a 10 percent increase in turbidity when the background turbidity is more than 50 NTU in the mixing zone. The mixing zone is established to allow only temporary exceedances of the turbidity criteria during and immediately after project construction. Consistent with WAC 173- 201A-400, a mixing zone is established within which the turbidity standards are waived. In rivers and streams, mixing zones would: 1) not extend in a downstream direction for a distance from the discharge points greater than three hundred feet plus the depth of water over the discharge points, or extend upstream for a distance of over one hundred feet; 2) not utilize greater than twenty-five percent of the flow; and, 3) not occupy greater than twenty-five percent of the width of the water body.

Turbidity compliance and monitoring would likely be incorporated as a condition of the Clean Water Act Section 401 Water Quality Certification to be obtained for this action. When work is completed, there would likely be a short pulse of turbid water immediately on removal of cofferdams when flow is first re-established through the site. This pulse would be temporary and quickly dissipate downstream.

9.1.3 Impediments to Fish Passage

Stream bypasses during instream construction would temporarily interfere with upstream and downstream fish passage. Under current conditions, the breached dam poses a barrier to fish passage at low flows, and partial barrier at high flows.

Because the duration of the construction activities is restricted to the in-water work window of a single season and would not coincide with major migrations (either upstream migrations of adults, or downstream migrations of juveniles), the temporary interference to fish passage should not result in measurable changes to coho stocks on a population scale.

9.1.4 Permanent operational effects

The creation of year-round fish passage at the new dam would allow coho to move up into areas upstream of the park which were previously inaccessible. The design of the fishway would also allow movement of other species such as cutthroat trout. Fish passage would allow coho to move upstream to potentially new spawning areas in the creek upstream of the park, although the availability and quality of any spawning habitat upstream of the park has not been assessed.

The pond upstream of the dam would be maintained from May to September and the pool drawn down for the winter months with the base channel remaining. Downstream flows would be maintained throughout the year. Sediment would continue to accumulate in the low gradient pond area upstream of the new dam. The gravel substrates located in the park reach downstream of the cross-vane weirs are currently used by coho for spawning and would remain unchanged from current conditions and continue to provide spawning habitat.

9.1.5 Riparian Vegetation

Existing trees surrounding the footpath and pond perimeter would be unaltered by the project. Only a few trees near the dam would likely need to be removed to accommodate new infrastructure. The footprint for the fishway structure also necessitates the removal of some trees in that area. Riparian vegetation downstream of the dam outside the fishway footprint would remain unchanged.

The small area of impact would have little measurable effect on riparian function through this reach. Existing conditions in the pond area are already open with trees situated well back from the stream beyond the footpath. The dock structure would extend out into the water when the pond is full during the summer months and shade a small portion of the pond. This very minor increase in shade is not anticipated to measurably affect instream habitat or prey resources.

9.2 EFH Impact Minimization Measures

Construction activities including dewatering of 0.2 acres of the stream are temporary, and EFH would be restored upon completion. The in-water work window reduces impacts to fish by taking advantage of times of year when fish at any life stage are least likely to be present. All construction activities for the project would occur within an isolated dewatered work area and be completed within a single work window. Measures to minimize impacts to EFH would be the same as those described above to minimize impacts to coho and fish habitat.

9.3 EFH Effect Determination

Active construction within Pacific salmon EFH for a period of four months, and temporary loss of 0.2 acres of rearing habitat ***may adversely affect*** EFH for Pacific salmon, specifically, coho salmon. The majority of negative effects to EFH and associated species that are present in the action area would be short term in nature, occurring primarily during active construction. Although not an effect to EFH, any juvenile coho that may be rearing within the dewatered work isolation area could potentially be handled during fish salvage, and would suffer temporary loss of rearing habitat while they are displaced. Operation of the project would have no adverse effects on EFH for Pacific salmon, and the addition of fish passage would have a benefit to coho spawning and rearing by opening up habitat previously inaccessible since the original dam was installed in 1930.

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Appendix A

Permitting Drawings for Mill Creek Park Dam Improvements

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STATE MAP

VICINITY MAP

LOCATION MAP

Permitting Drawings For:

City of Cosmopolis

Mill Creek Park Dam Improvements

HDR Project No.
171201

City of Cosmopolis, WA
MARCH 12, 2015

INDEX OF DRAWINGS

GENERAL:

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2	G-01	SYMBOLS LEGEND, ABBREVIATIONS, AND GENERAL NOTES
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4	C-01	DEMOLITION PLAN
5	C-02	OVERALL SITE PLAN
6	C-03	DAM IMPROVEMENTS PLAN
7	C-04	FISH PASSAGE PLAN
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10	C-07	DAM ELEVATION AND SECTIONS 1
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16	C-13	PLANTING PLAN

PERMITTING DRAWINGS

PROPOSED SITE PLAN SYMBOLOGY

SITE PLAN

——x——	PROPOSED TEMPORARY FENCE
——x——x——x——	BARBED WIRE OR CHAINLINK FENCE
—— 100 YEAR ——	100 YEAR FLOOD BOUNDARY
	PERMANENT EASEMENT
	TEMPORARY OR CONSTRUCTION EASEMENT
	PROPERTY LINES
	RIGHT OF WAY LINES
	RIGHT OF WAY CENTERLINE
B–101	SOIL BORING
	CUT SLOPE
	FILL SLOPE
	CONTRUCTION STAGING AREA

EROSION CONTROL

	SEDIMENT FENCE
—— HVF ——	CONSTRUCTION HIGH VISIBILITY FENCE
	DIRECTION OF SURFACE RUNOFF
	CONTRUCTION ENTRANCE

EXISTING SITE PLAN SYMBOLOGY

SYMBOL	DESCRIPTION
	MONUMENT
	MONUMENT IN CASE
	REBAR & CAP
	SCRIBED "X"
	PK NAIL
	METAL SIGN POST
	WOOD SIGN POST
	SANITARY SEWER MANHOLE
	STORM DRAIN MANHOLE
	CATCH BASIN
WM	WATER METER
W	WATER VAULT
	GAS VALVE
TR	TRAFFIC JUNCTION BOX
E	ELECTRICAL VAULT
EL	ELECTRICAL JUNCTION BOX
PM	POWER METER
TC	TELECOMMUNICATION JUNCTION BOX
CT	CABLE TV JUNCTION BOX
	JUNCTION BOX
P	POWER VAULT
TEL	TELECOMMUNICATION RISER
P	UTILITY POLE
UG	UTILITY POLE W/CONDUITS TO UNDERGROUND
	GUY ANCHOR
	GATE POST
MB	MAIL BOX
	CONIFEROUS TREE
	DECIDUOUS TREE
	TEST HOLE (WITH FIELD IDENTIFIER)
	YARD LIGHT OR LUMINAIRE W/NO MAST
	GRATE INLET
CPEP	CORRUGATED POLYETHYLYNE PIPE
RCP	REINFORCED CONCRETE PIPE
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
DIP	DUCTILE IRON PIPE
	WATER MANHOLE
	WATER VALVE
OR	FIRE HYDRANT
	TREE CANOPY OR SHRUB LINE
	ASPHALT IN PLAN
	GRAVEL IN PLAN

LINETYPE	DESCRIPTION
	GENERIC GAS LINE
IRR	IRRIGATION
	STORM DRAIN
	SANITARY SEWER
FM	FORCEMAIN
WL	WETLAND BOUNDARY
UGE	UNDERGROUND POWER
UGF	UNDERGROUND FIBER OPTIC
UGT	UNDERGROUND TELEPHONE
UGTV	UNDERGROUND TELEVISION
OHE	OVERHEAD POWER
OHF	OVERHEAD FIBER OPTIC
OHT	OVERHEAD TELEPHONE
OHTV	OVERHEAD TELEVISION
20	MAJOR CONTOUR
21	MINOR CONTOUR
	DITCH OR STREAM CENTERLINE
OHW	ORDINARY HIGH WATER
WL	WETLAND BOUNDARY

GENERAL SYMBOLOGY

N

ARROW INDICATES DIRECTION OF PLAN NORTH

SECTION

0 10 20 40

SCALE IN FEET

SECTION LETTER

FLAG INDICATES DIRECTION OF SECTION CUT

X

XXX

* DRAWING WHERE SECTION VIEW IS LOCATED

SECTION CUT MARKER

SECTION

SCALE: 1/4" = 1'–0"

SECTION LETTER

0

00x–00

* DRAWING WHERE SECTION VIEW IS FIRST CUT

X

XXX

DETAIL NUMBER

* DRAWING WHERE DETAIL IS LOCATED

DETAIL MARKER

DETAIL

SCALE: 1/4" = 1'–0"

DETAIL NUMBER

0

00x–00

* DRAWING WHERE DETAIL WAS TAKEN

KEYNOTE OR SPECIFIC NOTE DESIGNATION

#

KEYNOTE NUMBER

PHOTO MARKER

#

###

MISCELLANEOUS

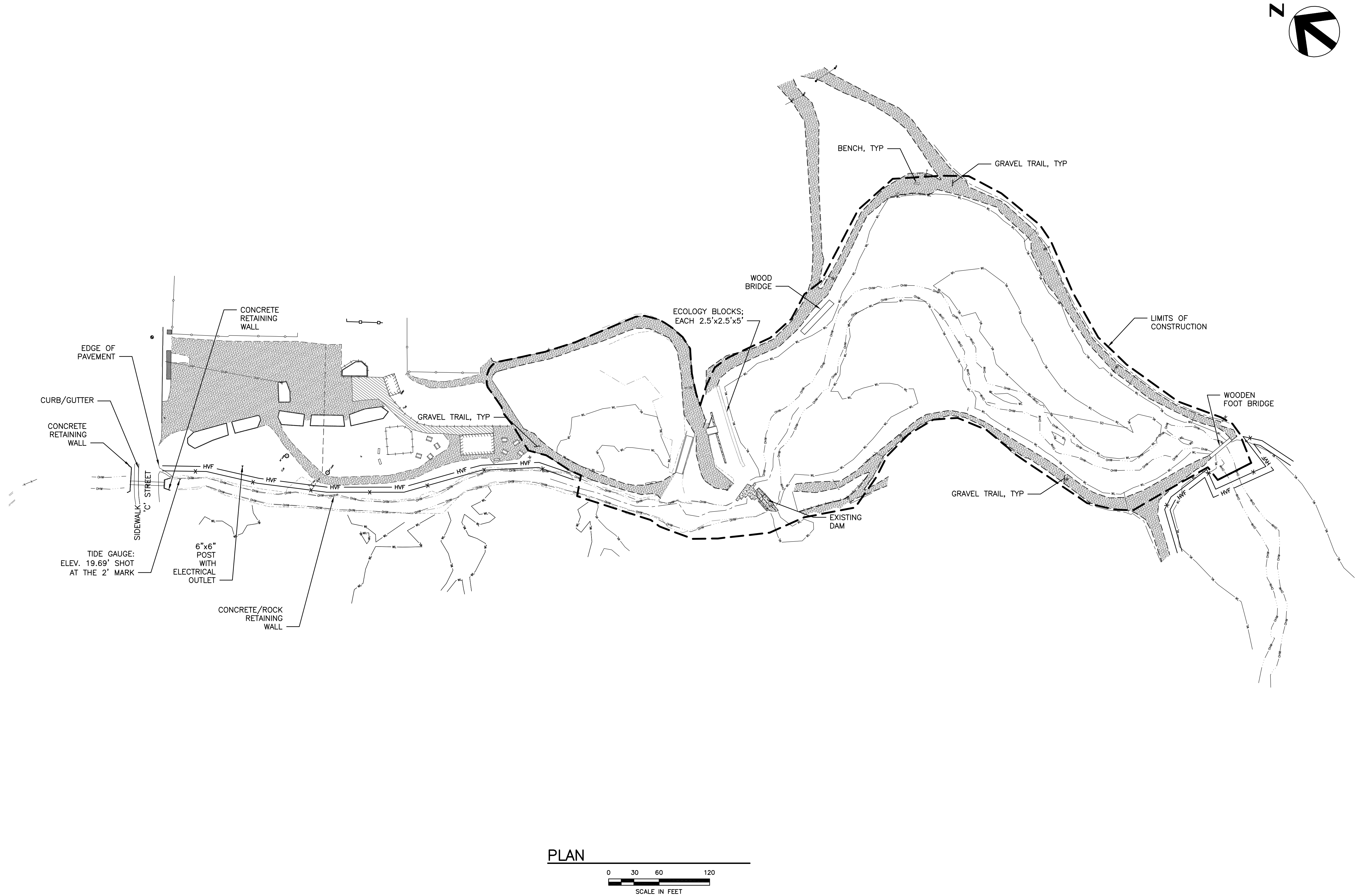
ABBREVIATIONS

ABC	AGGREGATE BASE COURSE
ABN	TO BE ABANDONED
ABND	ABANDONED
AC	ASBESTOS CEMENT
ACP	ASPHALT CONCRETE PAVEMENT
AFF	ABOVE FINISH FLOOR
ALUM	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BV	BALL VALVE
℄	CENTER LINE
CB	CATCH BASIN
CAV	COMBINATION AIR RELEASE VALVE
CCP	CONCRETE CYLINDER PIPE
CDF	COMPACTED DENSITY FILL
CE	CONCRETE ENCASEMENT
CI	CAST IRON
CO	CLEAN OUT
CONC	CONCRETE
CONSTR.	CONSTRUCTION
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CTB	CONCRETE TREATED BASE
CV	CHECK VALVE
CU	COPPER
DEQ	DEPARTMENT OF ENVIRONMENTAL QUALITY
DF	DOUGLAS FIR
DIP	DUCTILE IRON PIPE
DR	DRAIN
D/W	DRIVEWAY
ED	EQUIPMENT DRAIN
EL	ELEVATION
ELB	ELBOW
EW	EACH WAY
EXIST	EXISTING
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FLANGED END
FEXT	FIRE EXTINGUISHER
FF	FINISH FLOOR
FH	FIRE HYDRANT
FM	FLOW METER
GALVS	GALVANIZED STEEL
HPG	HIGH PRESSURE GAS
IE; INV	INVERT ELEVATION
LF	LINEAL FEET
MH	MANHOLE
MIN	MINIMUM
MIPT	MALE IRON PIPE THREAD
MJ	MECHANICAL JOINT
MON	MONITORING
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NIC	NOT IN CONTRACT
OF	OVERFLOW PIPE
OHE	OVERHEAD ELECTRIC
PE	POLYETHYLENE/ PLAIN END
PNL	PANEL
POC	POINT OF CONNECTION
PVC	POLYVINYL CHLORIDE
PG	PRESSURE GAGE
PRV	PRESSURE REDUCING VALVE
PS	PIPE SUPPORT
(R)	HORIZONTAL STATION REFERENCE
R&R	REMOVE AND REPLACE PER EXISTING
RED	REDUCING, REDUCER
RR	RAILROAD
SAN	SANITARY
SIM	SIMILAR
SPEC	SPECIFICATION
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STM	STORM
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
UGT	UNDERGROUND TELEPHONE
UGTV	UNDERGROUND TV CABLE
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY LOCATION AND/OR FEATURES IN FIELD PRIOR TO CONDUCTING POTENTIALLY IMPACTED CONSTRUCTION ACTIVITY
N	NORTH
E	EAST
S	SOUTH
W	WATER, WEST

SHEET NOTES

1. THIS IS A STANDARD DRAWING SHOWING COMMON SYMBOLOGY. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DEEMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK.

PERMITTING DRAWINGS
NOT FOR CONSTRUCTION



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DESIGNED BY:
CHECKED BY:
DRAWN BY:
PROJECT NUMBER: 000000000171201

MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

TESC PLAN

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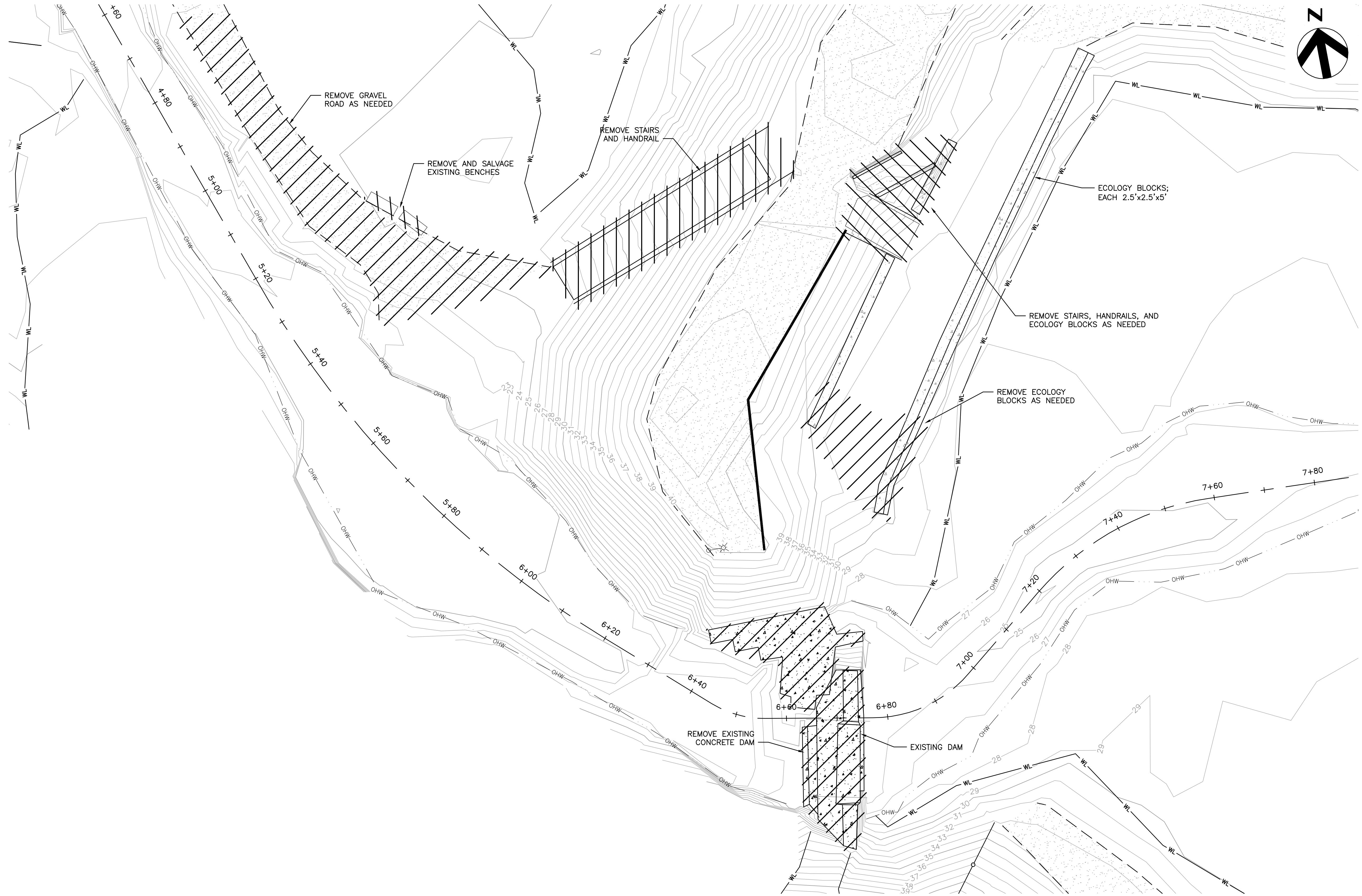
SHEET: 3 Of 16
G-02



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NOT FOR CONSTRUCTION

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PROJECT NUMBER:	000000000171201

MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

DAM DEMOLITION PLAN

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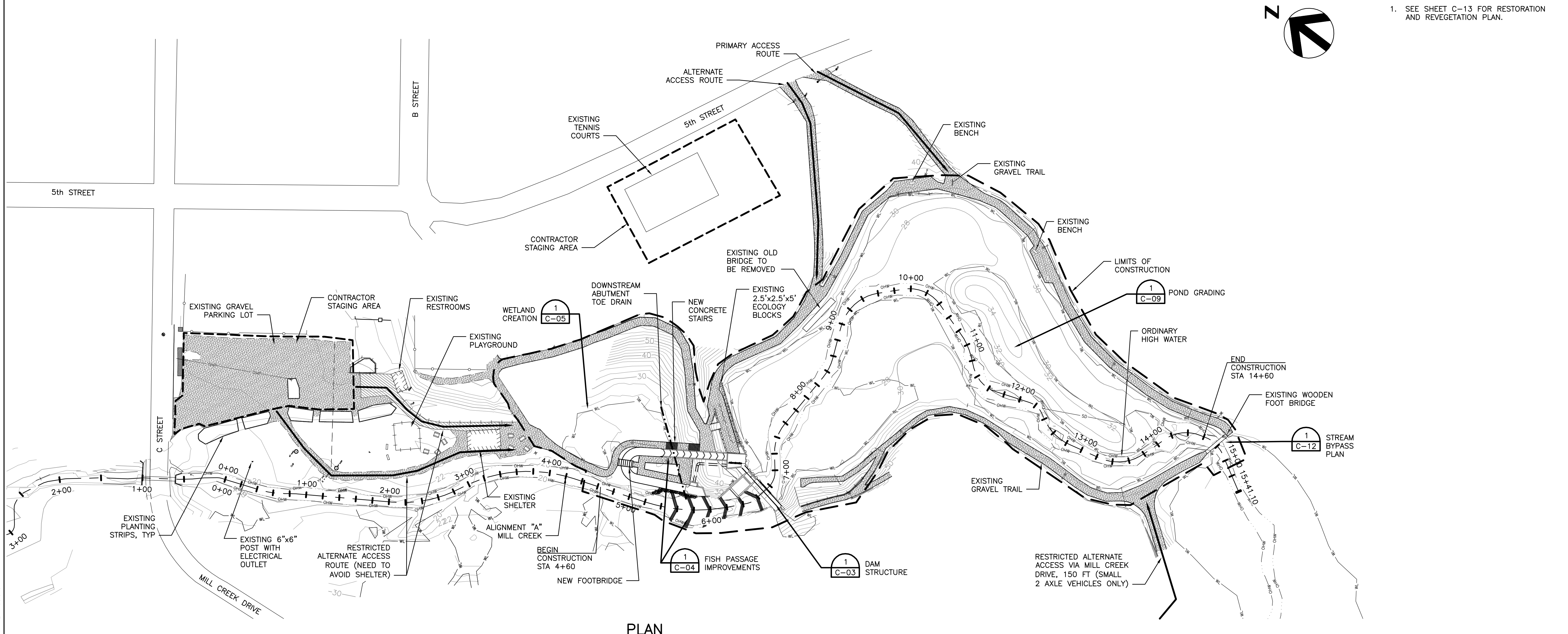
SHEET: 4 Of 16
C-01

NOTES:

1. SEE SHEET C-13 FOR RESTORATION AND REVEGETATION PLAN.



PLAN

SCALE: 1" = 60'

PERMITTING DRAWINGS
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MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

OVERALL SITE PLAN

FILENAME C-02.dwg

SCALE AS NOTED

SHEET: 5 Of 16

C-02

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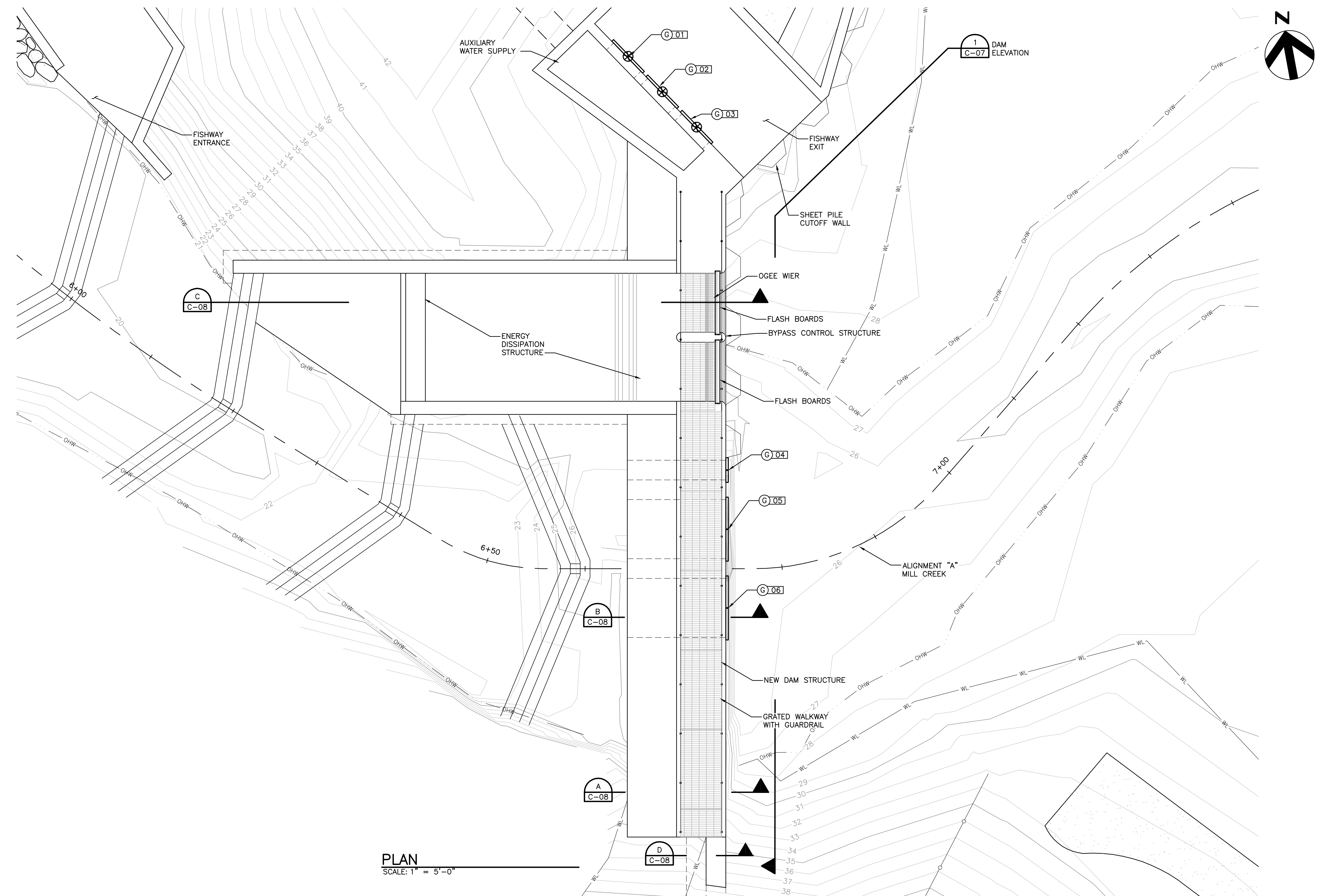

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MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS · Incorporated 1891

CITY OF COSMOPOLIS

DAM IMPROVEMENTS PLAN

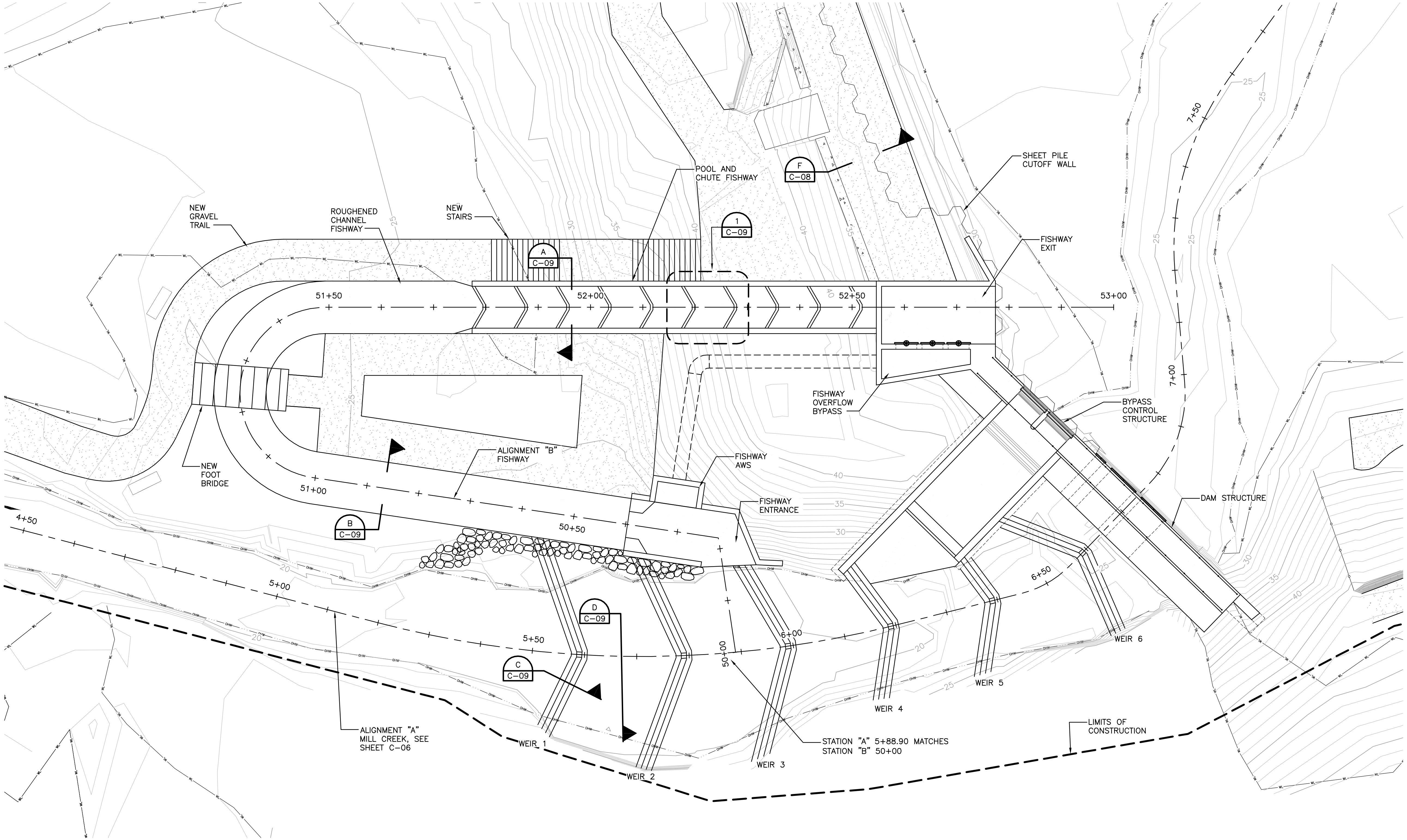
0 1" 2"

FILENAME C-03.dwg

SCALE AS NOTED

SHEET: 6 Of 16

C-03



PLAN
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PERMITTING DRAWINGS
NOT FOR CONSTRUCTION

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ISSUE DATE DESCRIPTION

MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

FISH PASSAGE PLAN

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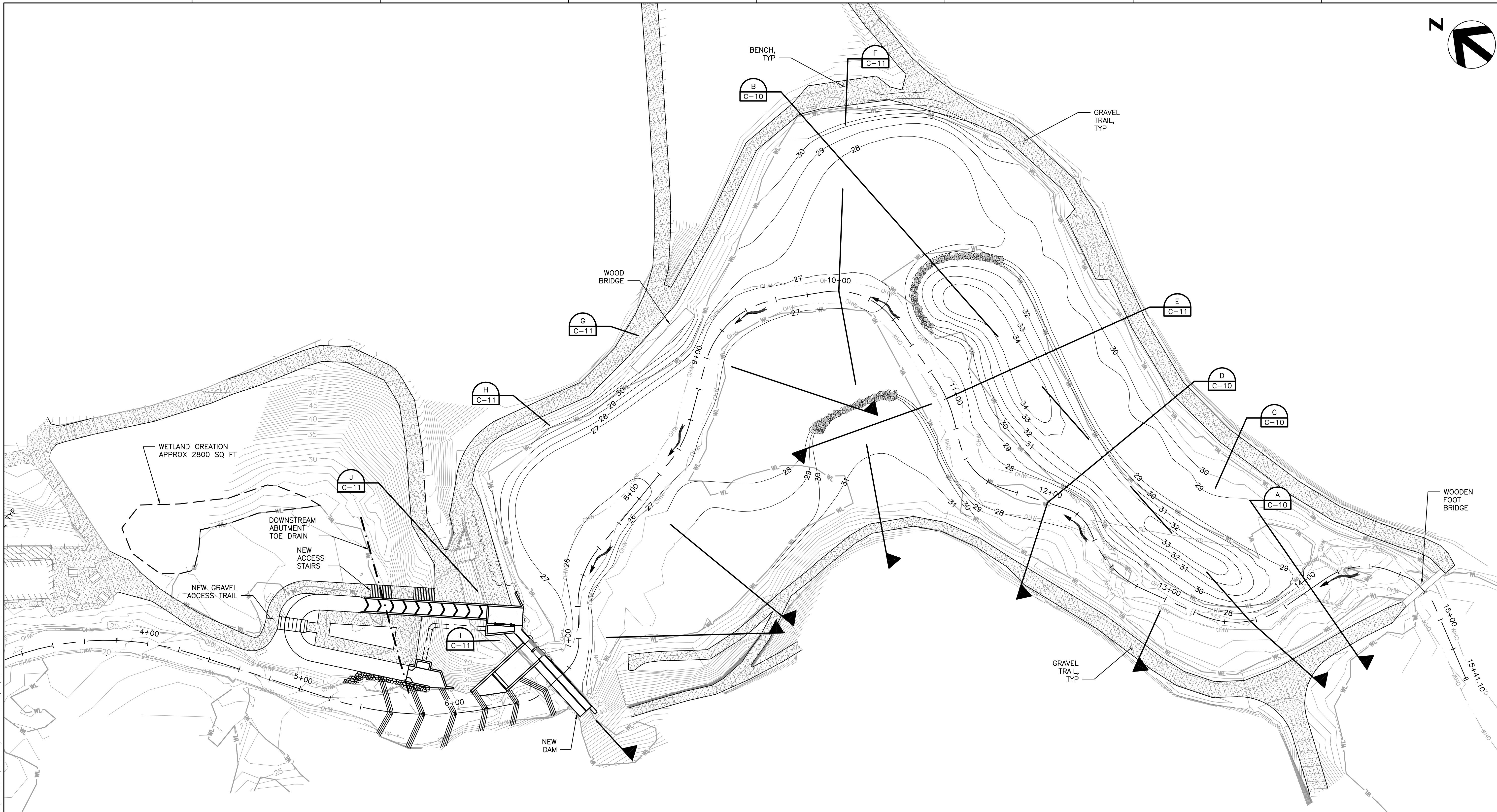
SHEET: 7 Of 16
C-04



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PERMITTING DRAWINGS
NOT FOR CONSTRUCTION

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PROJECT NUMBER:	000000000171201

MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

CITY OF COSMOPOLIS Incorporated 1891

POND GRADING PLAN

0 1" 2"

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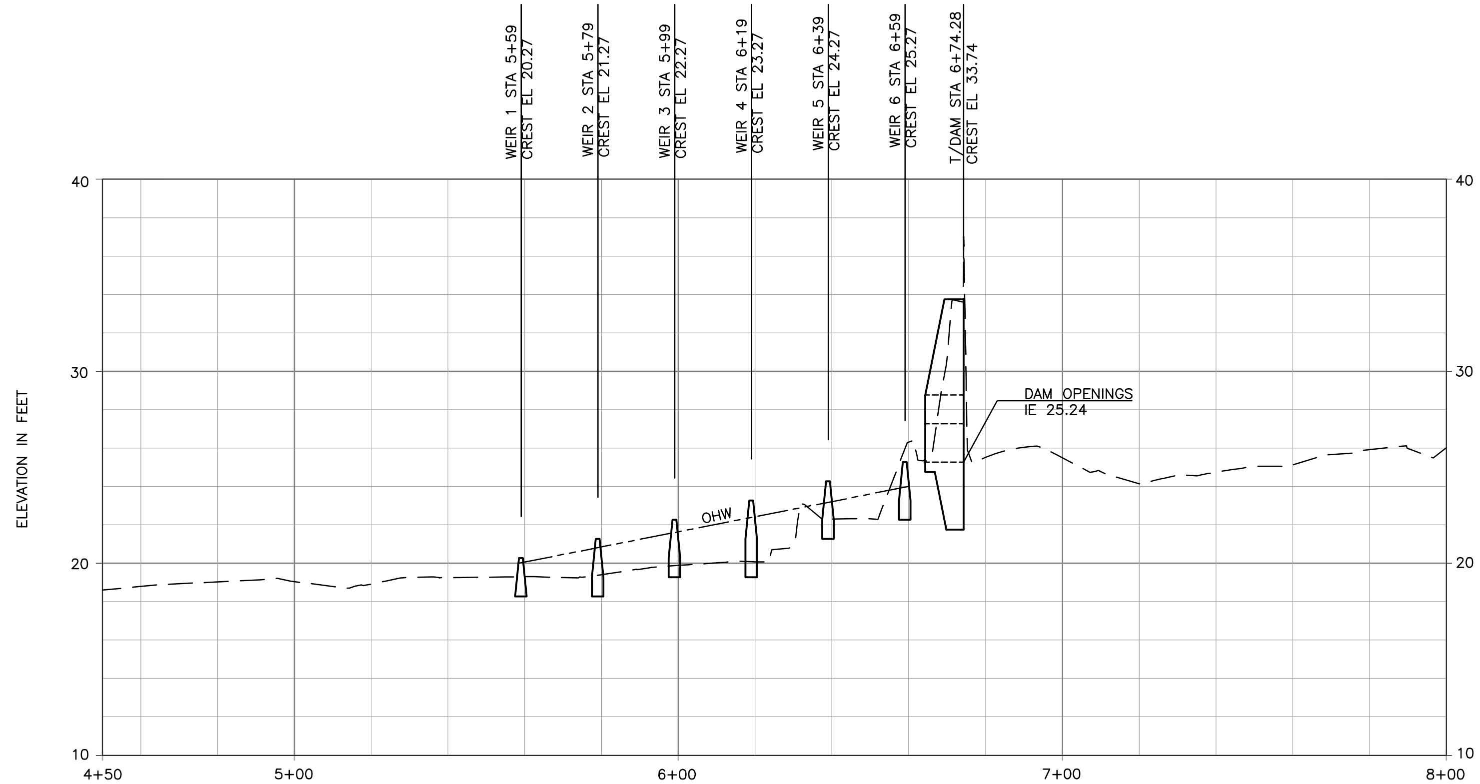
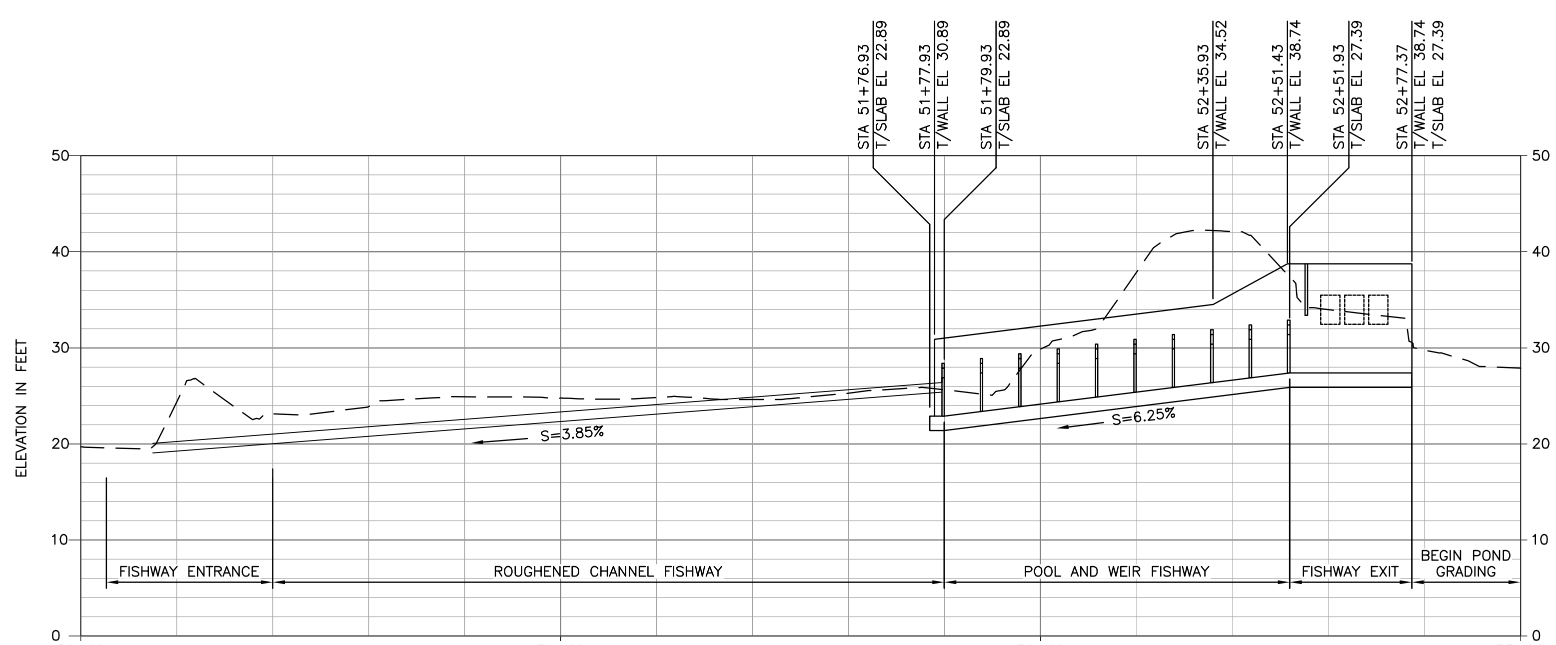
SHEET: 12 Of 16
C-05



ALIGNMENT "A" STATIONING
MILL CREEK PROFILE
SCALE: 1" = 25' H 1" = 5' V



ALIGNMENT "B" STATIONING
FISHWAY PROFILE
SCALE: 1" = 20' H 1" = 10' V

PERMITTING DRAWINGS
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MILL CREEK PARK DAM IMPROVEMENTS

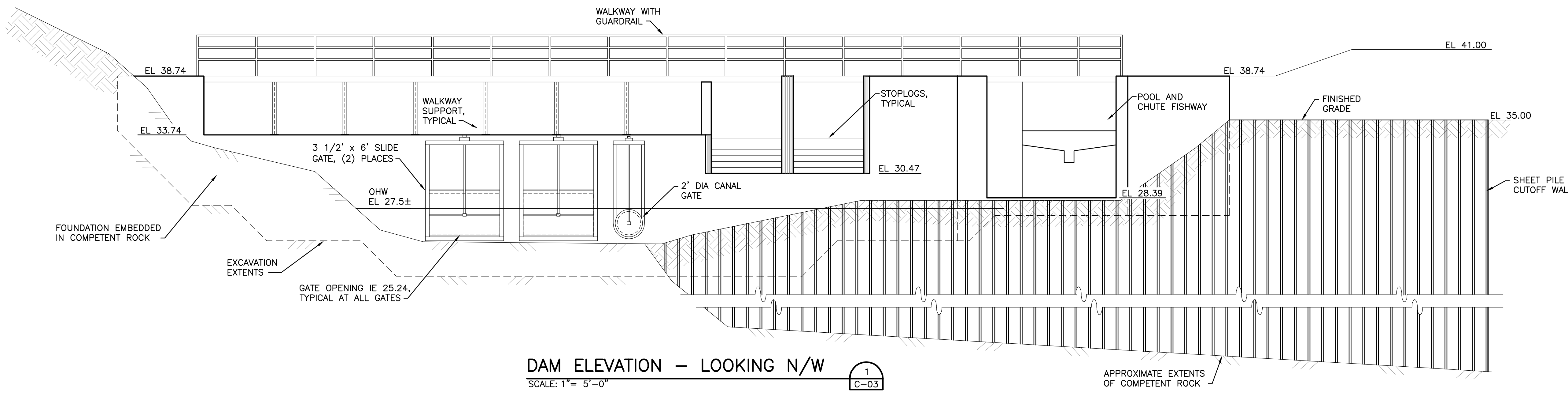
CITY OF COSMOPOLIS

MILL CREEK PROFILE

0 1" 2"

FILENAME C–06.dwg
SCALE AS NOTED

SHEET: 8 Of 16
C-06



DAM ELEVATION – LOOKING N/W

SCALE: 1"= 5'–0"

1 / C–03

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MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

DAM ELEVATIONS AND SECTIONS 1

0 1" 2"

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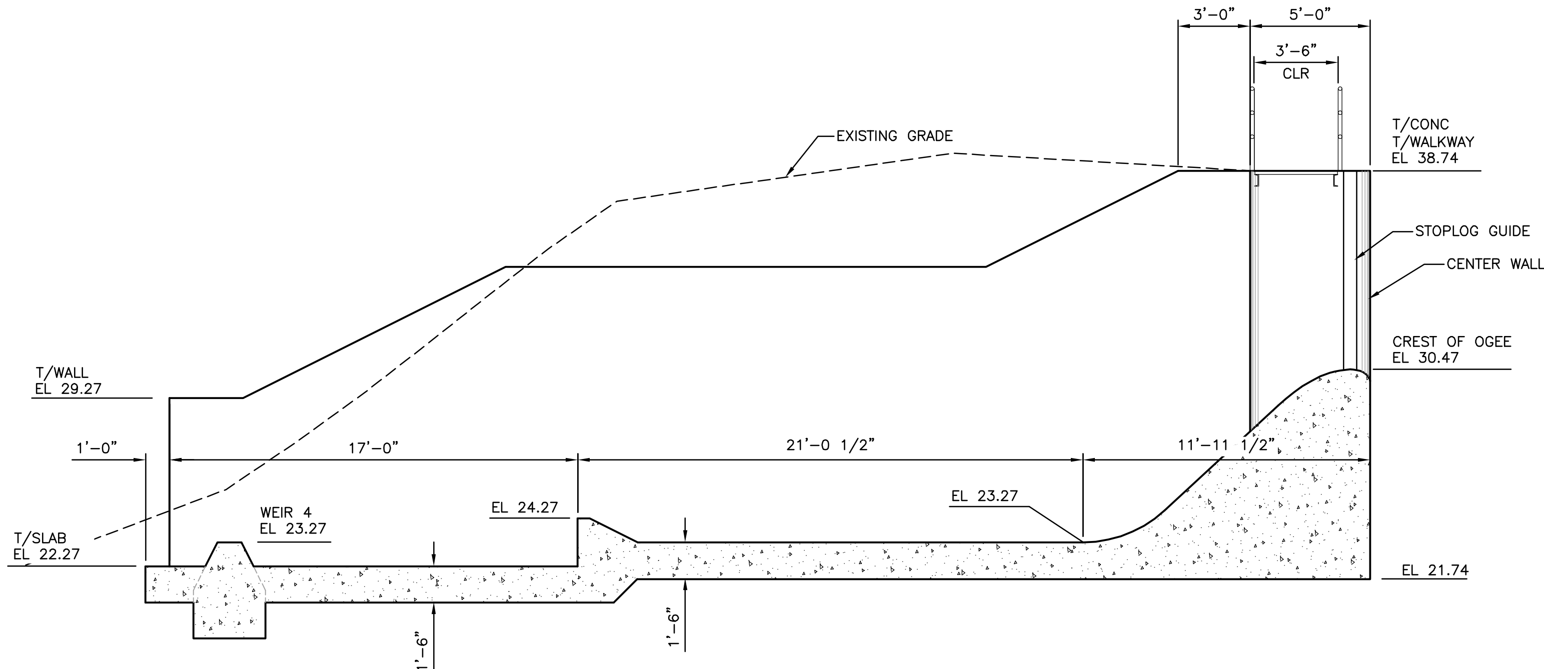
SCALE AS NOTED

SHEET: 9 Of 16

C-07



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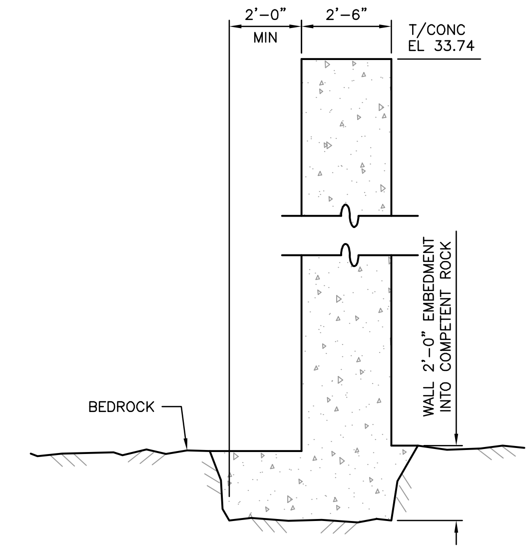
C-03



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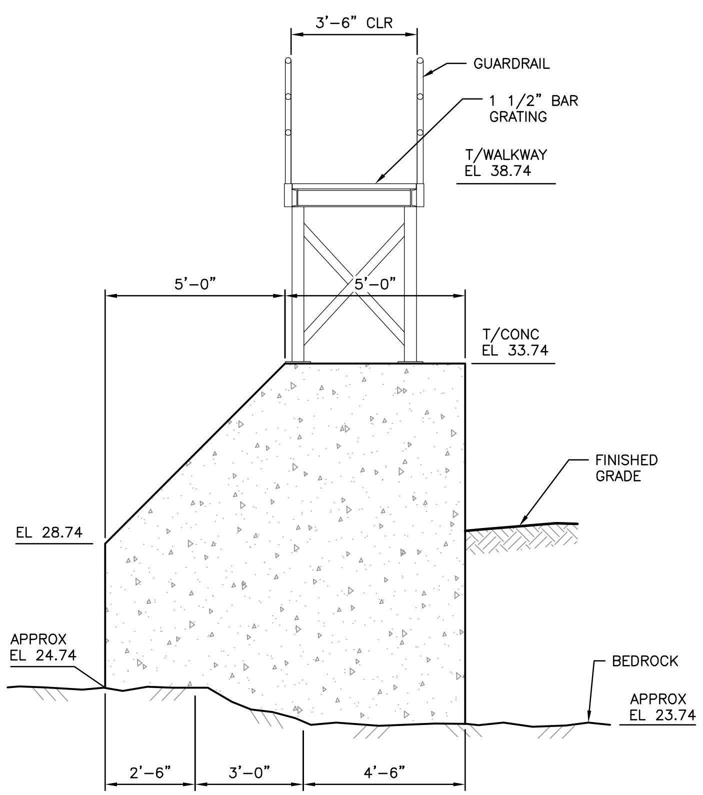
C-03



SECTION A
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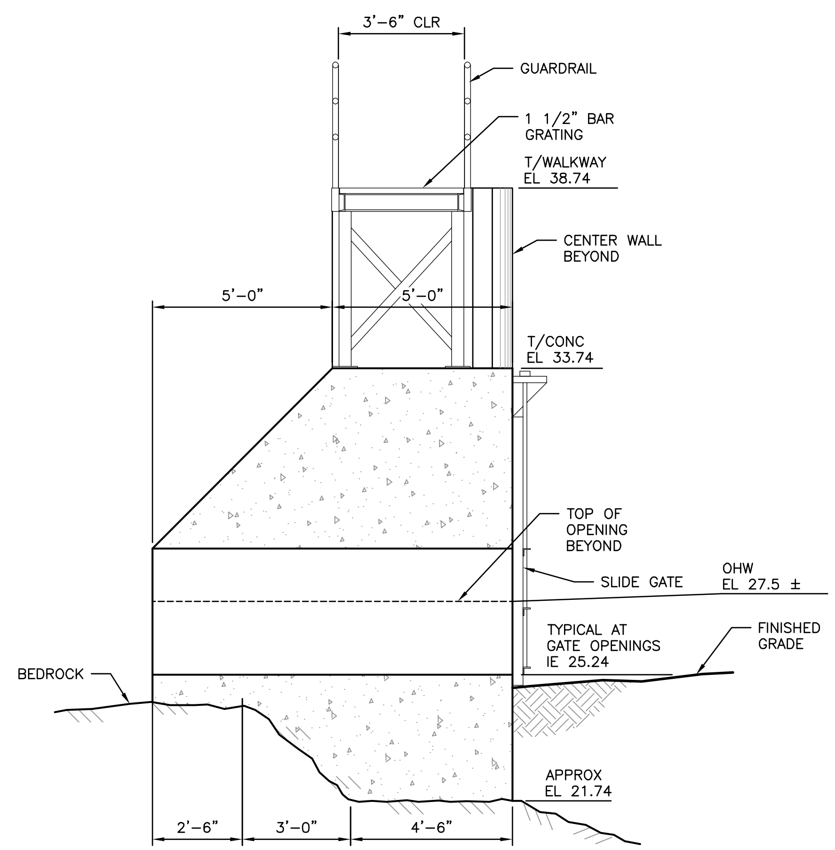
C-03



SECTION B
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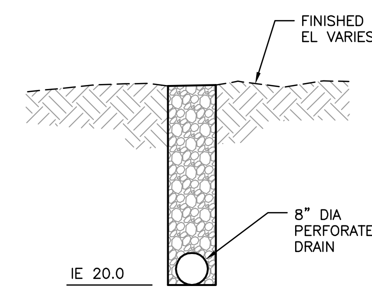

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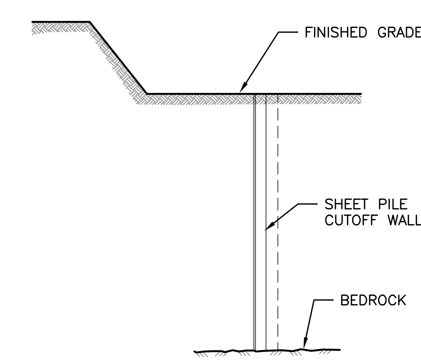
C-12



SECTION F
SCALE: 3/8" = 1'-0"
C-04

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MILL CREEK PARK DAM IMPROVEMENTS

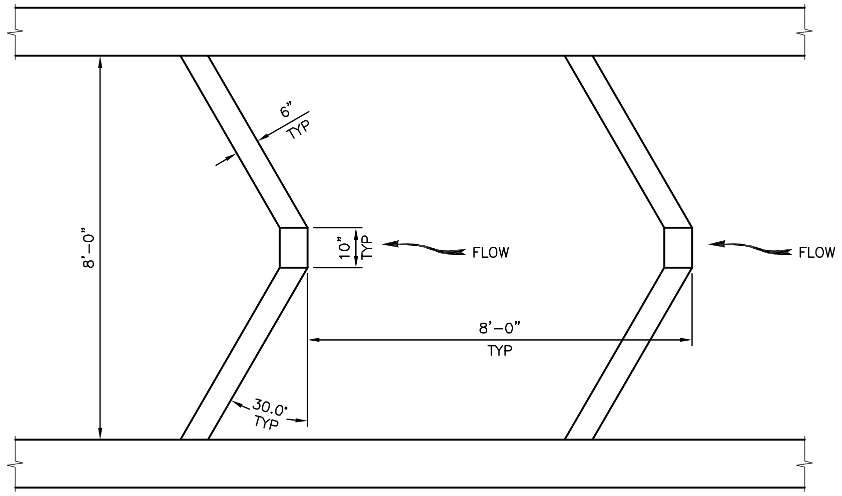
CITY OF COSMOPOLIS

DAM ELEVATIONS AND SECTIONS 2

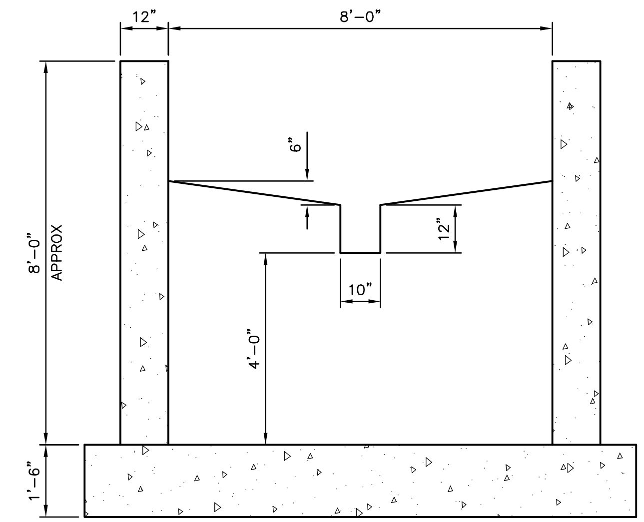
0 1" 2"

FILENAME C-08.dwg
SCALE AS NOTED

SHEET: 10 Of 16
C-08



POOL AND CHUTE
FISHWAY PARTIAL PLAN 1 C-04
SCALE: 1/2" = 1'-0"



POOL AND CHUTE FISHWAY SECTION A C-04
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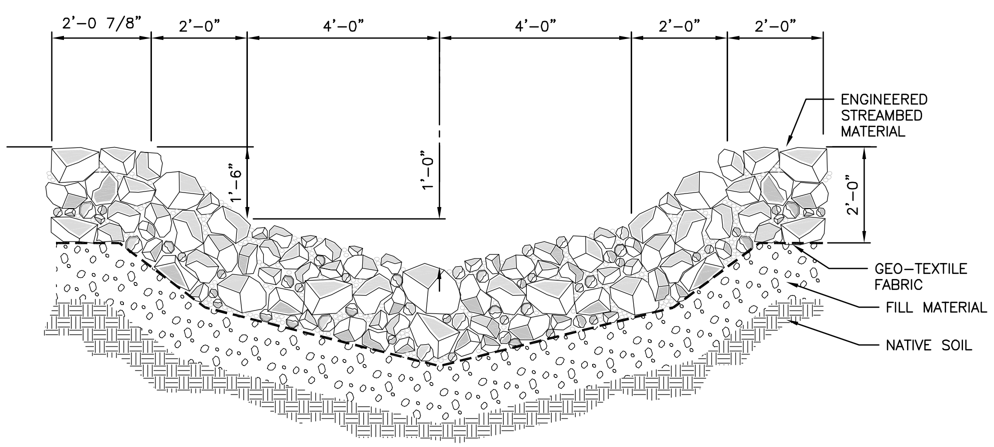

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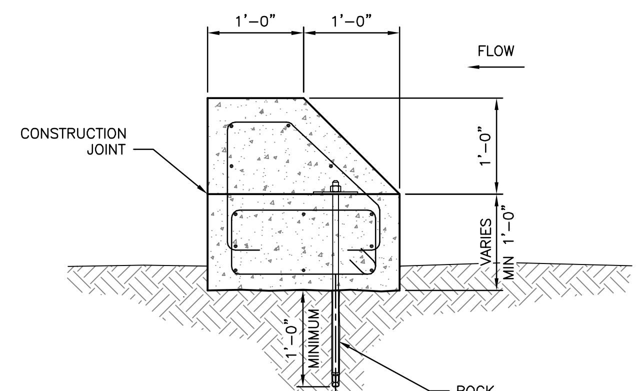
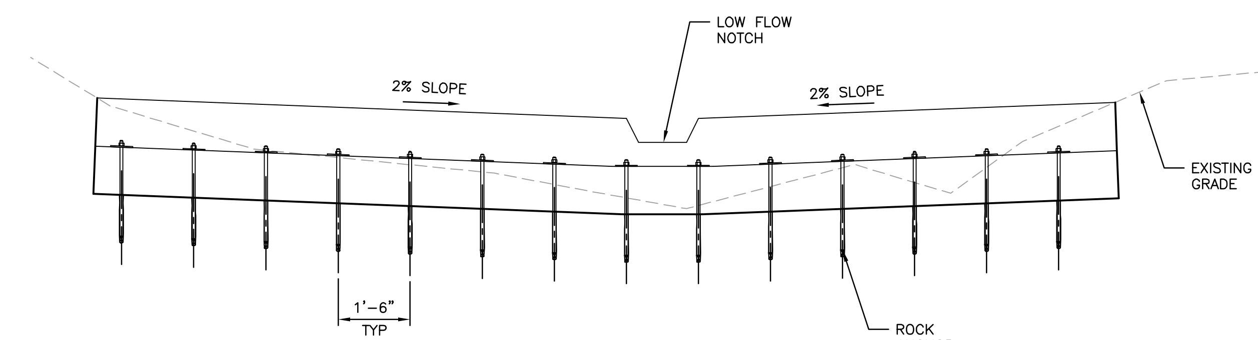


TYPICAL INSTREAM
WEIR SECTION C C-04
SCALE: 1" = 1'-0"

NOTES:

1. WEIR WILL BE MORE NATURALISTIC BOULDER SHAPED.



TYPICAL INSTREAM
WEIR ELEVATION D C-04
SCALE: 1/2" = 1'-0"

NOTES:

1. OHW ELEVATION VARIES. SEE MILL CREEK PROFILE ON SHEET C-06

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MILL CREEK PARK DAM IMPROVEMENTS

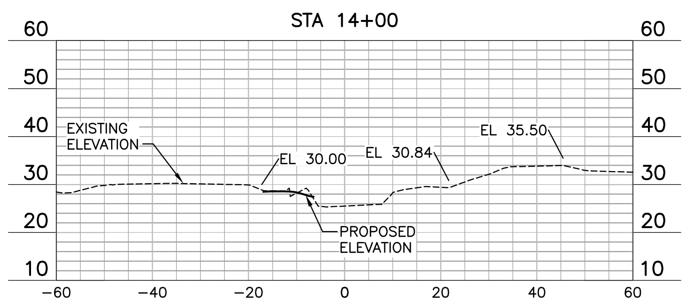
CITY OF COSMOPOLIS

FISH PASSAGE SECTIONS AND DETAILS

0 1" 2"

FILENAME C-09.dwg
SCALE AS NOTED

SHEET: 11 Of 16
C-09



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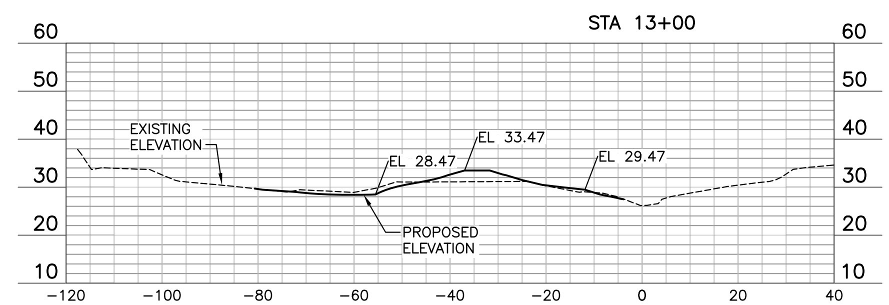

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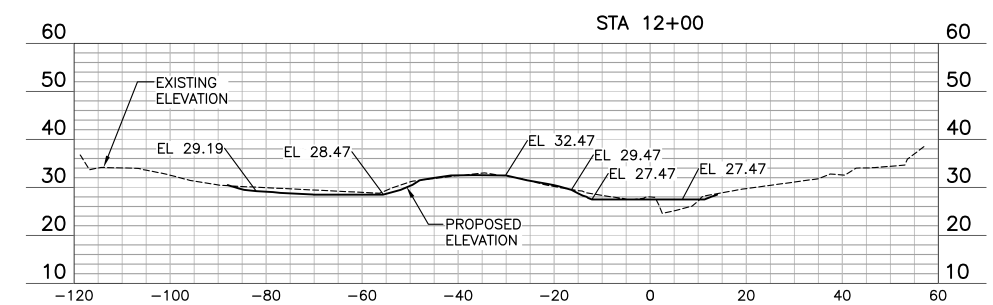

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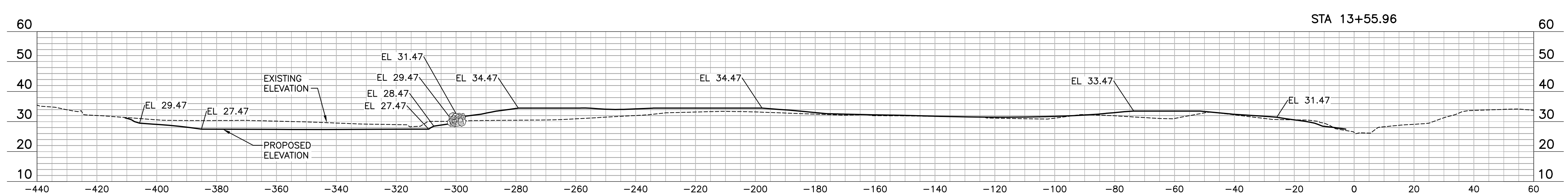

SECTION B C-05
SCALE: 1"=20'

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MILL CREEK PARK DAM IMPROVEMENTS

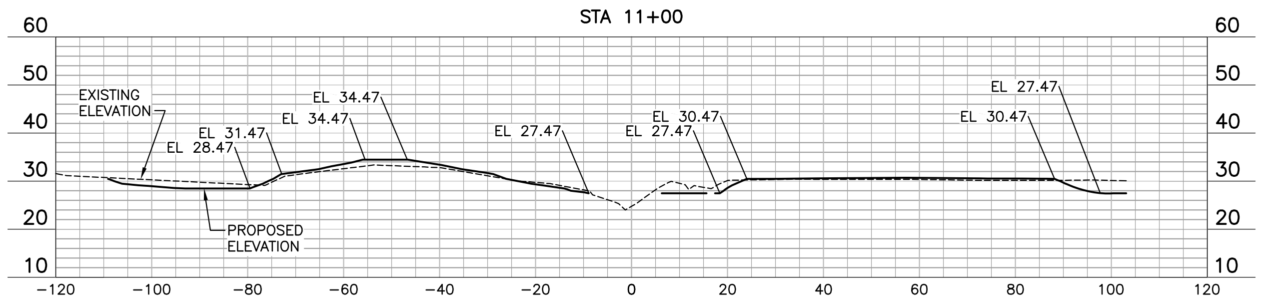
CITY OF COSMOPOLIS

POND CROSS SECTIONS 1

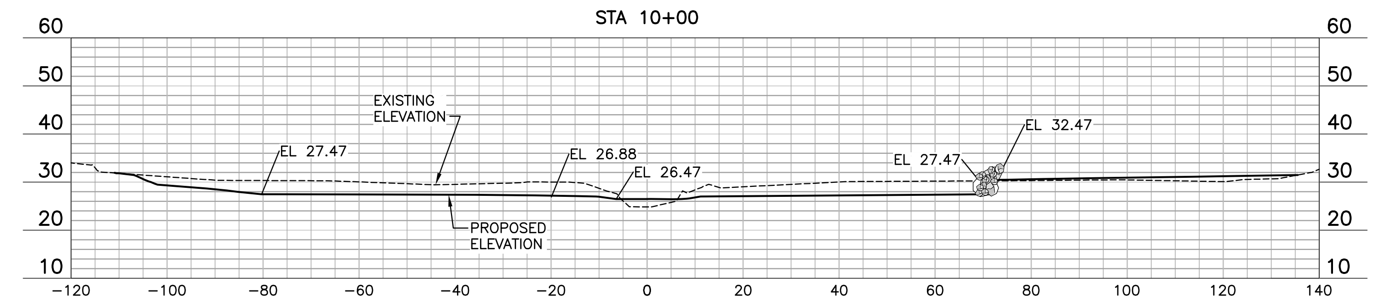
0 1" 2"

FILENAME C-10.dwg
SCALE AS NOTED

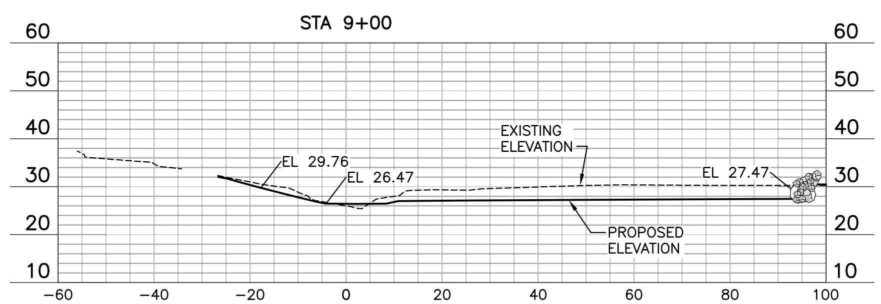
SHEET: 13 Of 16
C-10



SECTION E / C-05
SCALE: 1"=20'



SECTION F / C-05
SCALE: 1"=20'



SECTION G / C-05
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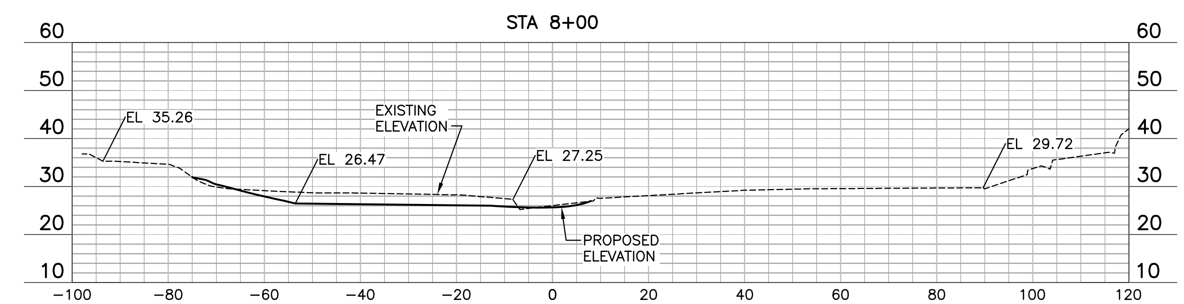

SECTION H / C-05
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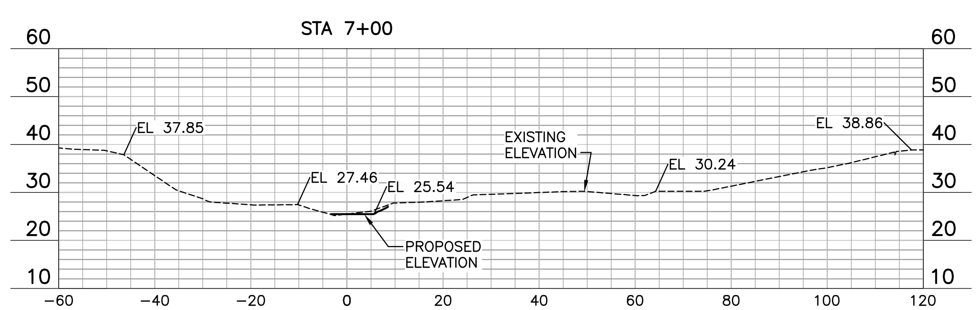

SECTION I / C-05
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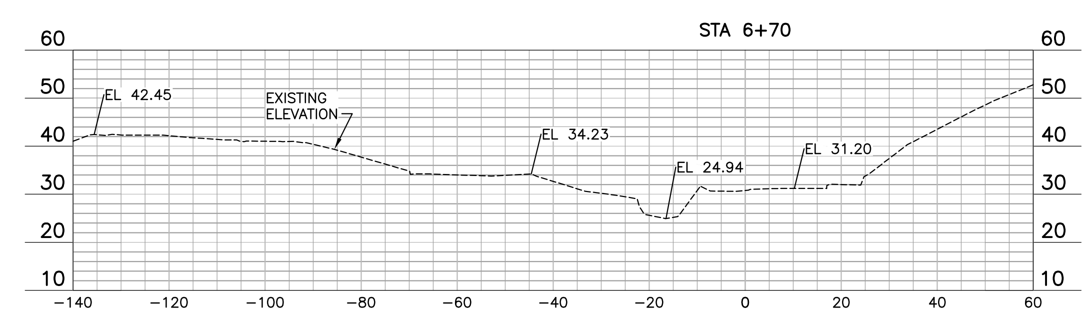

SECTION J / C-05
SCALE: 1"=20'

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MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

POND CROSS SECTIONS 2

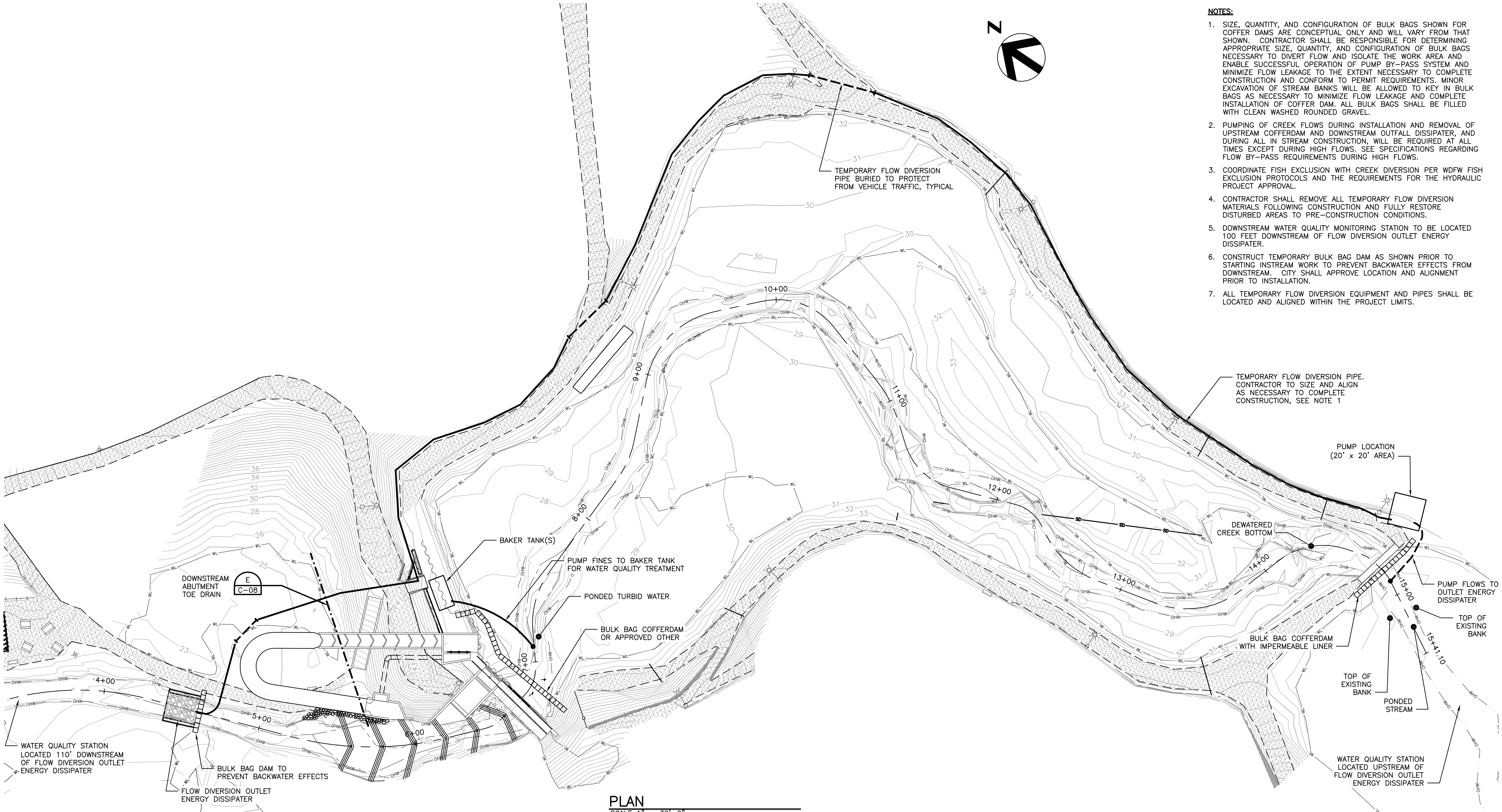
0 1" 2"

FILENAME C-11.dwg
SCALE AS NOTED

SHEET: 14 Of 16
C-11

NOTES:

1. SIZE, QUANTITY, AND CONFIGURATION OF BULK BAGS SHOWN FOR COFFER DAMS ARE CONCEPTUAL ONLY AND WILL VARY FROM THAT SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING APPROPRIATE SIZE, QUANTITY, AND CONFIGURATION OF BULK BAGS NECESSARY TO DIVERT FLOW AND ISOLATE THE WORK AREA AND ENABLE SUCCESSFUL OPERATION OF PUMP BY-PASS SYSTEM AND MINIMIZE FLOW LEAKAGE TO THE EXTENT NECESSARY TO COMPLETE CONSTRUCTION AND CONFORM TO PERMIT REQUIREMENTS. MINOR EXCAVATION OF STREAM BANKS WILL BE ALLOWED TO KEY IN BULK BAGS AS NECESSARY TO MINIMIZE FLOW LEAKAGE AND COMPLETE INSTALLATION OF COFFER DAM. ALL BULK BAGS SHALL BE FILLED WITH CLEAN WASHED ROUNDED GRAVEL.
2. PUMPING OF CREEK FLOWS DURING INSTALLATION AND REMOVAL OF UPSTREAM COFFERDAM AND DOWNSTREAM OUTFALL DISSIPATER, AND DURING ALL IN STREAM CONSTRUCTION, WILL BE REQUIRED AT ALL TIMES EXCEPT DURING HIGH FLOWS. SEE SPECIFICATIONS REGARDING FLOW BY-PASS REQUIREMENTS DURING HIGH FLOWS.
3. COORDINATE FISH EXCLUSION WITH CREEK DIVERSION PER WDFW FISH EXCLUSION PROTOCOLS AND THE REQUIREMENTS FOR THE HYDRAULIC PROJECT APPROVAL.
4. CONTRACTOR SHALL REMOVE ALL TEMPORARY FLOW DIVERSION MATERIALS FOLLOWING CONSTRUCTION AND FULLY RESTORE DISTURBED AREAS TO PRE-CONSTRUCTION CONDITIONS.
5. DOWNSTREAM WATER QUALITY MONITORING STATION TO BE LOCATED 100 FEET DOWNSTREAM OF FLOW DIVERSION OUTLET ENERGY DISSIPATER.
6. CONSTRUCT TEMPORARY BULK BAG DAM AS SHOWN PRIOR TO STARTING INSTREAM WORK TO PREVENT BACKWATER EFFECTS FROM DOWNSTREAM. CITY SHALL APPROVE LOCATION AND ALIGNMENT PRIOR TO INSTALLATION.
7. ALL TEMPORARY FLOW DIVERSION EQUIPMENT AND PIPES SHALL BE LOCATED AND ALIGNED WITHIN THE PROJECT LIMITS.



PLAN
SCALE: 1" = 30'-0"

PERMITTING DRAWINGS
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MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

STREAM BYPASS PLAN

FILENAME C-12.dwg
SCALE AS NOTED
SHEET: 15 Of 16
C-12

PLAN
SCALE: 1" = 30'-0"

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MILL CREEK PARK DAM IMPROVEMENTS

CITY OF COSMOPOLIS

PLANTING PLAN

FILENAME C–13.dwg
SCALE AS NOTED
SHEET: 16 Of 16
C-13

City of Cosmopolis Mill Creek Park Dam Improvements Project

Cosmopolis, Washington
Fish and Aquatics Habitat Report

January 2015

HDR
500 108th Avenue NE
Suite 1200
Bellevue, WA 98004
(425) 450-6200

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Table of Contents

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List of Figures

Appendix A – Stream Photos

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1.0 Introduction

This report describes the existing fish use and aquatic habitat in Mill Creek upstream of the Mill Creek Park Dam for the City of Cosmopolis Mill Creek Park Dam Improvements Project. This report was prepared by HDR Engineering, Inc., (HDR) biologists, and is intended to provide documentation of existing stream channel and fish habitat conditions in the project area and an assessment of changes from the fish passage component and the additional upstream area made available for fish use.

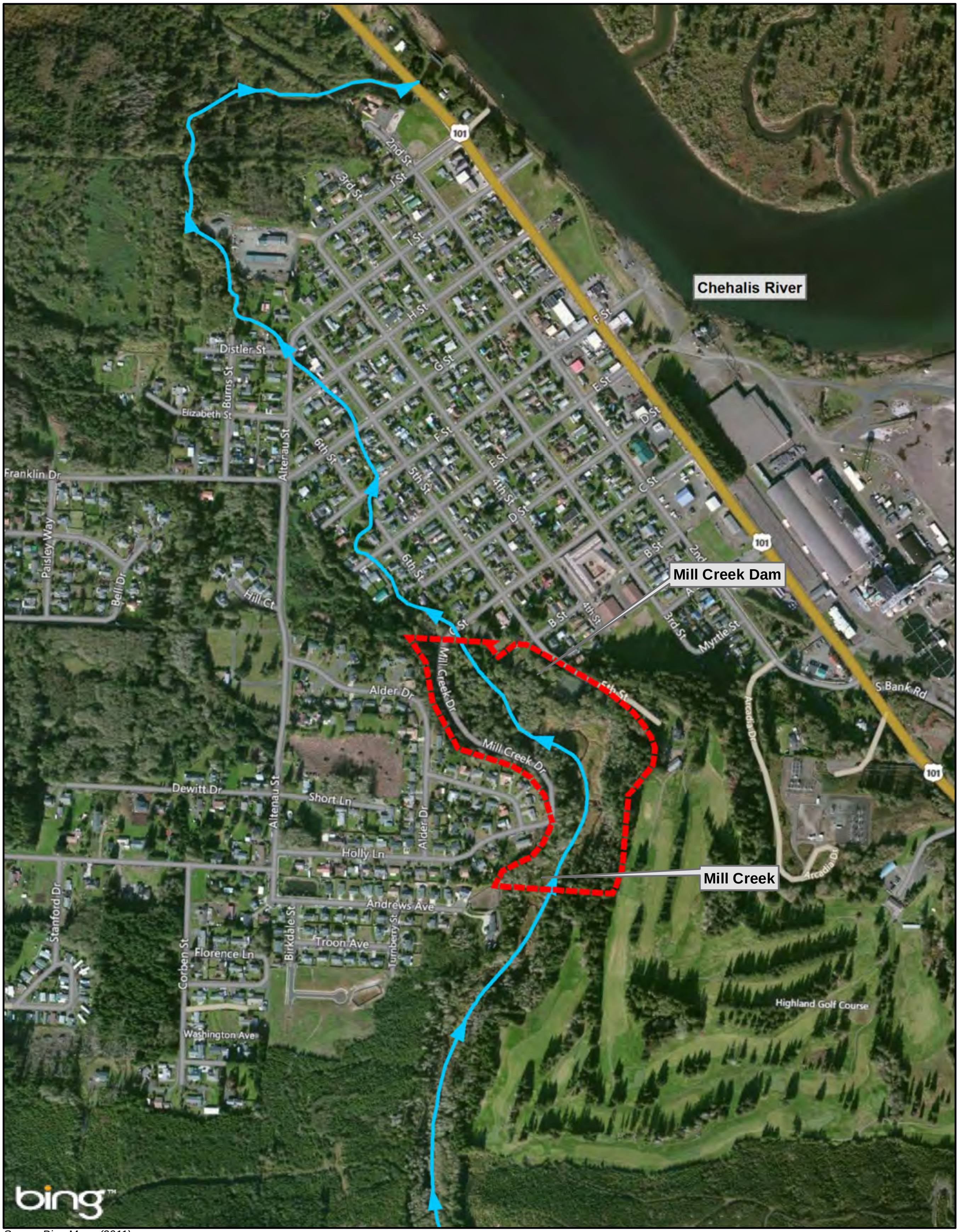
1.1 Background

The Mill Creek Dam, located in Mill Creek Park in Cosmopolis, Washington, was breached during an intense storm in November 2008. Prior to the breach, a 200-foot-wide by 20-foot-tall earth embankment and gravity concrete dam impounded approximately three to four acres within the Mill Creek Park and created a recreational fishing pond (HDR 2012). The dam also worked to alleviate downstream flooding in times of storm events. A 100-foot-long footbridge located above the dam was part of the pond's loop trail and failed during the dam breach. The breach was caused by a large alder tree that fell from the hillside above the dam after several days of heavy rain. The fallen alder caused the hillslide to become unstable and slide into the sheet piling of the dam, causing the breach to occur. The dam was no longer operational as a flood control hazard reduction facility and the impoundment was drained. The City of Cosmopolis (City) plans to replace the footbridge and address the dam breach by assessing multiple objectives of the Mill Creek stream system and opportunities for improvements.

1.2 Project Setting

The proposed project is located in Mill Creek Park approximately 2 miles southeast of Aberdeen, within the City of Cosmopolis, Washington (Figure 1). Mill Creek Park is located between residential housing and the city's Highland Golf Course at the south end of 5th Street (Section 23, Township 17 North, Range 9 West). The park is located on a parcel approximately 26 acres (#417092321009) in size and is owned by the City of Cosmopolis. The project site is centered at latitude 46.93026˚ North and longitude 123.74579˚ West. Topography of the site starting from the Mill Creek Dam is approximately 40 feet above sea level, and gently slopes downslope to the north to C Street. The park lies within a valley and drains groundwater from surrounding hillslopes to the east and west.

Mill Creek is a tributary of the Chehalis River and is the only stream in the project site. It is a perennial stream that originates from the surrounding hills south of the project area and is fed by runoff and groundwater seepage along the valley. Since the dam breach in 2008, the ponded area upstream of the dam has largely drained and the stream has formed a meandering channel through the park. Downstream of the dam, Mill Creek flows out of the north end of the park through a culvert under C Street. It subsequently passes through a series of culverts under residential streets and flows are confined in many areas by artificially armored banks within residential properties with little to no overhead cover. Downstream of the residential area, the stream retains more of its natural channel and continues through a tide gate at its confluence with the Chehalis River. The tide gates do not pose a passage barrier to fish moving to or from the Chehalis River during the majority of flow conditions when the tide gates would be open. During extreme storm events, the water pressure and elevation causes the tide gates to close and therefore blocks access to Mill Creek during these periods.



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Source:Bing Maps (2011).

Figure 1
Vicinity Map

Legend

Mill Creek Park Parcel

Mill Creek

N

0 250 500 Feet

Mill Creek Park Dam Improvement Project

1.3 Fish Species Present

Mill Creek is inventoried as a perennial stream with no natural barrier to the Chehalis River and is designated as a Type F stream (WDNR 2014). The only salmonid species documented to inhabit Mill Creek is coho salmon (*Onchorhynchus kisutch*) (WDFW 2014b). Coho in Mill Creek are from the Southwest Washington Evolutionary Significant Unit (ESU) which is not currently listed under the ESA.

Coho typically spend at least 1 year rearing in freshwater before migrating out to the ocean in the spring between March and June. During this time they inhabit pools and areas with cover from woody debris or other structure. Backwaters, side channels, and small streams are preferred rearing habitat, particularly in shaded areas with overhead cover (Smith and Wenger 2001). Complex instream habitat composed of large rocks, large woody debris, and vegetation is important to rearing coho because production is limited by the number of suitable territories present (Smith and Wenger 2001, Bjornn and Reiser 1991). In winter, coho juveniles can move both upstream and downstream into pools and off-channel areas. Fingerlings move into off-channel habitat when fall freshets begin. Instream cover, side channels, small intermittent streams, and ponds provide shelter from winter storms that could sweep the fish out of the system (Smith and Wenger 2001). Coho smolts begin to migrate downstream in the spring with outmigration generally peaking in May. Coho remain in the ocean for 1 to 2 years before returning to spawn in September through November (Wydoski and Whitney 2003). Coho are tolerant of degraded habitat and are commonly found in residential areas and streams channeled through ditches (Wydoski and Whitney 2003).

Prior to the breach of the dam, the dam posed an impassible barrier and marked the upstream extent of coho presence. Spawning gravel is present in the reach immediately downstream of the dam in Mill Creek Park, and several redds have been recorded and flagged in this reach by biologists from the Chehalis Tribe. This reach has vegetation cover from a mature tree canopy, as well as understory vegetation along its banks. There is also an area of open grass and access to the public to the stream on the northeast side of the reach in the park. The substrate is embedded with sand and some silt, but contained several areas of gravel that provided spawning habitat. Suitable spawning habitat for coho consists of flowing water at depths of 18 cm (7 inches) or more and gravel substrate with particle sizes in the range of 1 to 10 cm (0.4 to 4 inches) (Bjornn and Reiser 1991) depending on the size of the fish, with smaller fish using smaller sized substrates for redd construction.

The breached dam still poses a partial barrier at high flows and a full barrier at low flows. Prior to the dam breach, Rainbow trout (*Oncorhynchus mykiss*) were stocked in the pond upstream of the dam for recreational fishing.

2.0 Habitat Survey Methods

HDR biologists first reviewed existing documents, including fish distributions, critical habitat maps, aerial photographs, and other reports that include information pertinent to streams and fish use in the project vicinity. Existing documents reviewed for this stream study included the following:

- U.S. Fish and Wildlife Service (USFWS 2013) Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern in Grays Harbor County, Washington
- Washington State Department of Fish and Wildlife (WDFW 2014a) Priority Habitats and Species maps
- Washington State Department of Fish and Wildlife (WDFW 2014b) Salmonscape mapping tool
- StreamNet
- NMFS ESA species lists and critical habitat

In addition, HDR biologists completed a field investigation to assess existing channel conditions and fish habitat in the project study area. The study area included the stream channel downstream of the dam within the park and upstream of the dam in the former pond, south to the end of the property parcel where access was permitted. Figures 2 and 3 show the downstream (north) and upstream (south) study areas respectively.

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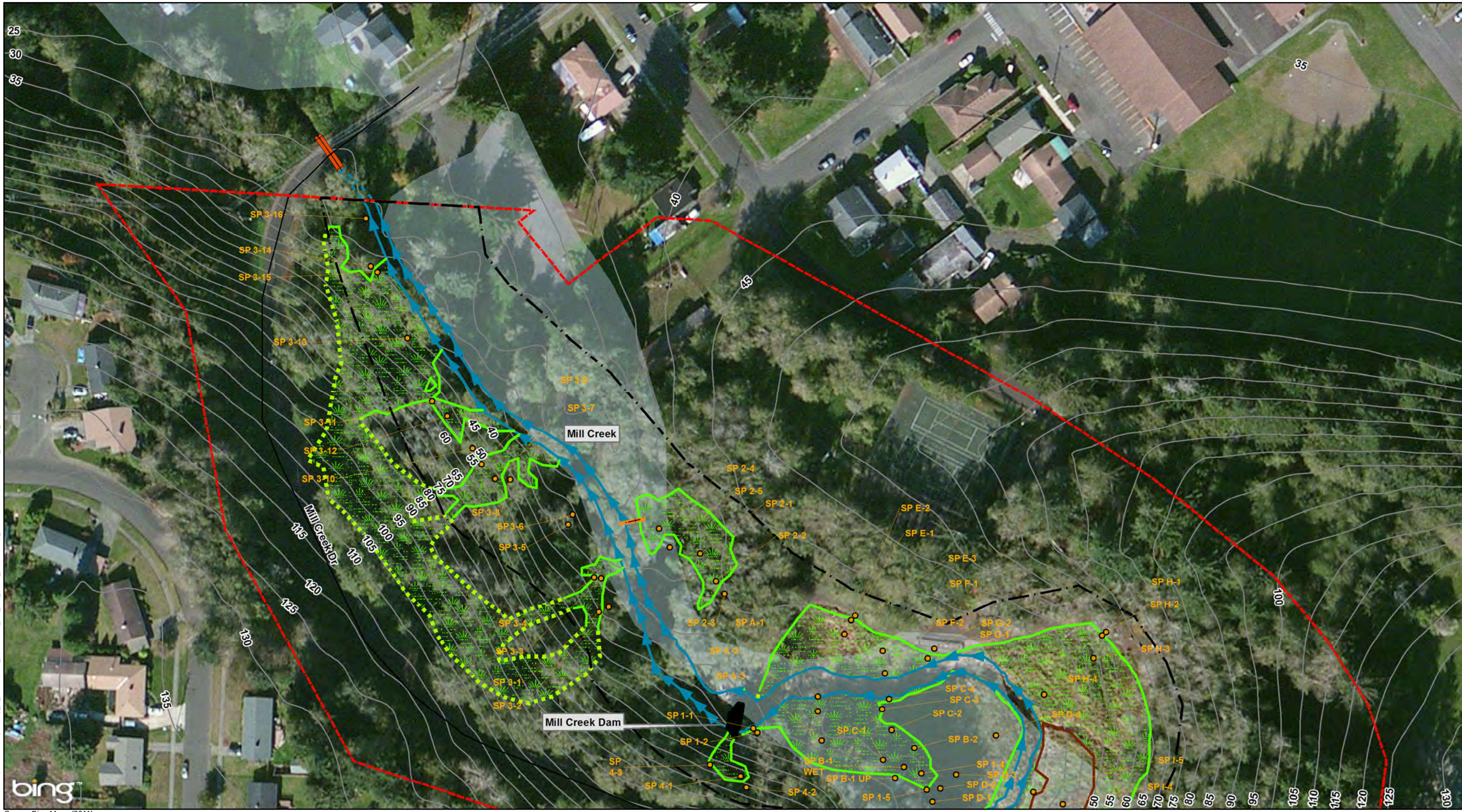

Source:Bing Maps (2011).

Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelim_171201\Map_Docs\Draft\Report\Wetland_Stream_Delineation.mxd | Date: 11/12/2014

Mill Creek Park Dam - North
Figure 2

Legend

- Park Parcel
- Study Area
- Roads
- Contour (5 ft interval)
- Mill Creek Dam
- Culvert
- 100 Year Floodplain
- Sample Plots
- Wetland Boundary (Delineated by HDR January 2014)
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Culvert Location
- Approximate Wetland Boundary
- Approximate Stream

N

0 25 50 100 Feet

Mill Creek Park Dam Improvements Project

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Source:Bing Maps (2011).

Legend

- Park Parcel
- Study Area
- Roads
- Contour (5 ft interval)
- Foot Bridge
- 100 Year Floodplain
- Sample Plots
- Wetland Boundary (Delineated by HDR January 2014)
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Wetland Boundary
- Approximate Stream

HDR

N

0 25 50 100 Feet

Mill Creek Park Dam - South
Figure 3

Mill Creek Park Dam Improvements Project

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The ordinary high water mark (OHWM) was delineated along each bank of the stream channel. To determine the OHWM of freshwater streams in the project area, HDR utilized Ecology's (Olsen & Stockdale 2010) guidance for OHWM identification, which is based on the Shoreline Management Act (RCW 90.58.030(2)(b) and Washington Administrative Code (WAC 173-22-030(11)). Ecology defines the "ordinary high water mark" as:

> "on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department: PROVIDED, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining saltwater shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water."

HDR staff looked for physical indicators including, but not limited to: a natural scour line impressed on the bank, distribution of upland and water tolerant vegetation; wracking of litter and debris; vegetation matted down, bent or absent; scour, and bed and banks.

Mill Creek is the only stream within the project area. The stream types described in this report are based on the stream reaches within the project area; upstream reaches may be rated differently. Fish presence was determined through the review of previous studies, an assessment of the available habitat, and the hydrologic condition of the identified surface water.

HDR biologists conducted a stream and riparian habitat survey on January 23, 2014. The stream habitat survey consisted of a characterization of general stream habitats metrics including:

- Physical reach type based on streambed conditions - glides, riffles, and pools
- dominant substrate
- general stream bank and riparian habitat characteristics
- large woody debris abundance

Methods for determining these metrics were derived from stream habitat measurement guideline documents used in Washington (Herrera 2009, Pleus et al. 1999; Kaufmann and Robison 1998; Fitzpatrick 1998). The general stream habitat type (i.e., glide, riffle, or pool) was recorded throughout the entire surveyed reach. A *glide* is considered an area with very little or no surface turbulence where the water is moving slowly; glides typically occur in the transition zone between riffles and pools and in low-gradient reaches with no flow obstructions (Kaufmann and Robison 1998). *Riffles* are relatively shallow areas of the channel with surface turbulence where water flows swiftly over completely or partially submerged obstructions, usually with relatively coarser substrates than pools and glides (Fitzpatrick et al. 1998). *Pools* are areas of the channel with reduced velocity, little surface turbulence, and with deeper water than surrounding areas. The location and size of each habitat type was recorded using a hand-held GPS to mark the transition from one to the next along the entire study reach.

The substrate characteristics present in each reach was recorded as cobble, gravel, or fines based on general observation to provide an overall classification for each reach. The general condition of each stream bank and the dominant riparian vegetation along both sides of the stream channel and general classifications of deciduous, coniferous, shrub, etc., were also recorded. General riparian and floodplain characteristics were observed and described within the park area and the valley to the south property boundary.

Large woody debris (LWD) is defined as logs, trees, or stumps that are at least 10 cm (4 inches) in diameter and 2 m (6.5 feet) long (Schuett-Hames et al. 1999; Kaufmann and Robison 1998), and that has at least some portion of its length within the bankfull channel of the stream. Large woody debris meeting these criteria was tallied throughout the surveyed reach.

Any barriers to fish passage encountered within the surveyed reach were also catalogued.

3.0 Stream Habitat Characteristics in the Project Study Area

The project area is located in Mill Creek within Washington Water Resources Inventory Area (WRIA) 22. The breached dam still poses a partial passage barrier at higher flows, and a complete barrier at low flows. Table 1 summarizes the classification of Mill Creek and photographs are provided in Appendix A.

Table 1. Summary of Streams in the Study Area

Stream Name	Tributary to	Stream Type[a]	USACE Jurisdiction[b]
Mill Creek	Chehalis River	F	RPW

[a] Summarized from WAC 222-16-030.
[b] TNW = Traditional Navigable Waters; RPW = Relatively Permanent Water (non-navigable tributary with relatively permanent flow year-round or continuous flow seasonally [≥ 3 months])

Although Mill Creek is not designated as critical habitat for any ESA-listed species; it is documented to be used for spawning and rearing by coho salmon from the park downstream of the dam to the Chehalis River. The habitat required for these aspects of salmon life history is therefore an important component in the stream habitat of Mill Creek.

Habitat requirements for spawning

The suitability of gravel substrate for spawning largely depends on the size of the fish. Larger fish such as Chinook tend to select spawning sites that contain larger gravels than fish of smaller sizes (Bjornn and Reiser 1991). Temperature and flow are also important habitat factors for salmon spawning areas. In general, adequate water depths for spawning should submerge the entire fish (Bjornn and Reiser 1991), and therefore larger fish tend to select deeper water areas, and smaller fish can take advantage of shallower areas. Salmon often select a pool to riffle transition that provides a down-welling flow at the redd. Interstitial flow through a redd is important to bring oxygen to the eggs and remove metabolic waste, and typically ranges from 20 to 100 cm/sec (0.7 to 3.3 ft/sec) (Bjornn and Reiser 1991). Cover in proximity to a spawning site is an important characteristic for providing shade and protection from disturbance and predation while the fish may be holding prior to spawning. Cover can be provided from overhanging or submerged vegetation, undercut banks, logs and boulders, deep water and turbulence. This cover can also serve as refuge for the juvenile fish when they emerge from the gravel.

Habitat requirements for rearing

Temperature, water quality, productivity, and suitable habitat are factor in the distribution and abundance of fish within a stream. Adequate cover for predation avoidance and thermal refuge is important for juvenile salmonids rearing in freshwater streams. Deep pools can provide both cover and refuge, especially during periods of low flow. Stream productivity and the macroinvertebrate communities are important for providing adequate food for rearing fish.

High quality rearing habitat is critical for the survival of juvenile salmonids from emergence to smoltification. Adequate total pool area and depth along with sufficient cover are necessary for successful juvenile salmonid rearing (Fevold et al. 2001; Bjornn and Reiser 1991). Salmonids also often shift their habitat preferences seasonally, primarily due to changes in flow and usable stream area. Juvenile coho prefer off-channel, backwater, or wetland/ beaver ponds during the winter, and show a preference for main-channel pools formed by large woody debris in the summer months (Fevold et al. 2001).

3.1 Results of Habitat Survey

The study area for the habitat survey comprised the stream channel in the park between the culvert under C Street and the dam, the area upstream of the dam where water was impounded when the dam was operational, and the stream channel upstream of the park trail to the property boundary. Surveys were only conducted upstream as far as the park property parcel boundary, as property access was not obtained for areas further upstream. Mill Creek continues upstream for approximately 3 miles to its headwaters. Aerial imagery shows the creek continues to meander along the valley floor and is within a forested riparian corridor throughout its length south of the park parcel. This forested corridor ranges in width from approximately 60 to 150 feet, on either side of the stream channel and continues through property actively managed for timber production to the south.

In the park area upstream of the dam, Mill Creek has formed a single low gradient (<1% slope) main channel through the area where the pond formed by the dam was previously located. The stream channel width was fairly uniform but tended to be widest near the dam and became narrower upstream of the footbridge. The average width at the OHWM in the park area was 17 feet, ranging from 10 to 25 feet, and the average width upstream of the footbridge was 12 feet, and ranged from 11 to 13 feet. The stream channel in the surveyed reach consisted primarily of glide habitat with sandy silty substrate. Table 2 below lists the mesohabitats recorded throughout the study reach, including the channel upstream of the dam and within the park downstream of the dam. The highest percentage for both reaches was glide habitat.

Table 2: Proportions of mesohabitats in Mill Creek within the project study area upstream of the dam and in the park downstream of the dam

Mesohabitat	Percent of study reach
Upstream of the Dam	
Glide	84.0
Riffle	2.8
Pool	13.2
Downstream of the Dam	
Glide	48.1
Riffle	41.7
Pool	2.4
Cascade	7.8

High quality aquatic habitat is the result of structural and hydraulic complexity where a mixture of habitat types within a stream creates an array of microhabitats that provide for the needs of an assortment of species throughout their various life stages. Riffle habitat provides oxygenated water and removal of fine sediments for spawning habitat. Glide habitats provide migratory corridors and transport nutrients and create drift feeding opportunities for rearing juveniles, as well as help maintain water temperatures. Pool habitats provide resting areas and cover for both upstream and downstream migrating life stages, as well as refugia in deeper, cooler water for periods of low water levels and over-wintering habitat.

The study area reach lacks some of this habitat heterogeneity by being predominantly glide habitat, with a small amount of pools and riffles (Table 2). Only a single riffle area approximately 12 feet in length was present in the reach upstream of the dam. This was located at the footbridge in the south end of the park where the stream flows over spall and gravel from embankment material for the foot path and bridge (Appendix A). Downstream of the dam, there were five riffle areas present that ranged from 22 to 116 feet in length.

A total of 5 pools ranging from 20 feet to 52 feet were located within the surveyed reach upstream of the dam. Water depths in this reach at the time of the survey ranged from about 4-5 inches in the shallowest areas to approximately 4 feet in some of the deeper pools. Downstream of the dam there were only 2 small pools located about midway in the reach, with a depth at the time of survey of 16 inches.

The majority of the streambed in the entire study reach upstream of the dam was comprised of sand and silt substrate with some organic debris. This area provides good rearing habitat for juvenile salmonids such as coho, with pools interspersed in the reach along with the cover and structure provided by the LWD. Suitable spawning gravels were not present in the project reach upstream of the dam. Downstream of the dam, the substrate contained coarse material with areas of exposed gravels in the riffles. This part of Mill Creek is documented to support coho spawning. Four flagged coho redds were observed in this reach during the survey.

The stream banks along the surveyed reach were vegetated and generally stable, with little scour or erosion. The channel was not deeply incised and only a few areas had undercut banks.

LWD is important in western Washington streams in that it provides cover for fish and contributes to stream complexity, which is beneficial to salmonids. LWD also helps stabilize streambeds by minimizing scour and dissipates hydraulic energy during peak flows, providing high-flow refuge for salmonids (Bilby and Ward 1991). LWD can maintain stream sinuosity, channel depth, and create pools and riffles (Keeley and Slaney 1996). In addition, LWD can improve substrate habitat and nutrient sources for the rearing of aquatic invertebrates, an important source of food for salmonid fishes (Schuett-Hames et al. 1999, Angermeier and Karr 1984).

Upstream of the dam there were 97 pieces of LWD observed in the 1,400-foot-long study reach, which extrapolates to 366 per mile. Although LWD is abundant, the majority of it is smaller than the 24-inch-diameter size class used by the NMFS pathways and indicators to identify properly functioning systems at >80 pieces per mile (NMFS 1996). The LWD in the reach consisted mainly of fallen trees that were within the medium (8 to 20-inch diameter) and small (3 to 8-inch diameter) categories. There were 15 pieces of LWD that were in the large category at >20 inches in diameter, many of which were located upstream of the footbridge in the south end of the study area. The largest diameter pieces were located in the meanders within the former ponded area in the park that helped form pools and included a few large stumps. Inside the park within the former pond area, there is considerably less LWD than upstream of the footbridge where it is abundant along the valley floor south of the project area (Appendix A). The open area created from the former pond as well as the constructed foot path surrounding it preclude mature trees from the stream banks and areas in proximity to the channel resulting in much less LWD present. There were also only two logs large enough to be counted as LWD in the reach downstream of the dam at the time of the survey. Much of the right bank of the stream in this reach has sparse tree cover due to clearing for the park lawn and pathway.

Riparian and Floodplain Habitat

Riparian habitat performs many functions that are essential to fish survival and productivity. Vegetation in riparian areas shades streams maintaining cool temperatures needed by most fish. Plant roots stabilize stream banks and control erosion and sedimentation, and vegetation creates overhanging cover for fish and contributes leaves, twigs, and insects to streams, thereby providing basic food and nutrients that support fish and aquatic life. Riparian vegetation and soils also contribute to water quality by filtering incoming sediments and pollutants. Riparian habitat moderates stream volumes by reducing peak flows during flooding periods and by storing and slowly releasing water into streams during low flows (Knutson and Naef 1997).

Riparian vegetation characteristics along Mill Creek differ among the reach downstream of the dam, the reach in the former impoundment, and the reach upstream of the south end of the park. The riparian vegetation downstream of the dam is predominantly deciduous forest cover with alder being the main component. There is a dense shrub understory along the left bank of the creek predominantly comprised of salmonberry and willows along the bank. The right bank of the stream between the dam and the culvert under C Street contains areas of mowed lawn in the park and several mature conifers with little to no shrub understory and a few willows along the bank.

The former impoundment area where the pond was located remains wet and is vegetated primarily by sedges and reed canary grass (Appendix A). Mill Creek currently provides some overbank flooding and interstitial flow to the wetland surrounding this reach. Some willows and alder saplings are present, but cover from mature trees is absent within the riparian wetland that currently occupies the former pond.

Upstream of the footbridge at the south end of the park, Mill Creek flows along the bottom of a forested valley with a mix of mature conifers and deciduous trees. The valley floor is fairly flat with willows and grasses in the areas that receive overbank flooding. Upslope riparian areas contain forest cover of alder, cedar, and hemlock that continues south along the stream corridor and consequently this part of Mill Creek contains a greater amount of LWD than the reaches in the park (Appendix A).

A small beaver dam was observed on Mill Creek upstream of the foot bridge in the southern portion of the study area. Beaver dams represent structural elements in stream channels and play a role similar to that of LWD and can act by flattening local stream gradients, increasing bank storage, capturing of relatively fine sediment in the channel, pool formation, hyporheic exchange, and increasing interactions between the stream and floodplain (Saldi-Caromile et al. 2004).

Interactions between the stream channel and its floodplain are important to the health of the aquatic ecosystem. Floodplain vegetation slows overbank flows, reducing erosion and promoting the capture and stabilization of fine sediments. Natural systems have floodplains that are connected directly to the river at many points, allowing wetlands to store flood water and later discharge this storage back to the river during lower flows. This not only decreases flood impacts, but also recharges fish habitat later when flows are low. Side channels and off-channel features within the floodplain provide vital habitat to many juvenile salmonids, including important low velocity refugia during periods of high flows when fish remaining in the main channels are washed away (outmigrating smolts take advantage of such high flows to quickly move downstream) (Saldi-Caromile et al. 2004).

A single stream channel was observed throughout the study area with no side channels present. Upstream of the surveyed reach, some small side channels were present near the south end of the property parcel. Aerial imagery also indicates the presence of multiple channels upstream of the study area.

The channel migration zone in the park downstream of the dam is restricted by vegetated banks and structure on the right bank maintaining a single channel. Upstream of the dam, in the area that was formerly ponded, the channel has established a meandering course through the lowest portion of this area, but during high flows could overtop its banks and re-establish throughout the bowl shaped area. This area would once again become ponded with the installation of the new dam structure. Upstream of the footbridge the channel meanders through a fairly flat valley bottom within which the channel could potentially migrate. Abundant LWD in this reach adds structure and stability to this channel and the existing channel was well established. High flows could potentially change or carve out additional side channels along the valley floor.

3.2 Summary

Mill Creek upstream of the dam within the project study area was primarily glide habitat with few pools and riffles and no suitable spawning gravel areas were observed within this reach. Areas further upstream were not accessed and could have potential spawning habitat for coho and migratory cutthroat trout which would be able to migrate upstream of the dam after completion of the fish passage structure. The habitat in the study area provides good rearing habitat for juvenile salmonids with the presence of some pools and an abundance of LWD.

Restoration of the dam would continue to trap sediment upstream of the dam and the substrate in that reach would continue to be dominated by fines and remain unsuitable for spawning. Upstream of the inundation area, the surveyed stream channel continued at a low gradient and the substrate was also dominated by fines. A further survey of habitat upstream of the project study area in Mill Creek is needed in order to properly quantify the amount of potential spawning and rearing habitat that would be made available to salmonids once the upstream passage structure is operational.

Within the park downstream of the dam, Mill Creek contains riffle areas and gravel substrate that provides spawning habitat that is currently used by coho salmon.

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Appendix A - Stream Photos

Stream channel looking upstream from the dam through the former pond.

Riffle over spall by footbridge at south end of the former ponded area.

The stream channel upstream of the project area flows along the forested valley with an abundance of LWD.

The stream channel within the former pond area in the park is predominantly glide habitat with reed canary grass and sedges along its banks.

Beaver dam located south (upstream) of the footbridge.

The stream channel downstream of the dam contains gravel areas used by spawning coho.

City of Cosmopolis Mill Creek Park Dam Improvements Project

Cosmopolis, Washington
Wetland and Stream Delineation Report

April 2015

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Acronyms and Abbreviations

Ecology	Washington State Department of Ecology
GPS	Global Positioning System
HDR	HDR Engineering, Inc.
HGM	Hydrogeomorphic
LWD	Large Woody Debris
OHWM	Ordinary High Water Mark
USACE	U.S. Army Corps of Engineers
USDA NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington State Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WRIA	Water Resource Inventory Area

1.0 Introduction

This report describes the results of wetland and stream delineations for the City of Cosmopolis Mill Creek Park Dam Improvements Project. This report was prepared by HDR Engineering, Inc. (HDR) biologists, and is intended to provide documentation of existing stream and wetland conditions in the project area to support federal permitting as well as applicable state and local permitting for the project.

1.1 Background

The Mill Creek Dam, located in Mill Creek Park in Cosmopolis, Washington, was breached during an intense storm in November 2008. Prior to the breach, a 40-foot wide by 20-foot tall gravity concrete dam maintained an approximately 2 acre impoundment within the Mill Creek Park and this impoundment provided flood hazard reduction and created a recreational fishing pond (HDR 2012). A 100-foot long footbridge, located above the dam, was part of the pond's loop trail and failed during the dam breach. The breach was caused by a large alder tree that fell from the hillside above the right bank of the dam after several days of heavy rain. The fallen alder caused the hillside to become unstable and slide into the sheet piling of the dam, causing the breach to occur. Following the breach, the dam was no longer operational as a flood hazard reduction facility and the impoundment was drained. The City of Cosmopolis (City) plans to replace the dam and footbridge and assess multiple objectives of the Mill Creek stream system and opportunities for improvements.

1.2 Project Setting

The proposed project is located in Mill Creek Park within the City of Cosmopolis, Washington (Figure 1). Mill Creek Park is located between residential housing and the Highland Golf Course at the south end of 5th Street (Section 23, Township 17 North, Range 9 West). The Park is located on a parcel (#417092321009) approximately 26 acres in size and is owned by the City of Cosmopolis. The project site is centered at latitude 46.93026˚ North and longitude 123.74579˚ West. Topography of the site starting from the Mill Creek dam is approximately 40 feet above sea level, and gently slopes downslope to the north to C Street. Mill Creek stream flows through the park from south to north, through the breached dam and downstream under C Street. The park lies within a valley and drains surface water from surrounding hillslopes to the east and west.

Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelm_171201\Map_Docs\Draft\Vicinity_Map_June2014.mxd | Date: 7/3/2014

Source:Bing Maps (2011).

Figure 1
Vicinity Map

Legend

- Mill Creek Park Parcel
- Chehalis River
- Mill Creek

N

0 250 500 Feet

Mill Creek Park Dam Improvement Project

2.0 Methods

2.1 Study Area

The study area for wetlands and streams consisted of three areas where proposed work or impacts associated with the project may occur: 1) the Mill Creek Dam site and the approximate upstream extent of ponding; 2) the proposed fish passage area within 100 feet downstream of the dam along the right bank of Mill Creek; and 3) within 50 feet of the left bank of Mill Creek in the park downstream of the dam (Figures 2 and 3). Wetlands and streams outside the study area were not formally delineated; these areas were assessed based on characteristics visible from public rights-of-way and on information obtained from existing documents and studies, maps, and aerial photographs.

Wetlands and streams in the study area were identified through a two-step process. HDR biologists first reviewed existing documents, including soil surveys, wetland and stream inventories, aerial photographs, and other reports that include information pertinent to wetlands and streams in the project vicinity. After this review, HDR biologists completed a thorough field investigation of the project area that included wetland and stream identification, delineation, and classification.

2.2 Review of Existing Information

Existing documents reviewed for this wetland and stream study included the following:

- Washington Department of Natural Resources (WDNR 2014a) Forest Practices Application Review System
- Washington State Department of Natural Resources (WDNR 2014b) Natural Heritage Information Request Self-Service System
- State Conservation Commission (SCC 2014) Water Resource Inventory Map
- USDA NRCS (2014a) Web Soil Survey
- U.S. Fish and Wildlife Service (USFWS 2014) National Wetland Inventory Website
- U.S. Fish and Wildlife Service (USFWS 2013) Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern in Grays Harbor County, Washington
- Washington State Department of Fish and Wildlife (WDFW 2014a) Priority Habitats and Species maps
- Washington State Department of Fish and Wildlife (WDFW 2014b) Salmonscape mapping tool

These documents provide background information on the soils, hydrology, wetlands and streams in the study area.

2.3 Field Investigation

Field investigation consisted of a detailed identification and delineation of wetlands and streams in the project area. The delineations of wetlands and streams in the project area were conducted by HDR biologists on January 21st through the 24th, 2014. For the month prior to field work (December 21st to January 21st) Weather Underground (2014) recorded a total of 6.33 inches precipitation in Hoquiam, Washington which is approximately 6.7 miles from the project area. This monthly precipitation total is below the normal range of precipitation for December/January (USDA NRCS WETS, 2002).

A follow up site visit was conducted on April 2, 2014 to quantitatively assess hydrology in delineated Wetland 1 and uplands. For the month prior to this field visit (March 2nd to April 2nd) Weather Underground recorded a total of 10.9 inches of precipitation. The recorded monthly precipitation total is above the normal range of precipitation for March/April (USDA NRCS WETS, 2002).

2.3.1 Wetlands

HDR staff identified wetlands within the project area using the three parameter methods described in the *Corps of Engineers Wetland Delineation Manual (*Environmental Laboratory 1987), as updated by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region- Version 2.0 (*WMVC*)* (U.S. Army Corps of Engineers [USACE] 2010). A detailed description of the field methods used in this study is provided in Appendix A. Delineated wetland boundaries and wetland data plot locations in the project area were marked in the field with flagging tape and were surveyed by a licensed land surveyor. The resulting data were incorporated into project base maps.

The City of Cosmopolis requires that wetlands are rated using the state wetland rating system as described in the *Washington State Wetland Rating System for Western Washington-Revised,* Washington State Department of Ecology Publication # 04-06-025 (Hruby 2004). Using this system, wetlands were rated in the field by using the Wetlands Rating Field Data Form provided with the rating system manual (Appendix D). Table 1 lists the rating criteria for the Department of Ecology. A detailed analysis of wetland functions is not included in this report; however, a brief description of wetland functions (based on the rating method) is provided in the general description for each wetland.

Table 1. Wetland Rating System for Washington State Department of Ecology

Rating System	Category I	Category II	Category III	Category IV
Western Washington Rating System[a,]	Category I wetlands are those wetlands that 1) represent a unique or rare wetland type; or 2) are more sensitive to disturbance than most wetlands; or 3) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or 4) provide a high level of functions. In western Washington the following types of wetlands are Category I: 1. Relatively undisturbed estuarine wetlands larger than one acre 2. Wetlands that are identified by scientists of the Washington Natural Heritage Program/DNR as high quality, relatively undisturbed wetlands, or wetlands that support State listed threatened or endangered plants 3. Bogs 4. Mature and old-growth forested wetlands over one acre in size 5. Wetlands in Coastal Lagoons, and 6. Wetlands that perform many functions very well. These wetlands a score 70 or more points out of 100 on the wetland rating form.	Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions. Category II Wetland in Western Washington include: 1. Any estuarine wetland smaller than an acre, or those that are disturbed and larger than one acre are category II wetlands; 2. Interdunal wetlands greater than one acre; and 3. Wetlands scoring between 51 and 69 points out of 100 on the wetland rating form.	Category III wetlands are: 1. Wetlands with a moderate level of functions (scores between 30 and 50 points out of 100 on the wetland rating form; and 2. Interdunal wetlands between 0.1 acre and 1.0 acre in size. Wetlands scoring between 30 -50 points generally have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands	Category IV wetlands have the lowest levels of functions (scores less than 30 points) and are heavily disturbed.

[a] Washington State Department of Ecology' Hruby (2004)

2.3.2 Streams

To determine the ordinary high water mark (OHWM) of freshwater streams in the project area, HDR utilized Ecology's (Olsen & Stockdale 2010) guidance for OHWM identification, which is based on the Shoreline Management Act (RCW 90.58.030(2)(b) and Washington Administrative Code (WAC 173-22-030(11)). Ecology defines the "ordinary high water mark" as:

> *"on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department: PROVDIDED, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining saltwater shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water."*

HDR staff looked for physical indicators including, but not limited to: a natural scour line impressed on the bank, distribution of upland and water tolerant vegetation; wracking of litter and debris; vegetation that was matted down, bent or absent; scour, and defined stream bed and banks.

One stream, Mill Creek, was identified in the project area, a tributary stream to the Chehalis River. Streams were categorized based on the Washington State stream typing system identified in WAC 222-16-030 (Table 2). The stream types described in this report are based on the stream reaches within the project area; downstream reaches may be rated differently. Fish presence was determined through the review of previous studies, an assessment of the available habitat, and the hydrologic condition of the identified surface water.

Table 2. Summary of the Washington State Water Typing System

Stream Type	Definition[a]
S	All waters, within their bankfull width, as inventoried as "shorelines of the state" under chapter 90.58 RCW and the rules promulgated pursuant to chapter 90.58 RCW including periodically inundated areas of their associated wetlands.
F	Segments of natural waters other than Type S waters, which are within the bankfull widths of defined channels and periodically inundated areas of their associated wetlands, or within lakes, ponds, or impoundments having a surface area of one-half acre or greater at seasonal low water and which in any case contain fish habitat. See WAC 222-16-030.
Np	All segments of natural waters within the bankfull width of defined channels that are perennial nonfish habitat streams. Perennial streams are flowing waters that do not go dry any time of a year of normal rainfall and include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
Ns	All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, moonfish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is Type Np water. Ns waters must be physically connected by an aboveground channel system to Type S, F, or Np waters. See WAC 222-16-030.

[a] Definitions are summarized from WAC 222-16-030.

3.0 Results

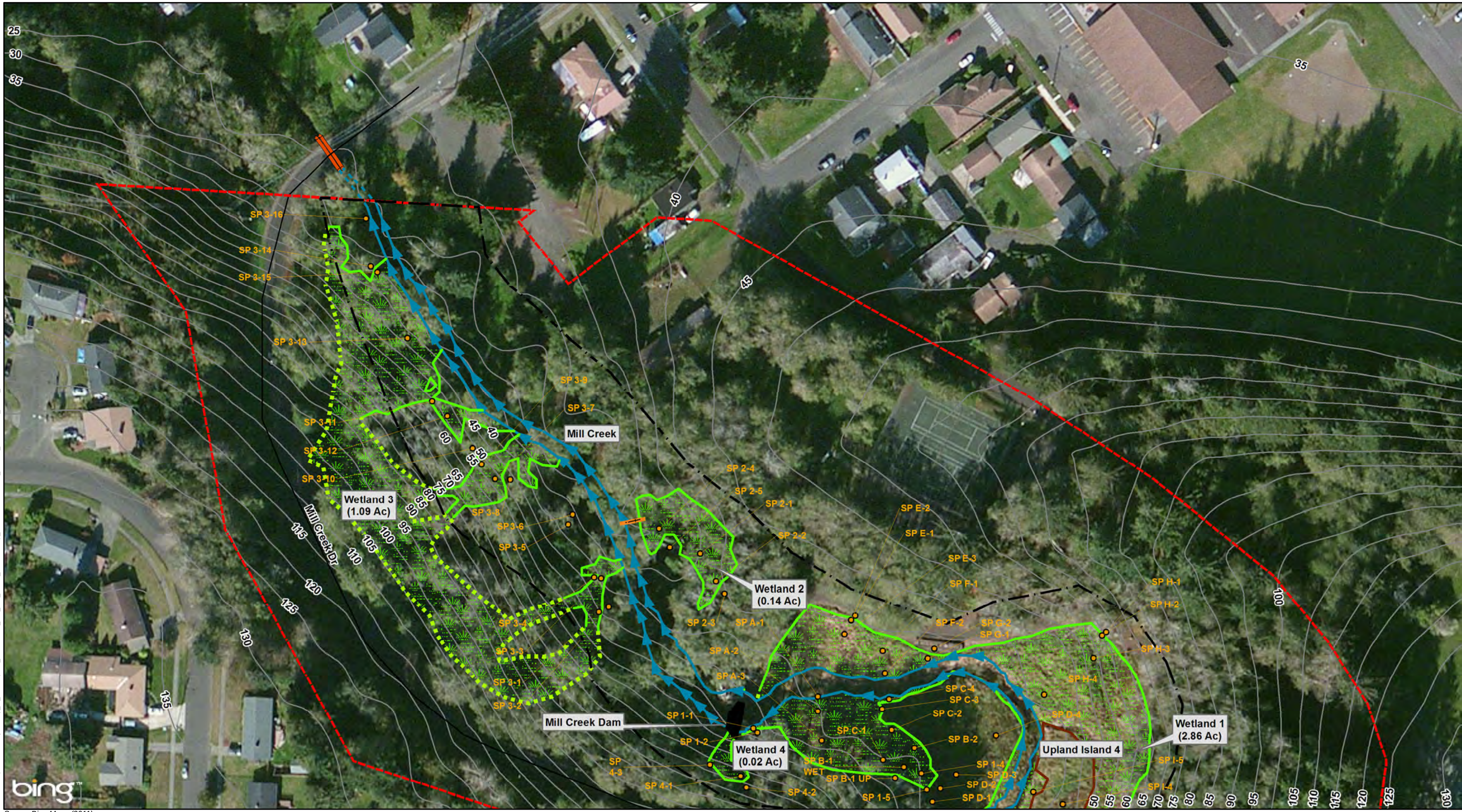
3.1 Wetlands in the Study Area

HDR staff identified four wetlands within the study area. Wetlands were distinguished from adjoining uplands by the presence of indicators for wetland hydrology, hydric soils, and hydrophytic vegetation. Wetland delineation data sheets for wetlands within the project area are provided in Appendix B, and site photographs are provided in Appendix C. Ecology rating forms are in Appendix D. Table 3 summarizes the size, rating, and classification of these wetlands. Figures 2 and 3 depict the locations of wetlands and streams in the study area. Detailed descriptions of each wetland within the project area are discussed from the south portion of the project area to the north, in the following sections.

Table 3. Wetland Size, Rating, and Classification for Wetlands in the Study Area

Wetland Name	Wetland Size in study area (total acres)	Western WA Wetland Rating[a]	Hydrogeomorphic (HGM) Classification	Cowardin Classification
1	2.86 (6.88)	III	Depressional	PEM1/PSS1/PFO1
2	0.14	III	Slope	PSS1
3	1.09	III	Slope	PFO4/PSS1/PEM1
4	0.02	IV	Slope	PSS1

[a] Wetland ratings are based on *Washington State Wetland Rating System for Western Washington – Revised* (Hruby 2004).
[b] Cowardin et al. (1979). PFO1 = palustrine forested, broad-leaved deciduous; PFO4 = palustrine forested needle leaved evergreen; PEM1 = palustrine emergent, persistent



Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelim_171201\Map_Docs\Draft\Wetland_Stream_Delineation_11x17_June2014.mxd | Date: 9/19/2014

Source:Bing Maps (2011).

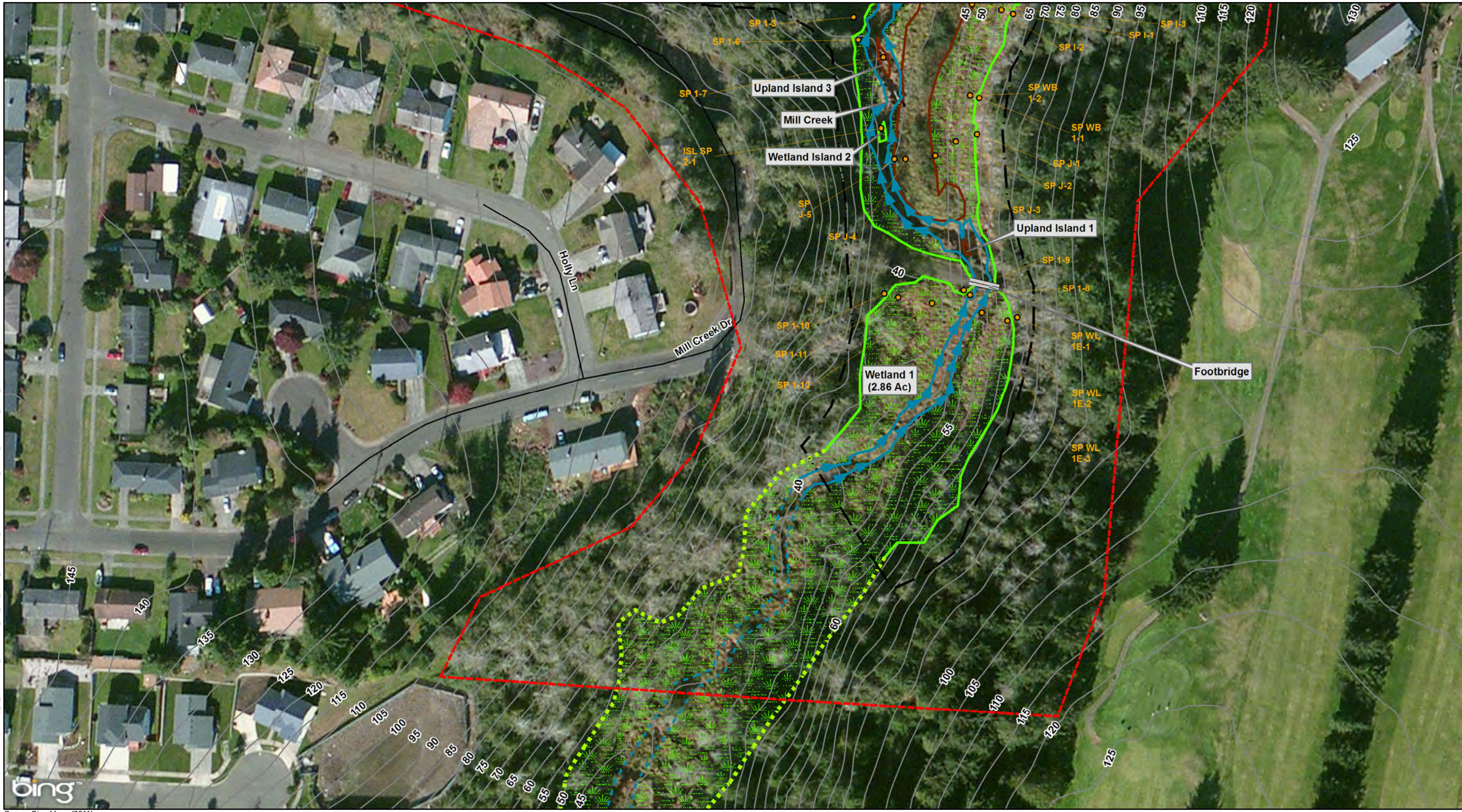
Legend

- Park Parcel
- Study Area
- Roads
- Contour (5 ft interval)
- Mill Creek Dam
- Culvert
- Sample Plots
- Wetland Boundary (Delineated by HDR January 2014)
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Culvert Location
- Approximate Wetland Boundary
- Approximate Stream

Mill Creek Park Dam - North
Figure 2

N
0 25 50 100
Feet

Mill Creek Park Dam Improvements Project



Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelim_171201\Map_Docs\Draft\Wetland_Stream_Delineation_11x17_June2014.mxd | Date: 9/19/2014

Source:Bing Maps (2011).

Legend

- Park Parcel
- Study Area
- Roads
- Contour (5 ft interval)
- Foot Bridge
- Sample Plots
- Wetland Boundary (Delineated by HDR January 2014)
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Wetland Boundary
- Approximate Stream

N

0 25 50 100 Feet

Mill Creek Park Dam - South
Figure 3

Mill Creek Park Dam Improvements Project

3.1.1 Wetland 1

Palustrine Emergent Persistent/ Palustrine Scrub-Shrub-Broad Leaved Deciduous
Category III
2.86 acres in the study area/ 6.88 acres total

Wetland Description

Wetland 1 is a depressional wetland located in a narrow basin that drains uplands on the west and east sides of the wetland (Photos 5 and 6). Wetland 1 also receives hydrology from the contributing basin of Mill Creek south of the study area. Prior to the dam breach in 2008, Mill Creek was impounded by the Mill Creek Dam, which formed a pond approximately 3 acres in size behind the dam and served as a regional recreational fishing pond (HDR 2012) (Photo 1). Based on aerial photo review of the pond prior to dam breach (Google Earth 2014), the pond appeared to remain largely unvegetated well into the summer, with the exception of scattered patches of emergent vegetation. Since the dam breach, (Photo 3) Mill Creek has receded back to a narrow stream channel, and portions of the impoundment area have revegetated with sedges and reed canarygrass, creating Wetland 1. A looped gravel walking trail with two footbridges surround Mill Creek Pond. One of the footbridges was damaged during the dam breach, resulting in a gap in the loop trail.

Under current conditions, Mill Creek flows through Wetland 1 from south to north, discharging through an unconstructed outlet at the breached dam. Mill Creek currently provides some overbank flooding and interstitial flow to Wetland 1. After large storm events, overbank flooding typically inundates Wetland 1 approximately 10 feet landward of the left and right banks of the creek; overbank flooding appears to continue upstream approximately 30 feet south of the footbridge before the creek becomes confined to a more incised channel with steep banks. The hydrologic regime in Wetland 1 is mainly saturated, with some seasonally inundated areas in the former Mill Creek Pond area. A footbridge on a fill pad partially bisects Wetland 1 near the south end of the study area.

In order to accurately determine wetland and upland boundaries within the impoundment area, HDR biologists established 10 (A-J) transect lines through the Mill Creek Pond area, as well as paired sample plots at the wetland boundary (Figures 2 and 3).

Vegetation

Wetland 1 is dominated by reed canarygrass (*Phalaris arundinacea,* FACW) in the north portion of the wetland, an area that was ponded prior to the dam breach (Photo 6). Red-tinge bulrush (*Scirpus microcarpus*, OBL) is dominant south of the footbridge upstream of the area that was previously ponded prior to the dam breach (Photos 13 and 14). Other species present in Wetland 1 include: Pacific water-dropwort (*Oenanthe sarmentosa*, OBL), Western touch me-not (*Impatiens noli-tangere*, FACW), salmonberry (*Rubus spectabilis*, FAC), lamp rush (*Juncus effusus*, FACW) and creeping buttercup (*Ranunculus repens*, FAC). The presence of these species meets the wetland vegetation criteria.

Soils

Soils observed in Wetland 1 are classified by the NRCS (USDA NRCS 2014) as a Mopang Silt Loam (30 to 65 percent slopes). Soils generally consist of a very dark grayish brown (10YR3/2) silty loam overlying a dark grayish brown (10YR4/2) sandy loam over a final layer of dark gray (10YR4/1) silt loam. All layers have redoximorphic features (5YR4/6). Soils south of the footbridge in Wetland 1 display dark grayish brown soils (10YR2/2 and 3/1) over dark greenish gray gleyed soils (10GY4/1 and 10GY3/1). Soils observed in Wetland 1 meet the hydric soil indicators for Redox Dark Surface (F6), a Depleted Matrix (F3), Loamy Gleyed Matrix (F2) and Hydrogen Sulfide (A4) was observed.

Hydrology

Some sample plots in Wetland 1 contained soils that were saturated at 10-12 inches below the surface and had a water table at that same depth. Other sample plots had surface saturation and/or water table inundation. Saturation in the upper 12 inches of the soil profile and the presence of a shallow water table meet the criteria for wetland hydrology. Pockets of shallow inundation were observed in Wetland 1 in January 2014; however, most of the delineated wetland was not inundated.

During the follow up site visit on April 2, 2014, wetland hydrology indicators in Wetland 1 were consistent with the hydrology observed in January 2014. Likewise, uplands did not have any indicators of wetland hydrology in spite of above-normal rainfall in March 2014.

Wetland Rating

Wetland 1 is a contiguous wetland; however, using guidance in the Ecology rating system (Hruby 2004), it was split into two separate assessment units (Wetland 1a and 1b) based on the elevational break at the existing Mill Creek Park footbridge, where the flow of Mill Creek is unidirectional and down-gradient, and there is greater than one-half-foot change in elevation between the two assessment units. In addition, the wetland narrows between two depressions at the footbridge. Both wetlands are rated Category III using the Western Washington State Department of Ecology (Ecology) rating systems (Hruby 2004, Table 1). See Appendix D for the delineation of assessment units 1a and 1b.

	Western Washington Rating Score	
Functions	**Wetland 1a**	**Wetland 1b**
Water Quality	12/32	12/32
Hydrologic	6/32	6/32
Habitat	22/36	29/36
Total	40	47

Wetland 1a: Wetland 1a has a low water quality function score (8 points) because the wetland has limited potential to retain water and treat surface water runoff and does not have clay or organic soils which work to remove pollutants. Wetland 1a has a low hydrologic function score

(6 points) with little potential to reduce flooding and erosion during wet periods due to the unconstructed outlet at the breached dam. The habitat score is moderate in Wetland 1a due to two vegetation communities (emergent and scrub shrub), multiple hydroperiods, moderate interspersion of habitats, and a single habitat feature. There are at least three other wetlands within a half mile of Wetland 1a with undisturbed connections and the wetland is part of a relatively unbroken vegetated corridor to the north of the study area along the stream corridor that is at least 250 acres in size.

Wetland 1b: Wetland 1b has a low water quality function score (12 points) because the wetland does not retain water nor have characteristics such as organic soils or seasonal ponding to substantially treat surface water runoff. Wetland 1b has the same hydrologic function score (6 points) as Wetland 1a because there is little potential to reduce flooding and erosion during wet periods due to the unconstricted outlet at the breached dam. In addition, the wetland unit size is much smaller than the contributing drainage basin (over 1,000 acres) and therefore is not expected to reduce peak flows. The habitat score is moderately high due to multiple vegetation communities (emergent, scrub shrub and forested), two hydroperiods and a high interspersion of habitats to diversity of vegetation communities. Wetland 1b has many special habitat features including large woody debris (Photo 14), snags, undercut banks with overhanging vegetation, steep banks along the stream and at least a quarter acre of thin stemmed persistent vegetation. There are at least three other wetlands within a half mile of Wetland 1b with undisturbed connections and the wetland is part of a relatively unbroken vegetated corridor to the north of the study area along the stream corridor that is at least 250 acres in size.

3.1.2 Wetland 2

Palustrine Scrub-Shrub, Broad-Leaved Deciduous
Category III
0.14 acres total

Wetland Description

Wetland 2 is a slightly sloped wetland (2-5%) located north of Wetland 1 near the right bank of Mill Creek downstream from the dam. Surface water from Wetland 2 discharges to Mill Creek via a culvert under the Mill Creek park trail; subsurface water from Wetland 2 also reaches Mill Creek under the trail. Wetland 2 receives hydrology from seep discharge from upslope to the north. (Figure 2, Photos 20 through 23).

Vegetation

The dominant plants in Wetland 2 include red alder (Alnus rubra, FAC), salmonberry (Rubus spectabilis, FAC), California black currant (Ribes bracteosum, FAC), licorice fern (Polypodium glycyrrhiza, FAC), piggy-back plant (Tolmiea menziesii, FAC) and lady fern (Athyrium filix-femina, FAC). The presence of these plant species meets the wetland vegetation criteria.

Soils

Soils in Wetland 2 vary between a sand and loam texture. Soils generally consist of a black (10YR2/1) silt loam over very dark brown (7.5YR2.5/3) silt loam over dark grayish brown (10YR4/2) sandy loam with redoximorphic features. Soils in Wetland 2 meet the hydric indicators for a Sandy Redox (S5) and Redox Dark Surface (F6).

Hydrology

Soils in Wetland 2 were saturated at around 9 inches and the water table was observed at 11 inches below the surface of the sample soil pits. Saturation in the upper 12 inches of the soil profile and a shallow water table meet the wetland hydrology criteria.

Wetland Rating

Wetland 2 is rated a Category III using the Western Washington State Ecology rating system (Hruby 2004, Table 1).

Functions	Western Washington Rating Score
Water Quality	4/18
Hydrologic	10/16
Habitat	20/36
Total	34

The low water quality function score of Wetland 2 reflects that slope wetlands are less effective at trapping sediment and tend to release water rather than trap it relative to other wetlands. Only a quarter of the area of Wetland 2 is covered by dense, uncut, herbaceous vegetation, which does not provide ideal sediment and pollutant trapping. Wetland 2 provides some opportunity to improve water quality because it is located to an adjacent residential area that discharges stormwater to the wetland. The hydrologic function score is low in Wetland 2 in general, because slope wetlands tend to provide less flood storage. Furthermore, Wetland 2 does not have substantial dense, rigid vegetation that can reduce velocity of surface flow during storms. Wetland 2 scored moderately high for habitat function based on presence of multiple vegetation structures, habitat features, undisturbed buffers, and unbroken connectivity to other wetlands and wildlife habitat in the area.

3.1.3 Wetland 3

Palustrine Forested, Broad-Leaved Deciduous/ Palustrine Scrub-Shrub, Broad-Leaved Deciduous
Category III
1.09 acres total

Wetland Description

Wetland 3 is a slope wetland located in the northwest portion of the park parcel (Figure 2, Photos 24 through 29). Wetland 3 is a large hillside seep wetland that drains to the left bank of Mill Creek. The western boundary of the wetland is comprised of fill slope forming C Street/Mill

Creek Drive to the north and west. This wetland has many hummocks and upland islands but was verified during field surveys to be a contiguous wetland at the top of slope just east of C Street/Mill Creek Drive. Mill Creek runs adjacent to Wetland 3 and composes the eastern boundary of the wetland.

Vegetation

The dominant tree species in Wetland 3 includes red alder. . Dominant shrubs and herbs present in Wetland 3 include vine maple (Acer circinatum, FAC), California black currant, Oregon crabapple (Malus fusca, FACW), salmonberry, red elderberry, piggyback-plant (Tolmiea menzeisii, FAC), yellow skunk cabbage (Lysichiton americanus, OBL), deer fern (Blechnum spicant, FAC), three-leaf foamflower (Tiarella trifoliata, FAC) and lady fern. The presence of these plant species meets the wetland vegetation criteria.

Soils

Soils in Wetland 3 generally consist of black (10YR 2/1) organic soils over a dark gray (10YR 4/1, 10YR4/2) silty clay loam or a silt loam with strong brown redoximorphic features (7.5YR 4/6 or 7.5YR3/4). One soil pit (SP3-3) had a final layer (15-21 inches) of 2.5YR3/1 (dark reddish gray) silt loam with redoximorphic features (7.5YR3/4). Soils in Wetland 3 meet the hydric indicators for, Muck (A10), Depleted Matrix (F3), Loamy Gleyed Matrix (F2) and Histic Epipedon (A2). One soil pit (SP 3-1) met the hydric soil indictor for Hydrogen Sulfide (A4).

Hydrology

Soils in Wetland 3 were generally saturated between zero and 12 inches. One plot (SP 3-15) had saturation at 14 inches: however it was included because of the abnormally low precipitation for January 2014. The water table was also observed at 12 inches from the surface of the sample soil pits. Saturation in the upper 12 inches of the soil profile and a shallow water table meet the wetland hydrology criteria.

Wetland Rating

Wetland 3 is rated a Category III using the Western Washington State Ecology rating system (Hruby 2004, Table 1).

Functions	**Western Washington Rating Score**
Water Quality	10/18
Hydrologic	6/16
Habitat	23/36
Total	39

As discussed for Wetland 2, slope wetlands are less effective at trapping sediment. Greater than half of the area of Wetland 3 is covered with dense, herbaceous vegetation which provides some opportunity for sediment control. C Street/Mill Creek Drive is located upslope of Wetland 3 and provides opportunity for water quality improvement from untreated stormwater discharge.

Overall, Wetland 3 received a low water quality score based on the steep slope and vegetation coverage of the wetland. Wetland 3 has small depressions throughout the wetland but they do not equal to greater than 10% of the surface area. Habitat functions in Wetland 3 scored moderate due to a low interspersion of habitat types, a single vegetation structure, two hydroperiods. Special habitat features in Wetland 3 include large woody debris, standing snags, undercut banks and minimal invasive species cover.

3.1.4 Wetland 4

Palustrine Scrub Shrub Broad-Leaved Deciduous
Category IV
0.02 acres total

Wetland Description

Wetland 4 is a steep slope wetland located in the northwest portion of the project area above the Mill Creek dam and adjacent to Mill Creek Drive (Figure 2, Photos 30 through 34). Wetland 4 is fed by groundwater seeps from the top of the slope.

Vegetation

The dominant shrubs and herbs present in Wetland 4 include devils club (Oplopanax horridus, FAC), California black currant, red elderberry, lady fern and piggyback-plant. The presence of these plant species meets the wetland vegetation criteria.

Soils

Soils in Wetland 4 were observed to have shallow topsoil over sandstone and depleted soils form in the shallow horizons. Soils in sample plots consisted of a very dark gray brown (10YR 3/2) silt loam over a dark grayish brown (10YR 4/2) silt loam with strong brown (7.5YR 4/6) redoximorphic features starting at 11 inches. These soil characteristics meet the Depleted Matrix (F3) indicator criteria for hydric soils.

Hydrology

Soils in Wetland 4 were saturated at 10 inches and the water table was observed at 15 inches from the surface of the soil pit. Saturation in the upper 10 inches of the soil profile meets the wetland hydrology criteria.

Wetland Rating

Wetland 4 is rated a Category IV using the Western Washington State Ecology rating system (Hruby 2004, Table 1).

Functions	Western Washington Rating Score
Water Quality	2/18
Hydrologic	6/16
Habitat	1836

Total	26

As discussed for Wetland 2 and 3, slope wetlands are less effective at trapping sediment. Greater than half of the area of Wetland 4 is covered with dense, herbaceous vegetation. This, in combination with a slope that is greater than 5%, results in an overall low water quality function. Wetland 4 has minimal potential to reduce velocity of surface flows during storms due to the lack of dense, uncut rigid vegetation present in the wetland. Wetland 4 scored moderately low for habitat function based on a single vegetation structure, single hydroperiod and no interspersion of habitat types. Special habitat features include large downed wood and less than 25% of the wetland is covered by invasive species.

3.2 Streams in the Study Area

The project area is located within Washington Water Resources Inventory Area (WRIA) 22. One stream, Mill Creek, was identified in the project area. Table 4 summarizes the classification of Mill Creek and photographs are provided in Appendix C.

Table 4. Summary of Streams in the Study Area

Stream Name	Tributary to	Stream Type[a]	USACE Jurisdiction[b]
Mill Creek	Chehalis River	F	RPW

[a] Summarized from WAC 222-16-030.
[b] TNW = Traditional Navigable Waters; RPW = Relatively Permanent Water (non-navigable tributary with relatively permanent flow year-round or continuous flow seasonally [≥ 3 months])

3.2.1 Mill Creek

Mill Creek is a tributary of the Chehalis River and is the only stream within the project area (Photos 35 to 48). It is a perennial stream that originates from the surrounding hills, south of the project area and is fed by runoff, and groundwater seepage along the valley. At the north end of the park, Mill Creek flows through a culvert under C Street, and subsequently passes through a series of culverts under residential streets and flows are confined in many areas by artificially armored banks within residential properties with little to no overhanging vegetation cover. Downstream and north of the residential area, the stream retains more of its natural channel and continues through a tide gate at its confluence with the Chehalis River. The tide gates do not pose a passage barrier to fish moving to or from the Chehalis River during the majority of flow conditions when the tide gates would be open. During extreme storm events, the water pressure and elevation causes the tide gates to close and therefore blocks access to Mill Creek during these periods.

Mill Creek is inventoried as a perennial stream with no natural barrier to the Chehalis River and is designated as a Type F stream (WDNR 2014). The only salmonid species documented to inhabit Mill Creek is coho salmon (*Onchorhynchus kisutch*) (WDFW 2014b). Coho typically spend 1 to 2 years rearing in freshwater before migrating out to the ocean in the spring between March and June. During this time they inhabit pools and areas with cover from woody debris or other structure. In winter, coho juveniles can move both upstream and downstream into pools and off-channel areas. Coho remain in the ocean for 1 to 2 years before returning to spawn in September through November (Wydoski and Whitney 2003). Coho are highly tolerant of degraded habitat and are commonly found in residential areas and streams channeled through ditches (Wydoski and Whitney 2003).

Prior to the breach, the dam posed as an impassible barrier and marked the upstream extent of coho presence (HDR 2012). Spawning gravel is present in the reach immediately downstream of the dam in Mill Creek Park, and several redds have been recorded and flagged in this reach. This reach has vegetation cover from a mature tree canopy, as well as understory vegetation. There is also an area of open grass and public access to the stream on the northeast side of the reach. The substrate is embedded with sand and some silt, and a few small areas of gravel that provide spawning habitat. Suitable spawning habitat for coho consists of flowing water at depths of 18 cm or more and gravel substrate with particle sizes in the range of 1 to 10 cm (Bjornn and Reiser 1991) depending on the size of the fish, with smaller fish using smaller sized substrates for redd construction.

The breached dam still poses a partial barrier at high flows and a full barrier at low flows. Prior to the dam breach, Rainbow trout (*Oncorhynchus mykiss*) were stocked in the pond upstream of the dam for recreational fishing. Since then there have also been a few reports of steelhead observed by park officials.

Upstream of the breached dam, within the park, Mill Creek has formed a single low gradient main channel through Wetland 1. Upstream of the park, Mill Creek flows along the bottom of a forested valley. Riparian vegetation is dominated by a canopy of red western cedar. The understory is sparsely vegetated with lady fern, thimbleberry (*Rubus parviflorus*), starflower (*Trientalis borealis*), hemlock saplings and moss species.

Large Woody Debris (LWD) is a key component for maintaining habitat complexity and stabilizes streambeds by minimizing scour and provides excellent cover and habitat diversity (Harmon et al. 1986) for salmonids. LWD also helps maintain the hydraulic stability of critical instream habitat features, especially pools (Bilby and Ward 1991). LWD dissipates hydraulic energy during peak flows, providing high-flow refuge for salmonids (Bilby 1984). LWD is abundant upstream of the footbridge at the south end of the park and some LWD is present below the footbridge within the Wetland 1 reach.

The stream channel in the park area is fairly uniform in width (18 feet average), then narrows upstream of the footbridge (15 feet average width) where multiple small channels are present south of the project area. The stream meanders through Wetland 1(below the footbridge) and is dominated by glide habitat but also contains 6 pools within the surveyed reach. Water depths in the stream at the time of the survey (January 23, 2014) ranged from 10 cm in the shallow runs to a little over 1 m in some of the pools. The majority of the substrate in this entire reach is comprised of sand and silt substrate with some organic debris. This area provides good rearing habitat for juvenile salmonids such as coho, with pools interspersed in the reach along with the cover and structure provided by the LWD. Suitable spawning gravels were not present in the surveyed project reach upstream of the breached dam. More detailed description of Mill Creek and fish habitat is presented in the Fish and Aquatic Habitat Assessment Report.

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Appendix A – Wetland Delineation Methods

Wetlands are defined as areas saturated or inundated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. The methods used to delineate the on-site wetlands conform to methods described in the, the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), and *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). All delineated wetlands were instrument-surveyed and mapped on project base maps.

To be considered a wetland, an area must have hydrophytic vegetation, hydric soils, and wetland hydrology. HDR staff collected data on these parameters in areas representative of typical site conditions. Staff collected additional data in associated uplands, as needed, to confirm wetland and stream boundaries. Wetland boundaries and wetland data plot locations in the project area were marked with sequentially-numbered flagging.

Vegetation

The dominant plants and their wetland indicator status were evaluated to determine if the vegetation was hydrophytic. To determine which plants were dominate at a sample plot biologists applied the 50/20 rule per Corps recommendations. Under this guidance absolute cover estimates were made for each species found rooted within the sample plot, for each vegetative strata found in the habitat (tree, sapling/shrub, herb, and woody vine). The species that had the most cover was included along with the next species until the absolute cover of these totaled more than 50% of the total absolute cover. Any other species that represented at least 20% of the total absolute cover was also included as a dominant species for that vegetative strata.

Sample plots varied in size depending on site topography and habitat complexity. The objective of establishing a plot was to depict particular plant associations that reflect specific water regimes or other ecological factors. Therefore, on steep-sided riparian areas, a plot may consist of a narrow strip along the water's edge or within a floodplain a plot may be a standard 30-foot circle.

Hydrophytic vegetation is defined as vegetation adapted to wetland conditions. To meet the hydrophytic vegetation criterion, more than 50% of the dominant plants in each stratum must be Facultative, Facultative Wetland, or Obligate, based on the wetland indicator category assigned to each plant species by the Corps (NWPL of the US Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Remote Sensing and Geographic Information System (http://www.crrel.usace.army.mil/). Table A-1 lists the definitions of the indicator categories.

Table A-1. Definitions of Wetland Plant Indicator Categories used to Determine the Presence of Hydrophytic Vegetation

Wetland Indicator Category	Symbol	Definition
Obligate Wetland Plants	OBL	Plants that almost always (> 99% of the time) occur in wetlands, but which may rarely (< 1% of the time) occur in non-wetlands.
Facultative Wetland Plants	FACW	Plants that often (67 to 99% of the time) occur in wetlands, but sometimes (1 to 33% of the time) occur in non-wetlands.
Facultative Plants	FAC	Plants with a similar likelihood (34 to 66% of the time) of occurring in both wetlands and non-wetlands.
Facultative Upland Plants	FACU	Plants that sometimes (1 to 33% of the time) occur in wetlands, but occur more often (67 to 99% of the time) in non-wetlands.
Upland Plants	UPL	Plants that rarely (< 1% of the time) occur in wetlands, and almost always (> 99% of the time) occur in non-wetlands.

Source: Lichvar et al. (2012).

HDR biologists identified plants to species in the field and estimated percent cover of dominant plants. Scientific and common plant names follow currently accepted nomenclature. Most names are consistent with *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973) and the PLANTS Database (USDA NRCS 2012). During the field investigation, staff observed and recorded the dominant plant species on data sheets for each data plot.

Soils

Generally, an area must contain hydric soils to be a wetland. Hydric soil forms when soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (12 inches). Biological activities in saturated soil result in reduced oxygen concentrations and organisms turn to anaerobic processes for metabolism. Over time, anaerobic biological processes result in certain soil color patterns, which are used as indicators of hydric soil. Typically, low-chroma colors are formed in the soil matrix, and bright-colored redoximorphic features form within the matrix. Other important hydric soil indicators include organic matter accumulations in the surface horizon, reduced sulfur odors, and organic matter staining in the subsurface (USDA NRCS 2010).

HDR staff examined soils by excavating sample pits to a depth of 20 inches to observe soil profiles, colors, and textures. In some cases, a shallower soil pit was adequate to document hydric soil indicators. Munsell color charts (Munsell Color 2009) were used to describe soil colors.

Hydrology

Project staff examined the area for evidence of hydrology. Wetland hydrology criteria were considered to be satisfied if it appeared that the soil was seasonally inundated or saturated to the surface for a consecutive number of days greater than or equal to 12.5% of the growing season. The growing season for the area was determined based on the period in which temperatures are above 28 degrees Fahrenheit 5 out of 10 years (Ecology 1997) using the long-term climatological data collected by the U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS 2002). Using the WETS table for the nearest station (HOQUIAM BOWERMAN AP, WA225), the growing season was approximated to be from February 1 through December 20 (322 days). Biologic indicators of the start of growing season were observed during the January 2014 field visit, including emergence of herbaceous plants from the ground, bud burst on woody plants, and appearance of new growth from vegetative crowns.

Primary indicators of hydrology include surface inundation and saturated soils. Secondary indicators of hydrology include drainage patterns, watermarks on vegetation, water-stained leaves, and oxidized root channels (USACE 2010).

Appendix B – Wetland Delineation Data Sheets

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

Project/Site: Cosmopolis Dam — City/County: Cosmopolis/ Grays Harbor — Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis — State: WA — Sampling Point: SP A-1

Investigators: Lisa Danielski — Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression — Local Relief (concave, convex, none): Concave — Slope(%):

Subregion (LRR): A — Lat: 46° 57' 0.86" N — Long: 123° 46' 21.25" W — Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes — NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes** ___ **No** **X**

Remarks:
This plot meets the criteria for a wetland. Sample plot In Wetland 1, near dam. Below normal rainfall for January. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Most PHAR is senesed; ~5% is emerging. Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP A-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR 3 / 2	80	5YR 4/6	20	C	M	SILT LOAM	
10 to 12	10YR 4 / 2	80	5YR 4/6	20	C	M	SANDY LOAM	
12 to 15	10YR 4 / 1	80	5YR 4/6	20	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		12
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? Yes X No

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

Remarks:
High water table and saturation level meet indicators for wetland hydrology.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP A-2

Investigators: Lisa Danielski Dangelei Fox Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%)

Subregion (LRR): A Lat: 46° 57' 0.71" N Long: 123° 46' 21.24" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Marginal hydrology. This plot meets the criteria for a wetland. Sample plot located in Wetland 1 near dam. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Most PHAR is senesced with 5% emerging. Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP A-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 13	10YR 3 / 2	93	5YR 4/6	7	C	M	SILT LOAM	
13 to 20	10YR 3 / 1	90	5YR 4/4	10	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
Decomposed wood. This area meets hydric soil indicator for Redox Dark Surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		14
Saturation Present? (includes capillary fringe)	X		12

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Water table and saturation levels indicate wetland hydrology. Levels due to low amounts of precipitation for this time of year.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP A-3

Investigators: Lisa Danielski Dangelei Fox Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): ______ Local Relief (concave, convex, none): Concave Slope(%) ____

Subregion (LRR): A Lat: 46° 57' 0.41" N Long: 123° 46' 21.17" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Sample plot located in Wetland 1 near dam. This plot meets all 3 criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Scirpus microcarpus	90	Y	OBL
Impatiens noli-tangere	5	N	FACW
	95	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		100 (B)

Prevalence Index = B/A= 1.05

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP A-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 13	10YR 3 / 2	100	None				SILT LOAM	
13 to 17	5Y 4 / 1	100	None				SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
Soil is problematic in this area. Redoximorphic features may not be visible due to saturated soils. Hydric soils assumed based on presence of wetland hydrology and hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	-
Water Table Present?		X	8
Saturation Present? (includes capillary fringe)		X	0

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3). Pockets of ponding water present.

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

Project/Site: Comopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP B-1 UP

Investigators: Lisa Danielski, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%): 45

Subregion (LRR): A | Lat: 46° 57' 0.05" N | Long: 123° 46' 20.03" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on 1:1 slope, near toe of slope, below gravel trail. Area is a narrow shrubby fringe area between wooded slope and emergent basin. This plot does not meet all hydrology indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Sambucus racemosa	30	Y	FACU
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	50	Y	FACW
Carex obnupta	30	Y	OBL
Ranunculus repens	20	Y	FAC
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	30	x 1 = 30
FACW species	50	x 2 = 100
FAC species	20	x 3 = 60
FACU species	30	x 4 = 120
UPL species	0	x 5 = 0
Column Totals:	130 (A)	310 (B)

Prevalence Index = B/A= 2.38

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP B-1 UP

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2 / 2	100	NONE				SILT LOAM	
4 to 18	10YR 4 / 4	100	NONE				SILTY CLAY LOAM	
18 to 20	10YR 6 / 8	100	NONE				CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP B-1 WET

Investigators: Lisa Danielski Bruce Moreira | Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope | Local Relief (concave, convex, none): Concave | Slope(%) 0

Subregion (LRR): A | Lat: 46° 57' 0.17" N | Long: 123° 46' 19.91" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Emergent basin 5 feet from toe of slope. Paired with B1-Up. Sample plot located on west side of Wetland 1. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP B-1 WET

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 2	90	5R 4/6	10	C	M	SILT LOAM	
6 to 12	10YR 5 / 1	98	5R 4/6	2	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes X No ____

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		12
Saturation Present? (includes capillary fringe)	X		3

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP B-2

Investigators: Lisa Danielski Bruce Moreira Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%): 0

Subregion (LRR): A Lat: 46° 57' 0.37" N Long: 123° 46' 19.76" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil X, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located in low area of depressional wetland approximately 20 ft upstream from an area of standing water in Wetland 1. Plot positioned between upland island area and slope at edge of wetland. This plot meets the criteria near a wetland edge. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP B-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 18	10YR 3 / 3	90	7.5 YR 4/6	10	C	M	SILT LOAM	
18 to 20	5G 5 / 1	100	None				SANDY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Hydric soils are assumed based on presence of wetland hydrology and hydrphytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	None
Water Table Present?	X		18
Saturation Present? (includes capillary fringe)	X		12

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology indicators present for and saturation (A3); below normal rainfall.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP C-1

Investigators: Lisa Danielski, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRR): A | Lat: 46° 57' 0.23" N | Long: 123° 46' 20.23" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil X, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes X No ___**

Remarks:
Plot located in lowest/wettest part of Wetland 1 between slope at edge of floodplain and stream channel. Plot is in likely old stream channel that has been abandoned. Photo 1032. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	60	Y	FACW
Oenanthe sarmentosa	30	Y	OBL
Impatiens noli-tangere	20	N	FACW
	110	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	80	x 2 =	160
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		190 (B)

Prevalence Index = B/A= 1.73

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP C-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 4	100	None				SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
No indicator met, but soil is problimatic. Soils assumed hydric based on presence of wetland hydrology and hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	-
Water Table Present?	X		1
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP C-2

Investigators: Lisa Danielski Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRR): A Lat: 46° 57' 0.55" N Long: 123° 46' 20.12" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Lowest part of basin/drainage between narrow upland lobe and plot C1. Close to Wetland 1 boundary and upland island. Photo 1031. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	95	Y	FACW
Scirpus microcarpus	5	N	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		195 (B)

Prevalence Index = B/A= 1.95

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

Meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP C-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 3	80	7.5 YR 4/6	20	C	M	SILTY CLAY LOAM	
6 to 12	10YR 4 / 1	70	10 YR 3/2	20	C	M	CLAY LOAM	
6 to 12	/		7.5 YR 4/6	10	C	M		

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Problematic soils. Hydric soils assumed based on wetland hydrology and hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	-
Water Table Present?	X		12
Saturation Present? (includes capillary fringe)	X		6

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam   City/County: Cosmopolis/ Grays Harbor   Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis   State: WA   Sampling Point: SP C-3

Investigators: Brendan Baughn   Bruce Moreira   Section, Township, Range S 23   T 17 N   R 9 W

Landform (hillslope, terrace, etc.): Depression   Local Relief (concave, convex, none): Convex   Slope(%) 0

Subregion (LRR): A   Lat: 46° 57' 0.76" N   Long: 123° 46' 20.27" W   Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes   NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic?   (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located at edge of stream bank a short distance from upland island area. Plot located along edge of low depressional area of floodplain. This plot meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP C-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 3 / 2	90	7.5 YR 5/6	10	C	M	SILT LOAM	
20 to 26	10Y 3 / 1	80	7.5 YR 4/6	20	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
This area meets hydric soil indicator for Redox Dark Surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		22
Saturation Present? (includes capillary fringe)	X		16

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Can be argued to meet secondary indicators for wetland hydrology based on drier than normal conditions.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP C-4

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): ____ Local Relief (concave, convex, none): ____ Slope(%) 0

Subregion (LRR): A Lat: 46° 57' 0.87" N Long: 123° 46' 20.17" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located at edge of stream on low, narrow plateau above OHWM in Wetland 1. Area is representative of riparian wetland areas along stream channel in this part of the stream. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	100	x 2 = 200
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP C-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 18	10YR 3 / 3	80	7.5 YR 5/6	20	C	M	SILT LOAM	
18 to 20	10YR 2 / 1	90	2.5 YR 3/3	10	C	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
Meets indicator for hydrogen sulfide (A4).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		16
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Wetland hydrology indicators for high water (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP D-1

Investigators: Lisa Danielski Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRR): A Lat: 46° 56' 59.81" N Long: 123° 46' 19.45" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located between gravel trail and Wetland 1 area. Positioned on 1:1 side slope below edge of gravel trail. Photo 1033. This site does not meet the criteria to be classified as a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	30	Y	FAC
	30	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Sambucus racemosa	20	Y	FACU
	20	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Oenanthe sarmentosa	10	Y	OBL
Phalaris arundinacea	10	Y	FACW
	20	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	10	x 2 = 20
FAC species	30	x 3 = 90
FACU species	20	x 4 = 80
UPL species	0	x 5 = 0
Column Totals:	70 (A)	200 (B)

Prevalence Index = B/A= 2.86

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP D-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 3	100	None				SILT LOAM	
6 to 21	10YR 4 / 3	80	7.5 YR	20	C	M	SILTY CLAY LOAM	
21 to 24	10YR 6 / 3	80	7.5 YR	20	C	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP D-2

Investigators: Lisa Danielski Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRR): A Lat: 46° 56' 59.95" N Long: 123° 46' 19.34" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located between slope at edge of floodplain and upland island. Borderline wetland area based on lack of soil criteria. This site does not meet the criteria to be classified as a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP D-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 18	10YR 3 / 3	100	5 YR 5/8	20	C	M	SILT LOAM	
18 to 21	5G 5 / 1	100	None				SANDY CLAY LOAM	
21 to 24	5G 5 / 1	100	None				SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
No indicator met. (3/3 does not meet criteria for surface layer on A12.)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:
Could be argued to meet B10 because of the directional matting of Reed Canary Grass around plot. This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam　City/County: Cosmopolis/ Grays Harbor　Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis　State: WA　Sampling Point: SP D-3

Investigators: Lisa Danielski　Bruce Moreira　Section, Township, Range: S 23　T 17 N　R 9 W

Landform (hillslope, terrace, etc.): Depression　Local Relief (concave, convex, none): Concave　Slope(%): 0

Subregion (LRR): A　Lat: 46° 57' 0.12" N　Long: 123° 46' 19.11" W　Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes　NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed?　Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic?　(If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on upland island adjoining Wetland 1. Soils are heavily layered and generated from variable parent material. This site does not meet the criteria to be classified as a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Alnus rubra	40	Y	FAC
	40	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across all Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	140 (A)		320 (B)

Prevalence Index = B/A= 2.29

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP D-3

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

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 15	10YR	3 / 4	80	10YR 5/4	20	C	M	SILT LOAM	
15 to 18	10YR	6 / 8	90	10YR 5/4	10	C	M	SANDY CLAY LOAM	
18 to 21	10YR	3 / 4	80	10YR 5/4	20	C	M	SILT LOAM	
21 to 27	10YR	6 / 8	90	10YR 5/4	10	C	M	SANDY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:
No indicator met.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

Remarks:
Could be argued to meet B10 because of the directional matting of Reed Canary Grass around plot. This sample does not meet any primary hydrology indicators.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/21/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP D-4

Investigators: Lisa Danielski Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Convex Slope(%) 0

Subregion (LRR): A Lat: 46° 57' 0.53" N Long: 123° 46' 18.53" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Plot located at highest point of upland island in adjoining Wetland 1. Located between existing stream channel and abandoned stream channel. This plot does not meet all wetland criteria. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Alnus rubra	60	Y	FAC
	60	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	75	Y	FACW
Scirpus microcarpus	25	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	75	x 2 =	150
FAC species	60	x 3 =	180
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		355 (B)

Prevalence Index = B/A= 2.22

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP D-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 24	10YR 3 / 3	80	7.5 YR 5/8	20	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ____ No X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam — City/County: Cosmopolis/ Grays Harbor — Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis — State: WA — Sampling Point: SP E-1

Investigators: Brendan Baughn, Bruce Moreira — Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Terrace — Local Relief (concave, convex, none): Convex — Slope(%): 5

Subregion (LRR): A — Lat: 46° 57' 1.72" N — Long: 123° 46' 20.74" W — Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes — NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot is located on side of gravel embankment for recreational trail. Attempted to find location for plot which was not on embankment, but holes dug below embankment (i.e. Plot E2) met wetland criteria. Trail runs entire edge of wetland. This site does not meet the criteria to be classified as a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Bare Ground	85		
Rubus spectabilis	10	Y	FAC
Taraxacum officinale	5	Y	FACU
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	15 (A)		50 (B)

Prevalence Index = B/A= 3.33

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

This sample does not meet any vegetative indicators.

SOIL

Sampling Point: SP E-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 3	10YR 3 / 3	75	2.5 YR 4/4	25	C	M	Gravel Fill Material	Gravel Fill. Disturbance not allowed due to trail damage.

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ____ No X

Remarks:
Gravel fill through out with a hard surface after 3". This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Comopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP E-2

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave Slope(%) 10

Subregion (LRR): A Lat: 46° 57' 1.67" N Long: 123° 46' 20.80" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot is located near toe of slope of gravel embankment. Plot located at edge of northeast end of Wetalnd 1. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	95	Y	FACW
Rubus spectabilis	5	N	FAC
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		205 (B)

Prevalence Index = B/A= 2.05

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP E-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 3	100	None				SILT LOAM	
6 to 16	5GY 3 / 1	90	5GY/4	10	D	M	SANDY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes X No ____

Remarks:
Soils meet S4. This area meets hydric soil indicator for sandy gleyed matrix (S4).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	-
Water Table Present?	Yes	X	No		Depth (inches):	14
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	10

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Wetland hydrology indicator present for saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP E-3

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) 2

Subregion (LRR): A Lat: 46° 57' 1.52" N Long: 123° 46' 20.89" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located in shallow depression in Wetland 1 20 feet from edge of stream. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	50	Y	FACW
Typha latifolia	50	Y	OBL
Rubus spectabilis	5	N	FAC
	105	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	50	x 1 = 50
FACW species	50	x 2 = 100
FAC species	5	x 3 = 15
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	105 (A)	165 (B)

Prevalence Index = B/A= 1.57

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP E-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 3 / 1	100	None				SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
This area meets hydric soil indicator for Hydrogen Sulfide (A4).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No	Depth (inches): 1
Water Table Present?	Yes X	No	Depth (inches): surface-
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): -surface

Wetland Hydrology Present? Yes X No

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

Remarks:
Standing water was observed at the surface in a area dominated by cattail. Wetland hydrology meets indicators for surface water (A1), high water table (A2), saturation (A3) and hydrogen sulfide odor (C1).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP F-1

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRR): A Lat: 46° 57' 1.36" N Long: 123° 46' 20.30" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on side slope along floodplain of stream about 20 feet from stream bank in Wetland 1. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
Juncus effusus	5	N	FACW
Scirpus microcarpus	5	N	OBL
	110	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	105	x 2 =	210
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		215 (B)

Prevalence Index = B/A= 1.95

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP F-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 2	80	5YR 4/6	20	C	M	SILT LOAM	
6 to 12	10YR 3 / 1	95	5YR 4/6	5	C	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This area meets hydric soil indicator for a redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		10
Saturation Present? (includes capillary fringe)	X		4

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:
Wetland hydrology indicator present for a high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP F-2

Investigators: Brendan Baughn Bruce Moreira | Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Terrace | Local Relief (concave, convex, none): Concave | Slope(%) 0

Subregion (LRR): A | Lat: 46° 57' 1.13" N | Long: 123° 46' 20.25" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil X, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located 5 feet from OHWM of stream on low, narrow plateau running parallel to stream channel in Wetland 1. Meets criteria for wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	50	Y	FACW
Scirpus microcarpus	50	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	50	x 1 = 50
FACW species	50	x 2 = 100
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	150 (B)

Prevalence Index = B/A= 1.50

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation
X Dominance Test > 50%
X Prevalence Index ≤ 3.0
___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP F-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 3 / 4	80	7.5 YR 4/6	20	C	M	SILT LOAM	
4 to 12	10YR 3 / 1	100	None				SILTY CLAY LOAM	
12 to 13	5GY 3 / 1	100	None				SANDY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Because of a high water table and saturatoin redox cannot be identified in the matrix. Hydric soils assumed due to obligate vegetation and high levels of hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	-
Water Table Present?	X		5
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP G-1

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Concave Slope(%) 10

Subregion (LRR): A Lat: 46° 57' 1.31" N Long: 123° 46' 19.61" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located 10 feet from edge of stream, approximately 5 feet in elevation above current water level near Wetland 1. This plot does not meet all hydrology indicators.Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	50	Y	FACW
Scirpus microcarpus	50	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		150 (B)

Prevalence Index = B/A= 1.50

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP G-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 6	10YR 3 / 3	100	None				SILT LOAM	
6 to 12	10YR 3 / 1	100	None				SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Problematic soils. Hydric soils assumed based on presence of wetland hydrology and hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		12
Saturation Present? (includes capillary fringe)	X		6

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology meets indicators for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP G-2

Investigators: Brendan Baughn, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%): 5

Subregion (LRR): A | Lat: 46° 57' 1.41" N | Long: 123° 46' 19.52" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil X, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on gravel fill at edge of gravel recreational trail. Adjacent to dock/bridge structure (wooden) which was moved here from impoundment wall area. Ground has recently been distrubed and fill placed in area. This plot does not meet all hydrology indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	10	Y	FAC
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	20	Y	FACW
Ranunculus repens	10	Y	FAC
	30	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	40 (A)		100 (B)

Prevalence Index = B/A= 2.50

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP G-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 5	10YR 3 / 1	100	None				Gravel Fill	Heavily distrubed soils/fill material.

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes ____ No X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam   City/County: Cosmopolis/ Grays Harbor   Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis   State: WA   Sampling Point: SP H-1

Investigators: Brendan Baughn   Bruce Moreira   Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope   Local Relief (concave, convex, none): Convex   Slope(%) 5

Subregion (LRR): A   Lat: 46° 57' 1.65" N   Long: 123° 46' 16.92" W   Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes   NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic?   (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on gravel recreational trail. Meets wetland criteria, however gravel trail has disturbed the wetalnd. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Ranunculus repens	40	Y	FAC
Bellis perennis	10	N	FACU
Cardamine oligosperma	10	N	FAC
Taraxacum officinale	10	N	FACU
	70	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	70 (A)		230 (B)

Prevalence Index = B/A= 3.29

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP H-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 2 / 2	99	10YR 5/8	1	C	M	Gravel	Surface of gravel trail.
8 to 12	10Y 5 / 1	80	5YR 5/8	20	C	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:
Soil surface is gravel fill. Strata below surface appears to be distrubed hydric soil which is saturated by horizontal water flow beneath trail surface. Soils meet hydric soil indicator for depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? **Yes** X **No** ______

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

Remarks:
Water appears to be seeping under gravel trail and maintaining soil saturation. Gravel trail surface shows no signs of innundation or saturation. Though soil is saturated at 10 inches, the area does not meet wetland hydrology criteria due to disturbance.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP H-2

Investigators: Brendan Baughn, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%) 5

Subregion (LRR): A | Lat: 46° 57' 1.61" N | Long: 123° 46' 16.98" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located at edge of trail embankment, 3 feet below wooded rails which form small retaining wall. This plot meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	75	Y	FACW
Ranunculus repens	25	Y	FAC
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		225 (B)

Prevalence Index = B/A= 2.25

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP H-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 6	10YR 2 / 2	100	None				SILT LOAM	
6 to 14	10YR 4 / 2	95	10YR 5/8	5	c	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This area meets hydric soil indicator for depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes		No		Depth (inches):
Surface Water Present?	Yes		No	X	-
Water Table Present?	Yes	X	No		12
Saturation Present? (includes capillary fringe)	Yes	X	No		6

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP H-3

Investigators: Brendan Baughn, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRR): A | Lat: 46° 57' 1.37" N | Long: 123° 46' 17.09" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil X, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes X No ___**

Remarks:
Plot located in wooded area at edge of depression in Wetland 1. Water ponding in isolated areas at surface. This plot meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Alnus rubra	70	Y	FAC
	70	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	70	Y	FACW
Juncus effusus	30	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	170 (A)		410 (B)

Prevalence Index = B/A= 2.41

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP H-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 1	100	None				SILTY CLAY LOAM	
6 to 12	10YR 4 / 2	100	None				SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
Soil is too wet to see redox in 4/2 layer. Due to present hydrology and vegetation, this soil is said to meet requirements for hydric. Problematic soils.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		4
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Water table at 4 inches in plot, but other areas nearby had surface ponding. Wetland hydrology meets indicators for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP H-4

Investigators: Brendan Baughn, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRR): A | Lat: 46° 57' 0.97" N | Long: 123° 46' 17.82" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on high point of stream embankment in Wetland 1. This plot meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	100	x 2 = 200
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP H-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 2	80	5 YR 3/4	20	C	M	SILTY CLAY	
6 to 14	10YR 3 / 3	70	7.5 YR 3/4	30	C	M	SILTY CLAY	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:
Soil has 6 inch deep crack/furrows between Reed Canary Grass clumps. Soil stratum measurements taken from top of furrows. This area meets hydric soil indicator for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	-
Water Table Present?	Yes ____	No X	Depth (inches):	-
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	10

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Soil has 6 inch deep crack/furrows between Reed Canary Grass clumps. Saturation measurement taken from top of furrows. Hydrology meets primary indicator saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP I-1

Investigators: Brendan Baughn   Bruce Moreira | Section, Township, Range: S 23   T 17 N   R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope | Local Relief (concave, convex, none): Convex | Slope(%):

Subregion (LRR): A | Lat: 46° 56' 59.69" N | Long: 123° 46' 16.56" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation X, Soil X, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes		No	X
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:
Plot located at edge of gravel recreational trail. Soils exhibit hydric characteristics and saturation is present at 6 inches. Due to disturbed nature of plot location and existing gravel trail at plot location, the area is not considered a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Bellis perennis	30	Y	UPL
Poa spp.	30	Y	NA
Ranunculus repens	25	Y	FAC
	85	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	30	x 5 =	150
Column Totals:	55 (A)		225 (B)

Prevalence Index = B/A= 4.09

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

X Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

Does not meet hydrophytic vegetation criteria because this area is on the top edge of the walking trail. This is a problematic area.

SOIL

Sampling Point: SP I-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 2 / 2	60	10YR 3/6	10	C	M	SILT LOAM/GRAVEL	Edge of gravel trail. Heavily disturbed soils.
0 to 20	/		10YR 2/1	30	D	M		

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:
This area meets hydric soil indicator for Redox Dark Surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		11
Saturation Present? (includes capillary fringe)	X		6

Wetland Hydrology Present? **Yes** X **No** ______

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

Remarks:
Wetland hydrology meets indicators for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP I-2

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Convex Slope(%): 0

Subregion (LRR): A Lat: 46° 56' 59.73" N Long: 123° 46' 16.73" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located at edge of slough/backwater area with standing water. 5 foot from base of slope leading to gravel trail. The site in Wetland 1 meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Scirpus microcarpus	75	Y	OBL
Juncus effusus	25	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	75	x 1 =	75
FACW species	25	x 2 =	50
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		125 (B)

Prevalence Index = B/A= 1.25

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP I-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 7	10YR 3 / 3	100	None				SILTY CLAY LOAM	
7 to 11	N 5 / 0	100	None				SILTY CLAY	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Hydric soils assumed based on presence of wetland hydrology and hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	-
Water Table Present?	X		7
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology meets indicators for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP I-3

Investigators: Brendan Baughn Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%): 10

Subregion (LRR): A | Lat: 46° 56' 59.78" N | Long: 123° 46' 17.19" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
Plot located at edge of slope between alder area (Plot I4) and open water slough/back water area (I2). This plot does not meet all wetland indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	90	Y	FACW
Juncus effusus	10	Y	FACW
Alnus rubra	5	N	FAC
	105	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	105 (A)		215 (B)

Prevalence Index = B/A= 2.05

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP I-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 3 / 3	70	5YR 4/6	30	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
Soils do not meet hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP I-4

Investigators: Brendan Baughn, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Top of Slope | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRR): A | Lat: 46° 56' 59.78" N | Long: 123° 46' 17.19" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil X, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on top of berm dominated by red alder. This plot does not meet all hydrology indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Alnus rubra	80	Y	FAC
	80	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	30	Y	FAC
Poa spp.	25	Y	NI
Polystichum munitum	10	N	FACU
Scirpus microcarpus	10	N	OBL
	75	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	0	x 2 =	0
FAC species	110	x 3 =	330
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	130 (A)		380 (B)

Prevalence Index = B/A= 2.92

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground = 25%. Vegetation meets dominance test and prevalence index.

SOIL

Sampling Point: SP I-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 4	10	None				SILT LOAM	
6 to 20	10YR 5 / 3	80	5YR 4/6	20	C	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
Soils do not meet indicators for hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
No primary or secondary indicators for wetland hydrology present.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP I-5

Investigators: Brendan Baughn, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%) 10

Subregion (LRR): A | Lat: 46° 56' 59.78" N | Long: 123° 46' 17.19" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on sloping area near banks of stream. Plot between stream and upland island in Wetland 1. This plot meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation
X Dominance Test > 50%
X Prevalence Index ≤ 3.0
___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP I-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3 / 3	90	5YR 3/4	10	C	M	SILTY CLAY LOAM	
6 to 12	5YR 4 / 6	100	None				SANDY CLAY LOAM	
12 to 16	10GY 2.5 / 1	100	None				SANDY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:
This area meets hydric soil indicator with redox depressions (F8).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	-
Water Table Present?	X		13
Saturation Present? (includes capillary fringe)	X		6

Wetland Hydrology Present? Yes X No ___

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

Remarks:
Wetland hydrology meets indicators for saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP J-1

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Concave Slope(%) 30

Subregion (LRR): A Lat: 46° 56' 58.43" N Long: 123° 46' 17.03" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located at edge of gravel trail on sideslope near Wetland 1. Soil pit not possible due to hard packed gravel surface. Plot assumed non-wetland because of existing gravel trail with no indicator of saturation or similar subsurface degradation due to wetland conditions. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	10	Y	FAC
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Ranunculus repens	20	Y	FAC
Taraxacum officinale	10	Y	FACU
Cardamine oligosperma	5	N	FAC
Juncus effusus	5	N	FACW
	40	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	35	x 3 =	105
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	50 (A)		155 (B)

Prevalence Index = B/A= 3.10

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ____ Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP J-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 1	Gravel /							Hard-pack gravel surface. Soil Pit not possible.

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Hard-packed gravel surface. Soil pit not possible. This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:
Hard-packed gravel surface. Soil pit not possible. This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP J-2

Investigators: Brendan Baughn, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Convex | Slope(%): 10

Subregion (LRR): A | Lat: 46° 56' 58.43" N | Long: 123° 46' 17.03" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil X, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on side slope between gravel trail and slough/backwater area in Wetland 1. Innundation during dry year strongly inidicates area is wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Scirpus microcarpus	100	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A= 1.00

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP J-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 14	10YR 2 / 2	100	None				SILTY CLAY	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
Problematic soils; redox not visible due to saturated soils. Assumed hydric based on presence of wetland hydrology and hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		4
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Wetland hydrology meets indicators for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP J-3

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) ____

Subregion (LRR): A Lat: 46° 56' 58.19" N Long: 123° 46' 17.65" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on slope along edge of upland island (Alder dominated) in Wetland 1. Positioned 4 feet from edge of open water slough/backwater area. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	75	Y	FACW
Ranunculus repens	25	Y	FAC
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		225 (B)

Prevalence Index = B/A= 2.25

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP J-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 3 / 2	80	10YR 4/6	20	C	M	SILT LOAM	
8 to 16	10YR 5 / 1	80	10YR 4/6	20	C	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes X No ____

Remarks:
This area meets hydric soil indicator with a redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		14
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Wetland hydrology meets indicators for saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP J-4

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Convex Slope(%) ____

Subregion (LRR): A Lat: 46° 56' 58.14" N Long: 123° 46' 18.10" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located on sloping area near banks of stream. Positioned on slope between stream and upland island. No saturation observed in plot down to 18". Area does not meet all criteria for wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Alnus rubra	10	Y	FAC
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	75	Y	FACW
Juncus effusus	20	Y	FACW
Athyrium filix-femina	10	N	FAC
Polystichum munitum	10	N	FACU
Carex obnupta	5	N	OBL
	120	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	95	x 2 = 190
FAC species	20	x 3 = 60
FACU species	10	x 4 = 40
UPL species	0	x 5 = 0
Column Totals:	130 (A)	295 (B)

Prevalence Index = B/A= 2.27

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP J-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 18	10YR 3 / 3	85	5YR 4/6	15	C	M	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP J-5

Investigators: Brendan Baughn Bruce Moreira Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Convex Slope(%) 10

Subregion (LRR): A Lat: 46° 56' 58.14" N Long: 123° 46' 18.26" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located 5 feet from OHWM on slope along stream bank. This site does not meet the criteria to be classified as a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP J-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 5	10YR 3 / 3	100	None				SILTY CLAY LOAM	
5 to 16	10YR 4 / 4	80	5YR 3/4	20	C	M	CLAY LOAM	
16 to 24	10Y 3 / 1	100	None				SILTY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 1-1

Investigators: Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): | Local Relief (concave, convex, none): None | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 0.50" N | Long: 123° 46' 22.21" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This site meets the criteria for a wetland. Located in Wetland 1 just upstream of dam. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	**Dominant Species**	**Indicator Status**
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	95	Y	FACW
Rumex obtusifolius	10	N	FAC
Oenanthe sarmentosa	2	N	OBL
Ranunculus repens	2	N	FAC
	109	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	2	x 1 = 2
FACW species	95	x 2 = 190
FAC species	12	x 3 = 36
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	109 (A)	228 (B)

Prevalence Index = B/A= 2.09

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 12	10YR 3 / 2	95	7.5YR 4/6	5	C	M	SILT LOAM	
12 to 15	10YR 2 / 1	93	7.5YR 4/6	70	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:
Quarry spalls in upper 12". This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?	____	X	____
Water Table Present?	____	X	13
Saturation Present? (includes capillary fringe)	____	X	9

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 1-2

Investigators: Lisa Danielski Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) ____

Subregion (LRR): A Lat: 46° 57' 0.50" N Long: 123° 46' 22.17" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Upland sample point paired with SP 1-1.This plot does not meet all wetland indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	10	Y	FAC
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	90	Y	FACW
Ranunculus repens	2	N	FAC
Rumex obtusifolius	1	N	FAC
Scirpus microcarpus	1	N	OBL
	94	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Hedera helix	1	N	FACU
	1	=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	90	x 2 =	180
FAC species	13	x 3 =	39
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	105 (A)		224 (B)

Prevalence Index = B/A= 2.13

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 15	10YR 3 / 2	100	None				LOAM	
15 to 18	2.5YR 4 / 1	98	10YR 4/6	2	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 1-3

Investigators: Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 56' 59.59" N | Long: 123° 46' 18.97" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Upland sample plot, south and upslope of SP1-1. This plot does not meet all wetland indicators. Position on upslope berm indicates not a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	95	Y	FACW
	95	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		190 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 19	10YR 2 / 2	95	7.5YR 4/6	5	C	M	FINE SAND	
19 to 21	10YR 4 / 1	90	5YR 4/4	10	C	M	FINE SANDY LOAM	
21 to 23	10YR 4 / 1	100	None				CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks:
This area meets hydric soil indicator for a redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 1-4

Investigators: Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 0.10" N | Long: 123° 46' 19.63" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This sample point is near the boundary of Wetland 1 and upland in middle of floodplain. Area meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	100	x 2 = 200
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-4

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

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR	3 / 2	93	5YR 4/6	70	C	M	SILT LOAM	
10 to 16	10YR	4 / 1	90	5YR 4/6	10	C	M	SILT LOAM	
16 to 19	GLEY 1	4 / 1	100	None				LOAMY SAND	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** X **No** ____

Remarks:
Aquic regime. This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		12
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:
Wetland hydrology indicators present for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 1-5

Investigators: Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 56' 59.93" N | Long: 123° 46' 19.54" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Area does not meet all wetland criteria. Edge plot between Wetland 1 and upland area in middle of floodplain. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	60	Y	FACW
Juncus effusus	30	Y	FACW
Scirpus microcarpus	10	N	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		190 (B)

Prevalence Index = B/A= 1.90

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR 2 / 1	95	7.5YR 4/6	5	C	M	FINE SANDY LOAM	
10 to 15	10YR 3 / 2	93	5YR 4/6		C	M	FINE SANDY LOAM	
15 to 23	7.5YR 3 / 2	100	None					

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This sample meets criteria for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	23

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
Saturation at the bottom of pit. This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 1-6

Investigators: Lisa Danielski, Dangelei Fox | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%) 2

Subregion (LRR): A | Lat: 46° 56' 59.36" N | Long: 123° 46' 18.89" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This site meets the criteria for a wetland. Located on west side of Wetland 1. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation
X Dominance Test > 50%
X Prevalence Index ≤ 3.0
___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

10-15% Emerging Reed Canary Grass as new growth. Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 13	7.5YR 3 / 2	90	5YR 4/6	10	C	M	SILT LOAM	
13 to 17	7.5YR 4 / 4	100	None				LOAMY SAND	
17 to 21	5Y 4 / 1	100	None				CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
This area meets hydric soil indicator for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		13
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology indicators present are high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 1-7

Investigators: Lisa Danielski Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%):

Subregion (LRR): A Lat: 46° 56' 59.19" N Long: 123° 46' 18.50" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
On Island 3. SP is at the high spot with marginal hydrology. This plot does not meet all wetland indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	75	Y	FACW
Scirpus microcarpus	25	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		175 (B)

Prevalence Index = B/A= 1.75

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation
X Dominance Test > 50%
X Prevalence Index ≤ 3.0
___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Small patch of alder on the top of the island. Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-7

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 18	10YR 3 / 2	90	5YR 4/4	10	C	M	FINE SANDY LOAM	
18 to 20	10YR 4 / 1	95	5YR 4/1	5	C	M	LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
Soils meet criteria for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	17
Saturation Present? (includes capillary fringe)		X	15

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 1-8

Investigators: Lisa Danielski | Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%)

Subregion (LRR): A | Lat: 46° 56' 56.76" N | Long: 123° 46' 17.04" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Area meets criteria for wetland indicators. Located on west side of Wetland 1 upslope of footbridge. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	50	Y	FACW
Scirpus microcarpus	45	Y	OBL
Ranunculus repens	5		FAC
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	45	x 1 = 45
FACW species	50	x 2 = 100
FAC species	5	x 3 = 15
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	160 (B)

Prevalence Index = B/A= 1.60

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-8

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 7	10YR 3 / 2	93	7.5YR 4/6	70	C	M	SANDY LOAM	
7 to 13	10YR 4 / 2	85	5YR 4/6	15	C	M	LOAMY SAND	
13 to 19	10YR 3 / 2	85	5YR 4/6				SANDY CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
This area meets hydric soil indicator for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		13
Saturation Present? (includes capillary fringe)	X		11

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Wetland hydrology meets indicators for high water table (A2) and saturation (A3). Low precip for this time of year.

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

Project/Site: Cosmopolis Dam   City/County: Cosmopolis/ Grays Harbor   Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis   State: WA   Sampling Point: SP 1-9

Investigators: Lisa Danielski   Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression   Local Relief (concave, convex, none): Concave   Slope(%)

Subregion (LRR): A   Lat: 46° 56' 56.81" N   Long: 123° 46' 17.14" W   Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes   NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic?   (If needed, explain any answers in Remarks.)

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

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

Remarks:
Paired upland plot, upslope from SP 1-8 on quarry spall fill. WL boundary is at the edge of fill. This plot does not meet all wetalnd criteria. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	40	Y	FACW
	40	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	50	Y	FACU
	50	=Total Cover	
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	90 (A)		280 (B)

Prevalence Index = B/A= 3.11

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

____ Dominance Test > 50%

____ Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes ____ No X**

Remarks: (Include photo numbers here or on a separate sheet.)

No hydrophytic vegetation present.

SOIL

Sampling Point: SP 1-9

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
Soil pit could not be excavated due to quarry spall.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
No primary or secondary indicators of wetland hydrology present.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 1-10

Investigators: Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 56' 56.74" N | Long: 123° 46' 18.34" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Paired upland sample point on west side on native hill slope west of Wetland 1. This sample does not meet any hydrology indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Tsuga heterophylla	20	Y	FACU
Pseudotsuga menziesii	10	Y	FACU
=Total Cover	30		
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Tolmiea menziesii	15	Y	FAC
Ranunculus repens	5	Y	FAC
=Total Cover	20		
Vine Stratum (Plot size: 30 Ft)			
Rubus ursinus	5	Y	FACU
=Total Cover	5		

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	20	x 3 = 60
FACU species	35	x 4 = 140
UPL species	0	x 5 = 0
Column Totals:	55 (A)	200 (B)

Prevalence Index = B/A= 3.64

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

This sample does not meet any vegetative indicators.

SOIL

Sampling Point: SP 1-10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 3 / 3	70	5YR 4/6	2	C	M	SANDY CLAY LOAM	
0 to 20	7.5YR 4 / 3	20	None					

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam   City/County: Cosmopolis/ Grays Harbor   Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis   State: WA   Sampling Point: SP 1-11

Investigators: Lisa Danielski   Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression   Local Relief (concave, convex, none): Concave   Slope(%) ____

Subregion (LRR): A   Lat: 46° 56' 56.70" N   Long: 123° 46' 18.12" W   Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes   NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic?   (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot in seep area of Wetland 1 south of footbridge. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Scirpus microcarpus	100	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A= 1.00

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2 / 2	100	None visible				FINE SANDY LOAM	
4 to 14	10G 4 / 1	100	None				LOAMY SAND	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
Redox was not visible due to saturated soils. This area meets hydric soil indicator for a Loamy Gleyed Matrix (F2).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:
Pockets of innundation at 1". Wetland hydrology meets indicators for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam   City/County: Cosmopolis/ Grays Harbor   Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis   State: WA   Sampling Point: SP 1-12

Investigators: Lisa Danielski   Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression   Local Relief (concave, convex, none): Concave   Slope(%):

Subregion (LRR): A   Lat: 123° 46' 17.61" W   Long: 46° 56' 56.66" N   Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes   NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic?   (If needed, explain any answers in Remarks.)

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

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

Remarks:
This site meets the criteria for a wetland. Located in Wetland 1 south of footbridge. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	10	Y	FAC
	10	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	95	Y	FACW
Scirpus microcarpus	5	N	OBL
	100	=Total Cover	
Vine Stratum			
% Bare Ground in Herb Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	95	x 2 =	190
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		225 (B)

Prevalence Index = B/A= 2.05

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1-12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 2 / 2	95	5YR 4/4	5	C	M	FINE SANDY LOAM	
8 to 14	10YR 3 / 1	60	None				FINE SANDY LOAM	
8 to 14	10G 3 / 1	40	None				FINE SANDY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:
This area meets hydric soil indicator for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Pockets of innundation 1" deep. Wetland hydrology meets indicators for surface water (A1), high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP WB 1-1

Investigators: Bruce Moreira, Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Convex | Slope(%): ____

Subregion (LRR): A | Lat: 46° 56' 58.81" N | Long: 123° 46' 17.02" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This site does not meet the criteria to be classified as a wetland. Located upslope of east side of Wetland 1. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Ranunculus repens	75	Y	FAC
Scirpus microcarpus	10	Y	OBL
Cardamine oligosperma	5	N	FAC
Polystichum munitum	5	N	FACU
	95	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	95 (A)		270 (B)

Prevalence Index = B/A= 2.84

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP WB 1-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 23	10YR 3 / 2.5	97	10YR 4/6	3	C	M	FINE SANDY LOAM	
23 to 24	2.5Y 4 / 1	98	10YR 4/6	2	C	M	SANDY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
Soils damp, but no saturation evident until 23". This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP WB 1-2

Investigators: Lisa Danielski, Zach Halstead | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 56' 58.83" N | Long: 123° 46' 17.16" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This plot meets the criteria for a wetland.Located on east side of Wetland 1 north of footbridge. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Scirpus microcarpus	80	Y	OBL
Juncus effusus	5	N	FACW
Impatiens noli-tangere	2	N	FACW
	87	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	7	x 2 =	14
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	87 (A)		94 (B)

Prevalence Index = B/A= 1.08

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetaion. 95% of cover is dead. 5% is emerging.

SOIL

Sampling Point: SP WB 1-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 7	10YR 3 / 2	85	7.5YR 3/4	15	C	M	SILT LOAM	
7 to 20	GLEY 2 4 / 10G	60	None				SANDY LOAM	
7 to 20	10YR 4 / 1	40	None				SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type: None

Depth (inches): N/A

Hydric Soil Present? **Yes** X **No** ___

Remarks:
This area meets hydric soil indicator with hydrogen sulfide (A4).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		14
Saturation Present? (includes capillary fringe)	X		surface

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:
Wetland hydrology meets indicators for saturation (A3), hydrogen sulfide odor (C1), and oxidized rhizospheres (C3) along living roots.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 1E-1

Investigators: Lisa Danielski Dangelei Fox Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Concave Slope(%) 6

Subregion (LRR): A Lat: 46° 56' 56.82" N Long: 123° 46' 16.63" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This plot does not meet all wetland indicators. Located on hillslope east of Wetalnd 1 upslope of footbridge. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	60	Y	FAC
	60	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Blechnum spicant	10	Y	FAC
Gentiana fremontii	4	Y	FACW
	14	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	4	x 2 =	8
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	74 (A)		218 (B)

Prevalence Index = B/A= 2.95

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1E-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 12	10YR 3 / 3	93	7.5YR 4/6	7	C	M	CLAY LOAM	
12 to 17	10YR 4 / 2	90	7.5YR 4/6	10	C	n	SANDY CLAY	loam w/ small rocks
17 to 20	10YR 4 / 2	80	5YR 4/6	20	C	M	SANDY CLAY	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ____ No X

Remarks:
Sample plot does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sample plot does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 1E-2

Investigators: Lisa Danielski Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%)

Subregion (LRR): A Lat: 46° 56' 56.51" N Long: 123° 46' 16.45" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This plot meets the criteria for a wetland. Located near east boundary of Wetland 1 south of footbridge. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	50	Y	FACW
Scirpus microcarpus	30	Y	OBL
Equisetum telmateia	25	Y	FACW
Carex obnupta	5	N	OBL
	110	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		185 (B)

Prevalence Index = B/A= 1.68

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1E-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 7	10YR 3 / 2	95	7.5YR 4/6	5	C	M	FINE SANDY LOAM	
7 to 13	10YR 4 / 1	97	7.5YR 4/6	3	C	M	LOAM	
13 to 17	2.5YR 4 / 1	93	7.5YR 4/6	7	C	PL	CLAY LOAM	M & PL

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:
This area meets hydric soil indicator for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		13"
Saturation Present? (includes capillary fringe)	X		11"

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Because of an extreme low precipitation for this time of year, it is assumed that the water table is normally higher and falls within the 12" mark. Wetland hydrology meets indicators f high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 1E-3

Investigators: Lisa Danielski Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) ____

Subregion (LRR): A Lat: 46° 56' 56.58" N Long: 123° 46' 16.84" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This plot meets the criteria for a wetland. Near right bank of Mill Creek south of footbridge in Wetland 1. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	50	Y	FACW
Scirpus microcarpus	50	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		150 (B)

Prevalence Index = B/A= 1.50

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 1E-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 7	10YR 2 / 2	98	7.5YR 4/6	2	C	M	CLAY LOAM	
7 to 14	2.5YR 4 / 1	98	7.5YR 4/6	2	C	M	CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes X No ____

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	14"
Saturation Present? (includes capillary fringe)	X		11"

Wetland Hydrology Present? Yes X No ____

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

Remarks:
Wetland hydrology indicator saturation (A3) is present.

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP Isl 2-1

Investigators: Lisa Danielski Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Top of Slope Local Relief (concave, convex, none): Concave Slope(%) ____

Subregion (LRR): A Lat: 46° 56' 58.45" N Long: 123° 46' 18.49" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This plot meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	80	Y	FACW
Scirpus microcarpus	20	Y	OBL
	100	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	80	x 2 = 160
FAC species	0	x 3 = 0
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	180 (B)

Prevalence Index = B/A= 1.80

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Island 2: Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP Isl 2-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR 3 / 2	98	7.5YR 4/4	2	C	M	FINE SANDY LOAM	
10 to 14	10YR 7 / 4	100	None				LOAMY SAND	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Meets criteria for redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):	
Water Table Present?	Yes	No X	Depth (inches):	15
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches):	10

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology meets indicators for saturation (A3).

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

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 2-1

Investigators: Bruce Moreira Lisa Danielski Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) 1

Subregion (LRR): A Lat: 46° 57' 2.29" N Long: 123° 46' 23.13" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Shallow wooded depression in sloped area. Overstory is alder snags, but most trunks are rooted outside of wetland boundary. No indicators of recent ponding. Ground water fed from seeps in adjacent slope. Sample plot meets all 3 wetland critiera. Sample plot located in Wetland 2. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	20	Y	FAC
Ribes bracteosum	10	Y	FAC
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Lysichiton americanus	5	Y	OBL
Tolmiea menziesii	5	Y	FAC
Oenanthe sarmentosa	1	N	OBL
	11	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	5	Y	FACU
Hedera helix	1	N	
	6	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	6	x 1 =	6
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	46 (A)		131 (B)

Prevalence Index = B/A= 2.85

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets dominance test and prevalence index. Bare ground = 80%.

SOIL

Sampling Point: SP 2-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 7	7.5 YR 4 / 4	90	5YR 4.6	10	C	M	FINE SANDY LOAM	
7 to 9	10YR 4 / 1	60	7.5YR 4/6	40	C	M	LOAMY SAND	
9 to 14	10YR 5 / 1	60	5YR 4/6	40	C	M	LOAMY SAND	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Problematic soils. Hydric soils assumed based on presence of wetland hydrology and hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	-
Water Table Present?	X		11
Saturation Present? (includes capillary fringe)	X		9

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

Saturation (A3), high water table (A2) and oxidized rhizospheres along living roots (C3) are the wetland hydrology indicators present.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 2-2

Investigators: Bruce Moreira, Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 2.02" N | Long: 123° 46' 22.87" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:
Wetland plot near edge of Wetland 2-2. Meets all wetland indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	20	Y	FAC
	20	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Ribes bracteosum	20	Y	FAC
Rubus spectabilis	5	N	FAC
Ilex aquifolium	2	N	FACU
	27	=Total Cover	
Herb Stratum			
Vine Stratum (Plot size: 30 Ft)			
hedera helix	5	N	FACU
	5	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	45	x 3 = 135
FACU species	7	x 4 = 28
UPL species	0	x 5 = 0
Column Totals:	52 (A)	163 (B)

Prevalence Index = B/A= 3.13

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation
X Dominance Test > 50%
___ Prevalence Index ≤ 3.0
___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 2-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 3	10YR 2 / 1	100	None				SILT LOAM	
3 to 6	7.5YR 2.5 / 3	90	7.5YR 4/6	10	C	M	SILT LOAM	
6 to 23	10YR 4 / 2	65	5YR 4/6	35	C	M	SANDY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This area meets hydric soil indicator with sandy redox (S5) starting at 6".

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	16
Saturation Present? (includes capillary fringe)	X		13

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:
Lower than normal precipitation. Wetland hydrology indicator present is saturation (A3) at 13".

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 2-3

Investigators: Bruce Moreira, Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Convex | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 1.89" N | Long: 123° 46' 22.73" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This site does not meet the criteria to be classified as a wetland. Upland sample plot south of Wetland 2. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	30	Y	FAC
	30	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	15	Y	FAC
Sambucus racemosa	15	Y	FACU
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Polystichum munitum	70	Y	FACU
Athyrium filix-femina	5	N	FAC
	75	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus ursinus	5	Y	FACU
	5	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	50	x 3 = 150
FACU species	90	x 4 = 360
UPL species	0	x 5 = 0
Column Totals:	140 (A)	510 (B)

Prevalence Index = B/A= 3.64

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

This sample does not meet any vegetative indicators.

SOIL

Sampling Point: SP 2-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 3 / 2	100					Gravely Sandy Loam	
4 to 16	10YR 5 / 6	68	7.5YR 4/6	2	C	M	CLAY LOAM	
4 to 16	10YR 6 / 3	30					CLAY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ____ No X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:
No hydrology within 17". This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 2-4

Investigators: Bruce Moreira, Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%): 2

Subregion (LRR): A | Lat: 46° 57' 2.54" N | Long: 123° 46' 23.77" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot located in shrubby open area inside alder forest on shallow slope. 15 feet from gravel trail. This site meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Ribes bracteosum	50	Y	FAC
Rubus spectabilis	15	Y	FAC
	65	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	10	Y	FAC
Polypodium glycyrrhiza	10	Y	FACU
Lysichiton americanus	5	N	OBL
	25	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Hedera helix	1	N	FACU
	1	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	0	x 2 = 0
FAC species	75	x 3 = 225
FACU species	11	x 4 = 44
UPL species	0	x 5 = 0
Column Totals:	91 (A)	274 (B)

Prevalence Index = B/A= 3.01

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ____ Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 2-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 4	7.5YR 2.5 / 2	100	None				LOAM	
4 to 10	7.5YR 3 / 2	95	5YR 3/4	5	C	M	SANDY CLAY LOAM	
10 to 15	10YR 4 / 2	75	7.5YR 4/6	25	C	M	SANDY LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
This area meets hydric soil indicator with a redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		12
Saturation Present? (includes capillary fringe)	X		9

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology meets indicators for high water table (A2) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 2-5

Investigators: Bruce Moreira Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRR): A | Lat: | Long: | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
Plot located on elevated point created by 2-3 alder tree root clusters. Soils were difficult to extract due to dense roots throughout area. This site does not meet the criteria to be classified as a wetland. Paired upland plot for east portion of Wetalnd 2. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	50	Y	FAC
	50	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Ribes bracteosum	20	Y	FAC
	20	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Polypodium glycyrrhiza	10	Y	NI
Polystichum munitum	10	Y	FACU
	20	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Hedera helix	10	Y	NI
	10	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	80 (A)		250 (B)

Prevalence Index = B/A= 3.13

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 2-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 2 / 2	100	None				LOAM	
8 to 16	10YR 4 / 4	100	None				SILTY CLAY LOAM	
16 to 20	10YR 5 / 2	80	7.5 YR 4/6	20	C	M	SILTY CLAY	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	18
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	14

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam   City/County: Cosmopolis/ Grays Harbor   Sampling Date: 1/22/2014

Applicant/Owner: City of Cosmopolis   State: WA   Sampling Point: SP 3-1

Investigators: Bruce Moreira   Lisa Danielski   Section, Township, Range S 23   T 17 N   R 9 W

Landform (hillslope, terrace, etc.): Hillslope   Local Relief (concave, convex, none): Convex   Slope(%) ____

Subregion (LRR): A   Lat: 46° 57' 1.64" N   Long: 123° 46' 24.63" W   Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes   NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic?   (If needed, explain any answers in Remarks.)

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

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

Remarks:
Plot Located in shallow depression on wooded slope in south portion of Wetland. Areas of surface water and shallow ponding were present in vicinity of plot. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Malus fusca	30	Y	FACW
Ribes bracteosum	30	Y	FAC
Alnus rubra	10	Y	FAC
	70 =Total Cover		
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	25	Y	FAC
Tolmiea menziesii	10	Y	FAC
Lysichiton americanus	5	N	OBL
	40 =Total Cover		
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	30	x 2 =	60
FAC species	75	x 3 =	225
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		290 (B)

Prevalence Index = B/A= 2.64

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation
X Dominance Test > 50%
X Prevalence Index ≤ 3.0
____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 1	10YR 3 / 1	100	None				Muck (Oa)	
1 to 12	10YR 3 / 1	100	None				SILTY CLAY	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Hydrogen sulfide smell noted from pit. This area meets hudric soil indicator for hydrogen sulfide smell (A4).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	X		1
Water Table Present?	X		Surface
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? Yes X No

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

Remarks:
Wetland hydrology meets indicators for high water table (A2), surface water (A1), hydrogen sulfide odor (C1) and saturation (A3).

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 3-2

Investigators: Bruce Moreira, Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 1.70" N | Long: 123° 46' 24.48" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
This plot does not meet all wetland indicators. Paired upland sample plot south of Wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	50	Y	FAC
Acer circinatum	15	Y	FAC
ilex aquifolium	5	N	FACU
	70	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Carex obnupta	15	Y	OBL
Athyrium filix-femina	5	Y	FAC
	20	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	90 (A)		245 (B)

Prevalence Index = B/A= 2.72

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation. 15% Bare ground

SOIL

Sampling Point: SP 3-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2 / 2	100	None				SILT LOAM	
4 to 10	10YR 3 / 3	100	None				SILTY CLAY LOAM	
10 to 15	7.5YR 3 / 1	100	None				SILT LOAM	
15 to 20	10YR 4 / 3	90	7.5YR 4/4	10	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This are does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:
This sample does not meet any hydrology indicators.

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

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 3-3

Investigators: Bruce Moreira, Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 1.99" N | Long: 123° 46' 24.62" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
This plot meets the criteria for a wetland. In south portion of wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Acer circinatum	25	Y	FAC
Rubus spectabilis	20	Y	FAC
	45	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Blechnum spicant	7	Y	FAC
Athyrium filix-femina	5	Y	FAC
Tiarella trifoliata	5	Y	FAC
	17	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	62	x 3 =	186
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	62 (A)		186 (B)

Prevalence Index = B/A= 3.00

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Dead leaves fill bare ground, which is about 25%. Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 6	10YR 2 / 1	100	None				Organic	Organic
6 to 15	10YR 4 / 2	70	7.5YR 4/6	30	C	PL	SILT LOAM	Matrix and Pore Lining (M/PL)
15 to 21	2.5YR 3 / 1	90	7.5YR 3/4	10	C	M	SILT LOAM	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils: [3]

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

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		10
Saturation Present? (includes capillary fringe)	X		4

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology meets indicators for high water table (A2) and saturation (A3) levels.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 3-4

Investigators: Bruce Moreira Lisa Danielski Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Local Relief (concave, convex, none): Concave Slope(%)

Subregion (LRR): A Lat: 46° 57' 2.00" N Long: 123° 46' 24.72" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland?	Yes ___ No X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks:
This plot does not meet all wetland indicators. Paired upland plot for SP 3-3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Picea sitchensis	30	Y	FAC
Alnus rubra	20	Y	FAC
	50	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Acer circinatum	15	Y	FAC
Rubus spectabilis	10	Y	FAC
Ilex aquifolium	5	N	FACU
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	2	Y	FAC
Blechnum spicant	2	Y	FAC
	4	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus ursinus	3	N	FACU
	3	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	79	x 3 =	237
FACU species	8	x 4 =	32
UPL species	0	x 5 =	0
Column Totals:	87 (A)		269 (B)

Prevalence Index = B/A= 3.09

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 3	7.5YR 2.5 / 2	100	None				SILT LOAM	
3 to 12	10YR 4 / 3	98	10YR 4/6	2	C	M	SILT LOAM	
12 to 17	10YR 4 / 2	90	7.5YR 3/4	10	C	M	SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	-
Water Table Present?	Yes ___	No X	Depth (inches):	-
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	-

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 3-5

Investigators: Bruce Moreira Lisa Danielski | Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%)

Subregion (LRR): A | Lat: 46° 57' 2.54" N | Long: 123° 46' 25.15" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** **X**
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes No X	

Remarks:
This site does not meet the criteria to be classified as a wetland. Verification plot between lobes of Wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Ilex aquifolium L.	10	Y	FACU
Ribes bracteosum	5	Y	FAC
	15	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Polystichum munitum	10	Y	FACU
Gymnocarpium dryopteris	5	Y	FAC
	15	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus ursinus	5	Y	FACU
	5	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	35 (A)		130 (B)

Prevalence Index = B/A= 3.71

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

This sample does not meet any vegetative indicators.

SOIL

Sampling Point: SP 3-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 3 / 3	100	None				SILT LOAM	
4 to 18	10YR 4 / 6	95	5YR 5/8	5	C	M	CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:
Soils do not meet criteria for hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	-
Water Table Present?		X	-
Saturation Present? (includes capillary fringe)		X	-

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam — City/County: Cosmopolis/ Grays Harbor — Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis — State: WA — Sampling Point: SP 3-6

Investigators: Bruce Moreira, Lisa Danielski — Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope — Local Relief (concave, convex, none): Convex — Slope(%):

Subregion (LRR): A — Lat: 46° 57' 2.64" N — Long: 123° 46' 25.09" W — Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes — NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:
Upland sample plot. This site does not meet the criteria to be classified as a wetland. Verification plot between lobes in Wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Ribes bracteosum	15	Y	FAC
Rubus spectabilis	15	Y	FAC
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	10	Y	FAC
Bryopsidae Spp.	5	Y	FAC
	15	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	45	x 3 =	135
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	45 (A)		135 (B)

Prevalence Index = B/A= 3.00

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2 / 2	100	None				FINE SANDY LOAM	
4 to 12	10YR 2 / 2	49	None					
4 to 12	10YR 3 / 2	49	7.5YR	2	C	M	LOAM	
12 to 20	7.5YR 4 / 6	100	None				LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	-
Water Table Present?		X	-
Saturation Present? (includes capillary fringe)		X	-

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 3-7

Investigators: Dangelei Fox Zach Halstead Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): ____ Local Relief (concave, convex, none): Concave Slope(%) ____

Subregion (LRR): A Lat: 46° 57' 2.98" N Long: 123° 46' 26.28" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	
Hydric Soil Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X No	

Remarks:
This plot meets the criteria for a wetland. In middle lobe of Wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	50	Y	FAC
Ribes bracteosum	10	N	FAC
	60	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	5	Y	FAC
Lysichiton americanus	5	Y	OBL
Tolmiea menziesii	5	Y	FAC
	15	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	75 (A)		215 (B)

Prevalence Index = B/A= 2.87

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

25% Bare Ground. Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 3	10YR 2 / 1	100	None					Organic
3 to 10	2.5YR 4 / 1	85	5YR 4/6	15	C	PL	SILTY CLAY LOAM	Root channels/pore linings
10 to 23	GLEY 1 5 / N	85	5YR 4/6	15	C	PL	SILTY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☑ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This area meets hydric soil indicator with a loamy gleyed matrix (F2) and a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☑ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	X		1"
Water Table Present?		X	19"
Saturation Present? (includes capillary fringe)	X		surface

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
1" deep, 2 feet deep surface water flowing approximately 5 feet from the sample plot. Wetland hydrology indicators present include reduced iron (C4), surface water (A1) and saturation (A3).

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 3-8

Investigators: Dangelei Fox Zach Halstead Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Concave Slope(%): ____

Subregion (LRR): A Lat: ____ Long: ____ Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:
This plot does not meet all wetland hydrology indicators. Paired upland plot for SP 3-7. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	30	Y	FAC
Skimmia japonica	20	Y	FACU
Ribes bracteosum	10	N	FAC
	60	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Polystichum munitum	20	Y	FACU
Athyrium filix-femina	5	Y	FAC
	25	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum ____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	45	x 3 =	135
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	85 (A)		295 (B)

Prevalence Index = B/A= 3.47

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

____ Dominance Test > 50%

____ Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **X** **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Bare ground is about 10%. Without invasive species, vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 5	10YR 2 / 2	100	None				SILT LOAM	
5 to 18	10YR 3 / 3	100	None				SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ____ No X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	-
Water Table Present?	Yes		No	X	Depth (inches):	-
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):	-

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 3-9

Investigators: Dangelei Fox Zach Halstead Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Local Relief (concave, convex, none): Concave Slope(%)

Subregion (LRR): A Lat: 46° 57' 3.12" N Long: 123° 46' 26.50" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	
Hydric Soil Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Wetland Hydrology Present?	Yes X No	

Remarks:
This plot meets the criteria for a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Ribes bracteosum	20	Y	FAC
Rubus spectabilis	20	Y	FAC
	40	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	10	Y	FAC
Tolmiea menziesii	5	Y	FAC
Lysichiton americanus	2	N	OBL
	17	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	57 (A)		167 (B)

Prevalence Index = B/A= 2.93

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

Leaf litter on ground covers about 50%. Vegetation meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 11	10YR 2 / 1	100	None				MUCK	
11 to 22	10YR 4 / 1	85	7.5YR 4/6	15	C	M	SILT LOAM	M & PL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes X No ____

Remarks:
This area meets hydric soil indicator with histic epipedon (A2).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		16
Saturation Present? (includes capillary fringe)	X		4

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Weeping at 7". Wetland hydrology indicator saturation (A3) prsent.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 3-10

Investigators: Dangelei Fox Zach Halstead Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): Concave Slope(%)

Subregion (LRR): A Lat: 46° 57' 3.29" N Long: 123° 46' 26.65" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:
This sample does not meet all wetland criteria. Paired upland plot for SP 3-9. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	50	Y	FAC
	50	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	30	Y	FAC
Gaultheria shallon	10	Y	FACU
Ilex aquifolium	5	N	FACU
	45	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	5	Y	FAC
Blechnum spicant	5	Y	FAC
Maianthemum racemosum	5	Y	FAC
polypodium glycyrrhiza	2	N	FACU
	17	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	95	x 3 = 285
FACU species	17	x 4 = 68
UPL species	0	x 5 = 0
Column Totals:	112 (A)	353 (B)

Prevalence Index = B/A= 3.15

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ____ Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

20% Bare ground. Vegetation meets the dominance tes for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 11	7.5YR 2.5 / 2	100	None				SILT LOAM	
11 to 18	10YR 3 / 2	100	None				SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No	X	Depth (inches):	-
Water Table Present?	Yes ___	No	X	Depth (inches):	-
Saturation Present? (includes capillary fringe)	Yes ___	No	X	Depth (inches):	-

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 3-11

Investigators: Dangelei Fox, Zach Halstead | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: | Long: | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PFO1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation X, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	
Hydric Soil Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Wetland Hydrology Present?	Yes X No	

Remarks:
This plot meets the criteria for a wetland given that the vegetation is problematic. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	50	Y	FAC
	50	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Ilex aquifolium	15	Y	FACU
	15	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Polystichum munitum	15	Y	FACU
Athyrium filix-femina	10	Y	FAC
polypodium glycyrrhiza	5	N	FACU
	30	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	60	x 3 = 180
FACU species	35	x 4 = 140
UPL species	0	x 5 = 0
Column Totals:	95 (A)	320 (B)

Prevalence Index = B/A= 3.37

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ___ No X**

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation assumed due to the presence of wetland hydrology and hydric soils. Illex aquifolium is an aggressive invasive in Wetland 3.

SOIL

Sampling Point: SP 3-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	/	100	None				Muck	
6 to 20	10YR 4 / 1	90	7.5YR 3/4	10	C	M	SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	17
Saturation Present? (includes capillary fringe)	X		surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Weeping into pit at 8". Wetland hydrology meets indicators for having saturation at surface (A3).

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 3-12

Investigators: Dangelei Fox Zach Halstead Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave Slope(%) ____

Subregion (LRR): A Lat: 46° 57' 3.61" N Long: 123° 46' 27.05" W Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No	

Remarks:
Area meets all wetland indicators. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	35	Y	FAC
Ilex aquifolium	15	Y	FACU
	50 =Total Cover		
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	15	Y	FAC
	15 =Total Cover		
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	65 (A)		210 (B)

Prevalence Index = B/A= 3.23

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

____ Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

25% bare ground = leaf litter. Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	/	100	None				MUCK	
4 to 9	10YR 2 / 1	100	None				SILT LOAM	
9 to 15	10YR 4 / 1	90	7.5YR 3/4	10	C	M	SILT LOAM	M & PL
15 to 18	7.5YR 6 / 6	50					SILTY CLAY LOAM	
15 to 18	7.5YR 4 / 1	48	7.5YR 3/4	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		8
Saturation Present? (includes capillary fringe)	X		5

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology meets indicators for a high water table (A2) and saturation (A3).

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 3-13

Investigators: Bruce Moreira Lisa Danielski | Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%) ____

Subregion (LRR): A | Lat: 46° 57' 4.40" N | Long: 123° 46' 27.71" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	
Hydric Soil Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes X No ____**
Wetland Hydrology Present?	Yes X No	

Remarks:
This site meets the criteria for a wetland. In north portion of Wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	50	Y	FAC
Ribes bracteosum	5	N	FAC
Sambucus racemosa	5	N	FACU
	60	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Tolmiea menziesii	3	Y	FAC
Lysichiton americanus	2	Y	OBL
	5	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	2	x 1 = 2
FACW species	0	x 2 = 0
FAC species	58	x 3 = 174
FACU species	5	x 4 = 20
UPL species	0	x 5 = 0
Column Totals:	65 (A)	196 (B)

Prevalence Index = B/A= 3.02

Hydrophytic Vegetation Indicators:

____ Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

____ Prevalence Index ≤ 3.0

____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR 3 / 2	98	10YR 4/6	2	C	M	CLAY LOAM	
10 to 15	2.5Y 4 / 2	90	7.5YR 4/6	10	C	M	CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [x] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
This area meets hydric soil indicator with a redox dark surface (F6).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		14
Saturation Present? (includes capillary fringe)	X		12

Wetland Hydrology Present? Yes X No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology indicators present include saturation (A3) and a high water table (A2).

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam City/County: Cosmopolis/ Grays Harbor Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis State: WA Sampling Point: SP 3-14

Investigators: Dangelei Fox Zach Halstead Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave Slope(%)

Subregion (LRR): A Lat: 46° 57' 5.14" N Long: 123° 46' 28.31" W Datum: NAD83

Soil Map Unit Name: NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
This plot does not meet all wetland indicators. Paired upland sample plot for north portion of wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Alnus rubra	65	Y	FAC
	65	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Ilex aquifolium	5	Y	FACU
	5	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Athyrium filix-femina	5	Y	FAC
Polypodium glycyrrhiza	5	Y	FACU
	10	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Hedera helix	2	N	FACU
	2	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	12	x 4 =	48
UPL species	0	x 5 =	0
Column Totals:	82 (A)		258 (B)

Prevalence Index = B/A= 3.15

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

This sample does not meet any vegetative indicators.

SOIL

Sampling Point: SP 3-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 9	7.5YR 2.5 / 2	100	None				SILT LOAM	
9 to 20	10YR 3 / 3	100	None				SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 3-15

Investigators: Dangelei Fox Zach Halstead | Section, Township, Range S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%)

Subregion (LRR): A | Lat: 46° 57' 5.08" N | Long: 123° 46' 28.20" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No	

Remarks:
This plot meets the criteria for a wetland. Sample plot in north portion of Wetland 3. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Sambucus racemosa	40	Y	FACU
Rubus spectabilis	10	Y	FAC
	50	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Tolmiea menziesii	5	Y	FAC
	5	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	55 (A)		205 (B)

Prevalence Index = B/A= 3.73

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 3-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 9	10YR 3 / 2	100	None				SILT LOAM	
9 to 21	10YR 4 / 2	40						
9 to 21	GLEY 1 4 / N	40	7.5YR 4/6	20	C	M	SILT LOAM	M & PL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)	X		14

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology meets indicators for saturation (A3) and having both drainage patterns (B10) and because of it's geomorphic position (D2) even with lower than normal precipitation. Shallow shale.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 3-16

Investigators: Bruce Moreira, Lisa Danielski | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 5.63" N | Long: 123° 46' 28.41" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Upland sample plot near Mill Creek Drive north of Wetland 3. This site does not meet the criteria to be classified as a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	25	Y	FAC
Sambucus racemosa	25	Y	FACU
Ribes bracteosum	5	N	FAC
	55	=Total Cover	
Herb Stratum			
Vine Stratum (Plot size: 30 Ft)			
Hedera helix	80	Y	FACU
	80	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column Totals:	135 (A)		510 (B)

Prevalence Index = B/A= 3.78

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

This sample does not meet any vegetative indicators.

SOIL

Sampling Point: SP 3-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR 2 / 2	100	None				FINE SANDY LOAM	
10 to 20	10YR 3 / 3	100	None				FINE SANDY LOAM	
20 to 21	10YR 3 / 3	70	7.5YR 4/6	5	C	M	FINE SANDY LOAM	
20 to 21	10YR 3 / 2	25					FINE SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___
Water Table Present?	Yes ___	No X	Depth (inches):	___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 4-1

Investigators: Dangelei Fox, Zach Halstead | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%): 15

Subregion (LRR): A | Lat: 46° 57' 0.00" N | Long: 123° 46' 22.37" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: PSS1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
This plot meets all 3 criteria for a wetland.Located in Wetland 4. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Ribes bracteosum	30	Y	FAC
Sambucus racemosa	20	Y	FACU
	50	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Tolmiea menziesii	30	Y	FAC
Athyrium filix-femina	15	Y	FAC
Polypodium glycyrrhiza	5	N	FACU
Ranunculus repens	2	N	FAC
	52	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	77	x 3 = 231
FACU species	25	x 4 = 100
UPL species	0	x 5 = 0
Column Totals:	102 (A)	331 (B)

Prevalence Index = B/A= 3.25

Hydrophytic Vegetation Indicators:

- ____ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ____ Prevalence Index ≤ 3.0
- ____ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 4-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 11	10YR 3 / 2	100	None				SILT LOAM	
11 to 20	10YR 4 / 2	85	7.5YR 4/6	15	C	M	SILT LOAM	Gravely

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** X **No** ____

Remarks:
This area meets hydric soil indicator with a depleted matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	-
Water Table Present?	X		15
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology meets indicators for saturation (A3).

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis | Sampling Date: 1/24/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 4-2

Investigators: Dangelei Fox, Zach Halstead | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%):

Subregion (LRR): A | Lat: 46° 56' 59.88" N | Long: 123° 46' 22.28" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:
This plot does not meet all wetland indicators. Paired sample plot for SP 4-1. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Ribes bracteosum	30	Y	FAC
Rubus spectabilis	30	Y	FAC
Acer circinatum	5	N	FAC
	65	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Polystichum munitum	20	Y	FACU
Tolmiea menziesii	5	Y	FAC
	25	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	90 (A)		290 (B)

Prevalence Index = B/A= 3.22

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

10% Bare ground. Vegetation meets the dominance test for hydrophytic vegetation.

SOIL

Sampling Point: SP 4-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	7.5YR 3 / 2	100	None				SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	-
Water Table Present?	Yes ___	No X	Depth (inches):	-
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	-

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: Cosmopolis Dam | City/County: Cosmopolis/ Grays Harbor | Sampling Date: 1/23/2014

Applicant/Owner: City of Cosmopolis | State: WA | Sampling Point: SP 4-3

Investigators: Lisa Danielski, Bruce Moreira | Section, Township, Range: S 23 T 17 N R 9 W

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Convex | Slope(%):

Subregion (LRR): A | Lat: 46° 57' 0.10" N | Long: 123° 46' 22.85" W | Datum: NAD83

Soil Map Unit Name: Mopang Silt Loam, 30 to 65% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X
Is the Sampled Area within a Wetland?		X

Remarks:
Upland sample point on south side of Wetland 4. Larch Mountain Salamander habitat. This site does not meet the criteria to be classified as a wetland. Below normal rainfall for January.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rubus spectabilis	3	Y	FAC
	3	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Cryptogramma stelleri	1	Y	FACU
Cystopteris fragilis	1	Y	FACU
Luzula parviflora	1	Y	FAC
Oenanthe sarmentosa	1	Y	OBL
	4	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus ursinus	15	Y	FACU
Rubus armeniacus	5	Y	FACU
	20	=Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.9% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	0	x 2 =	0
FAC species	4	x 3 =	12
FACU species	22	x 4 =	88
UPL species	0	x 5 =	0
Column Totals:	27 (A)		101 (B)

Prevalence Index = B/A= 3.74

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Mostly downed debris in this area. This sample does not meet any vegetative indicators.

SOIL

Sampling Point: SP 4-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 14	10YR 2 / 2	100	None				LOAM	
14 to 20	10YR 3 / 4	100	None				CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This sample does not meet any hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	-
Water Table Present?		X	-
Saturation Present? (includes capillary fringe)		X	-

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This sample does not meet any hydrology indicators.

Appendix C – Wetland and Stream Photographs

Photo 1: Mill Creek Pond upstream of dam prior to breach (HDR 2013).

Photo 2: Mill Creek dam before breach facing upstream (HDR 2013).

Photo 3: Mill Creek Park Dam and area of breach, facing downstream and northwest from the dam. January 2014.

Photo 4: Mill Creek Park Dam temporary repairs after breach, facing upstream (HDR 2013).

Photo 5: Wetland 1, east side facing north with foot trail on right. January 2014.

Photo 6: Wetland 1, facing southeast upstream of dam. January 2014.

Photo 7: Wetland 1, Island 4 with alder stand. Facing southeast. January 2014.

Photo 8: Wetland 1, island 3, facing southwest (upstream). January 2014.

Photo 9: Wetland 1, facing west. Island 4 with alder stand. January 2014.

Photo 10: Facing southeast, alder stand on east side of Wetland 1. January 2014.

Photo 11: Wetland 1 fringe along Mill Creek, facing northeast. January 2014.

Photo 12: South portion Wetland 1, facing southwest from footbridge. January 2014.

Photo 13: South end of Wetland 1, facing southeast. January 2014.

Photo 14: South portion of Wetland 1, facing south from footbridge. January 2014.

Photo 15: Wetland 1, facing south at south edge of parcel. January 2014.

Photo 16: Wetland 1, large woody debris, facing north. January 2014.

Photo 17: Wetland 1, Juvenile northern red-legged frog. January 2014.

Photo 18: Wetland 1 from new footbridge, facing north. January 2014.

Photo 19: Wetland 1, wetland sample plot I5. Saturation at 6". January 2014.

Photo 20: Wetland 2 facing northeast. January 2014.

Photo 21: Wetland 2 facing north. January 2014.

Photo 22: Wetland 2, wetland sample plot 2-4. Saturation starts at "9. January 2014.

Photo 23: Wetland 2 facing northwest near SP 2-4. January 2014.

Photo 24: Wetland 3, facing northeast. January 2014.

Photo 25: Wetland 3, facing west. January 2014.

Photo 26: Wetland 3, wetland sample plot 3-3. Saturation starts at 4”. January 2014.

Photo 27: Wetland 3, facing Mill creek (northwest). January 2014.

Photo 28: Wetland 3, facing southwest from trail. January 2014.

Photo 29: Wetland 3, facing east. January 2014.

Photo 30: Wetland 4, facing north, downslope. January 2014.

Photo 31: Wetland 4, facing south upslope. January 2014.

Photo 32: Wetland 4, facing west/southwest upslope. January 2014.

Photo 33: Wetland 4. larch mountain salamander (*Plethodon larselli*). January 2014.

Photo 34: Wetland 4, sample plot 4-1. Saturation present at 10”. January 2014.

Photo 35: Mill Creek in Wetland 1, north of footbridge facing south. January 2014.

Photo 36: Mill Creek in south portion of park parcel, facing north. January 2014.

Photo 37: Mill Creek, facing north from south portion of park parcel. Beaver dam. January 2014.

Photo 38: Mill Creek, facing north, downstream. January 2014.

Photo 39: Mill Creek, facing south, downstream. January 2014.

Photo 40: Mill Creek facing south, downstream. January 2014.

Photo 41: Mill Creek, facing downstream from Island 2. January 2014.

Photo 42: Mill Creek facing upstream from loop trail. April 2014.

Photo 43: Mill Creek, facing upstream at Mill Creek Dam. January 2014.

Photo 44: Mill Creek below dam looking upstream. April 2014.

Photo 45: Mill Creek, adjacent to Wetland 3, facing upstream. April 2014.

Photo: 46: Mill Creek below dam facing south and upstream. April 2014.

Photo 47: Mill Creek facing downstream at C street. April 2014.

Photo 48: Mill Creek from C street facing upstream. April 2014.

Appendix D – Ecology Rating Forms

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland 1 Date of site visit: 1/22/2014

Rated by Lisa Danielski Trained by Ecology? Yes ✓ No___ Date of training 2005

SEC: 23 TWNSHP: 17N RNGE: 9W Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 1, 2 **Estimated size** 6.88 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	6
Score for Habitat Functions	27
TOTAL score for Functions	**45**

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category **(choose the "highest" category from above)** III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* **animal or plant** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* **animal** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*	✓	
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

NO - go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	***(see p.38)***
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure 1 1
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 1,2 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure 1,2 0
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ✓ Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other________ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 44)*** multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	***(see p.46)***
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	3
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems ✓ Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other____________________________ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 49)*** multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	6

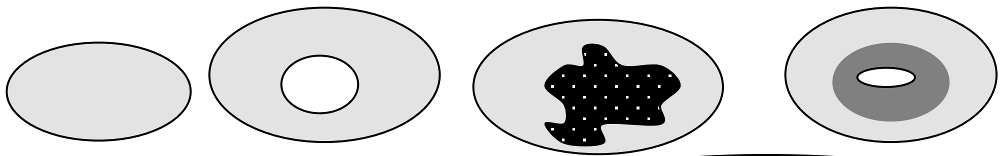
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	Points (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have >30% cover) ✓ Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ✓ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure 1,2 4
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — 3 types present — points = 2 ____Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ✓ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure 1,2 2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species — points = 2 *List species below if you want to:* 5 - 19 species — points = 1 < 5 species — points = 0 Ranunculus repens; Rubus armeniacus Scirpus microcarpus; Impatiens noli-tangere Phalaris arundinacea; Sambucus racemosa Oenanthe sarmentosa; Typha latifolia Rumex obtusifolius; Juncus effusus Alnus rubra; Bellis perennis	1

Total for page 7

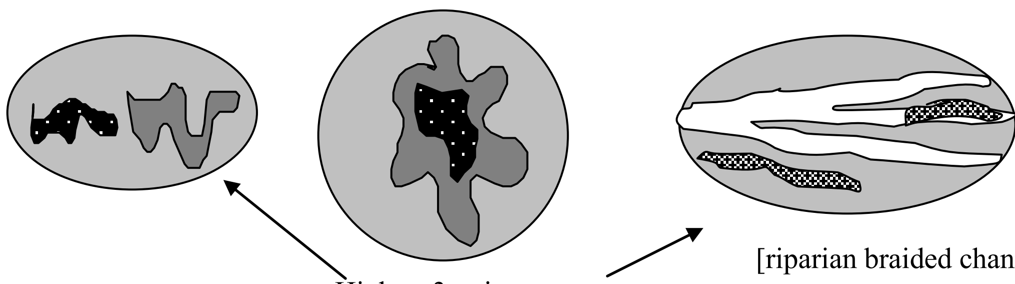
H 1.4. Interspersion of habitats *(see p. 76)*

Figure 1,2

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

2

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

✓ Standing snags (diameter at the bottom > 4 inches) in the wetland

✓ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

✓ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

3

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

12

Comments

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ✓ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**. — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1,2 3
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors*, *heavily used gravel roads*, *paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

Total for page 7

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. _____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ✓ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	3

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	5
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	15
TOTAL for H 1 from page 14	12
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	27

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

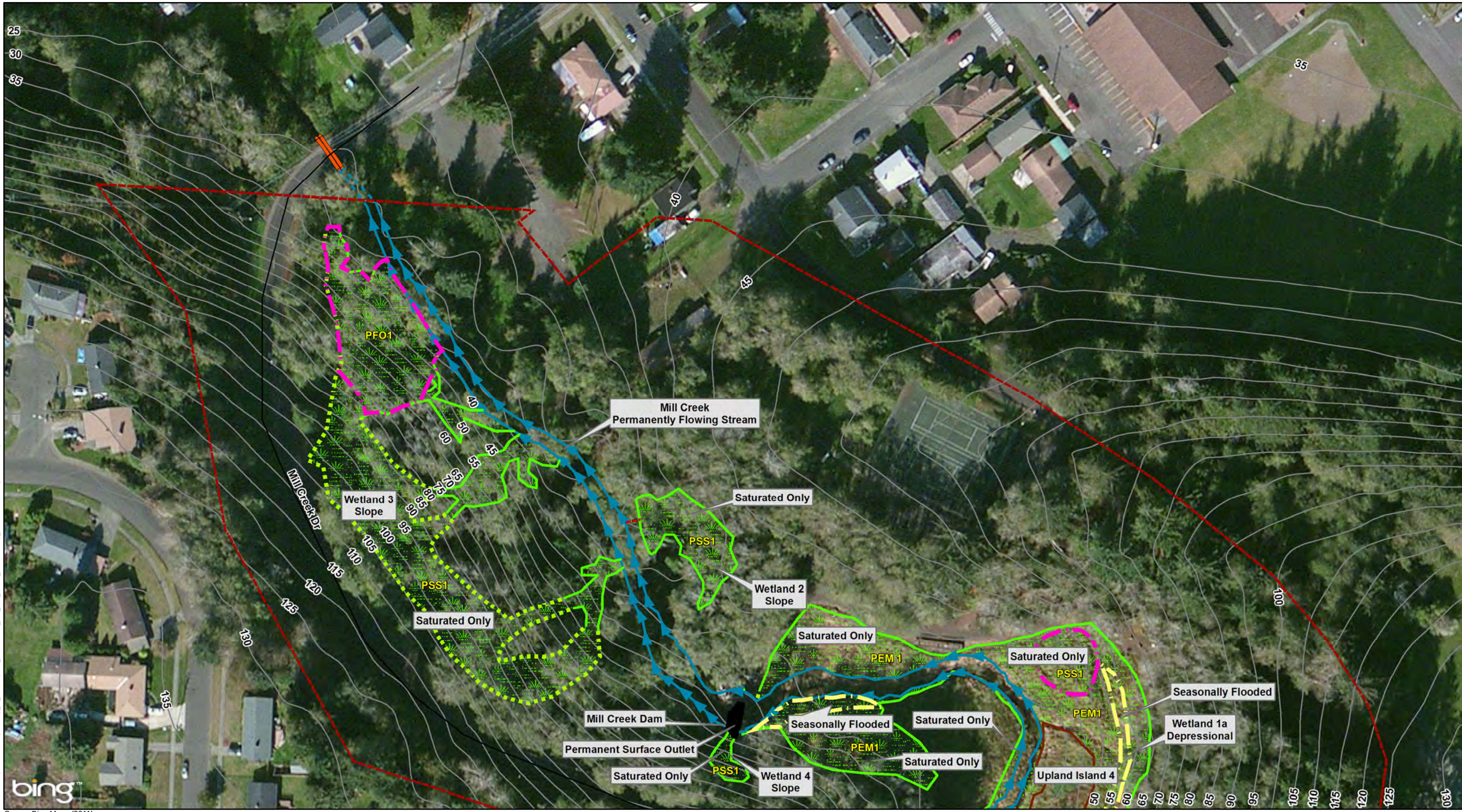
Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands ***(see p. 86)*** Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ✓	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating** **I/II**

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ✓ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands ***(see p. 93)*** Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A



Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelim_171201\Map_Docs\Draft\Rating Form.mxd | Date: 7/11/2014

Source:Bing Maps (2011).

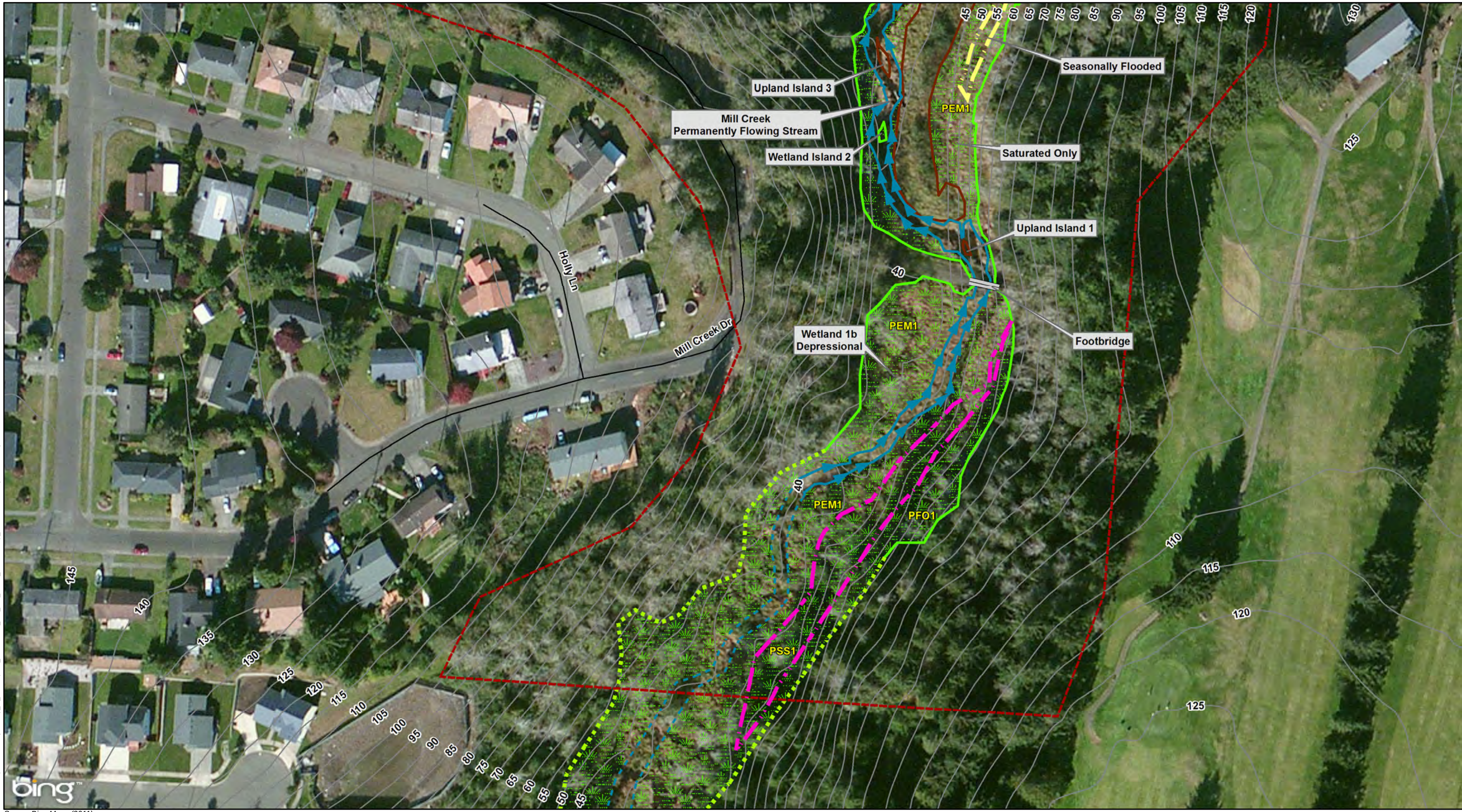
Legend

- Parcel
- Roads
- Contour (5 ft interval)
- Mill Creek Dam
- Culvert
- Wetland Boundary (Delineated by HDR January 2014)
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Culvert Location
- Approximate Wetland Boundary
- Approximate Stream
- Cowardin Classification
- Hydroperiod

N

0 25 50 100 Feet

Mill Creek Park Dam - North Western WA Rating Form
Figure 1



Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelim_171201\Map_Docs\Draft\Rating Form.mxd | Date: 7/1/2014

Source:Bing Maps (2011).

Legend

- Parcel
- Roads
- Contour (5 ft interval)
- Foot Bridge
- Wetland Boundary (Delineated by HDR January 2014)
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Wetland Boundary
- Approximate Stream
- Cowardin Classification
- Hydroperiod

N

0 25 50 100 Feet

Mill Creek Park Dam - South
Western WA Rating Form
Figure 2

Path: G:\Projects\Washington\City_of_Cosmopolis_451975\Mill_Crk_Dm_Prelim_171201\Map_Docs\Draft\Wetland 1.mxd | Date: 7/1/2014

Source:Bing Maps (2011).

Legend

- Parcel
- Roads
- Contour (5 ft interval)
- Foot Bridge
- Cowardin Classification
- Wetland Boundary (Delineated by HDR January 2014)
- Mill Creek (Delineated by HDR January 2014)
- Upland Island (Delineated by HDR January 2014)
- Approximate Wetland Boundary
- Approximate Stream

N

0 25 50 100 Feet

Mill Creek Park Dam
Western WA Rating Form
Figure 3

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland 2 Date of site visit: 1/23/2014

Rated by Lisa Danielski Trained by Ecology? Yes ✓ No___ Date of training 2005

SEC: 23 TWNSHP: 17N RNGE: 9W Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 1 Estimated size 0.14 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	4
Score for Hydrologic Functions	6
Score for Habitat Functions	20
TOTAL score for Functions	30

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category **(choose the "highest" category from above)** III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	✓
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* **animal or plant** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* **animal** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
✓ The wetland is on a slope (*slope can be very gradual*),
✓ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
✓ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

NO - go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES –** The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

S	Slope Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	*(see p.64)*
S	S 1.1 Characteristics of average slope of unit: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	1
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure ___ 1
S	**Total for S 1** *Add the points in the boxes above*	2
S	**S 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft — Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet of wetland ✓ Residential, urban areas, or golf courses are within 150 ft upslope of wetland — Other ______ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.67)* multiplier 2
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	4

Comments

S	Slope Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	Points (only 1 score per box)
	S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?	***(see p.68)***
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. points = 6 Dense, uncut, **rigid** vegetation > 1/2 area of wetland points = 3 Dense, uncut, **rigid** vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0	1
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	3
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ✓ Wetland has surface runoff that drains to a river or stream that has flooding problems — Other______________________________ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	6

Comments

Wetland name or number Wetland 2

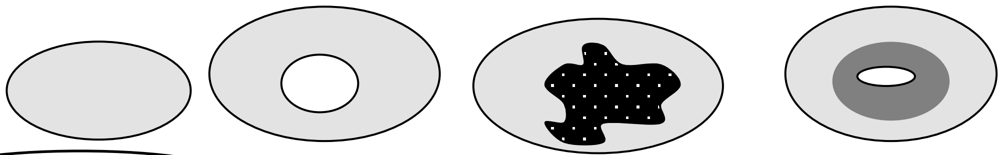
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ____Emergent plants ✓ Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more points = 4 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	Figure 1 0
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated 4 or more types present points = 3 ____Seasonally flooded or inundated 3 types present points = 2 ____Occasionally flooded or inundated 2 types present point = 1 ✓ Saturated only 1 type present points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure 1 0
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species points = 2 *List species below if you want to:* 5 - 19 species points = 1 < 5 species points = 0 Tolmiea menziesii Sambucus racemosa Rubus spectabilis Athyrium filix-femina Hedera helix Ribes bracteosum Lysichiton americanus Acer circinatum	1

Total for page 1

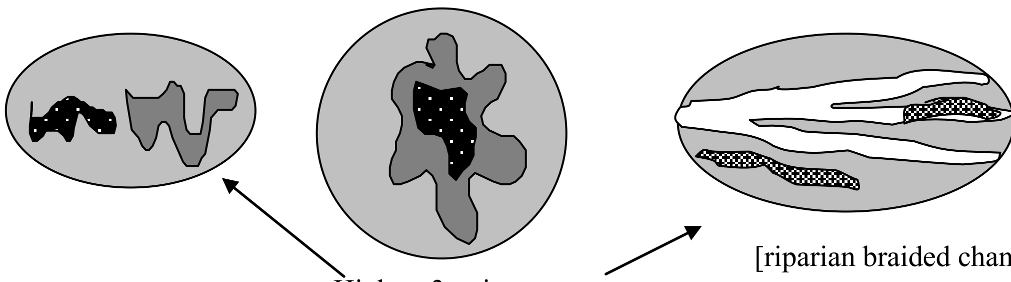
H 1.4. Interspersion of habitats ***(see p. 76)***

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure 1



None = 0 points   Low = 1 point   Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Score: 0

H 1.5. Special Habitat Features: ***(see p. 77)***

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- ✓ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).
- ✓ Standing snags (diameter at the bottom > 4 inches) in the wetland
- ____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)
- ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
- ____ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*
- ✓ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Score: 3

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

4

Comments

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer**.** (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ✓ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**. — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1 3
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors*, *heavily used gravel roads*, *paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

Total for page 7

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

✓ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

✓ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **3 or more** priority habitats **= 4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat **= 1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

Score: 4

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits*) ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	5
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	16
TOTAL for H 1 from page 14	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	20

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands ***(see p. 86)*** Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ✓	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating** **I/II**

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ✓ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands ***(see p. 93)*** Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland 3 Date of site visit: 1/23/2014

Rated by Lisa Danielski Trained by Ecology? Yes ✓ No___ Date of training 2005

SEC: 23 TWNSHP: 17N RNGE: 9W Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 1 **Estimated size 1.09 acres**

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	6
Score for Habitat Functions	23
TOTAL score for Functions	39

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	✓
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
✓ The wetland is on a slope (*slope can be very gradual*),
✓ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
✓ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

NO - go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES –** The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number Wetland 3

S	Slope Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	*(see p.64)*
S	S 1.1 Characteristics of average slope of unit: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	0
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	3
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure 1 2
S	**Total for S 1** *Add the points in the boxes above*	5
S	**S 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft ✓ Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet of wetland ✓ Residential, urban areas, or golf courses are within 150 ft upslope of wetland — Other________________________ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.67)* multiplier 2
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	10

Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
	S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?	*(see p.68)*
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. points = 6 Dense, uncut, **rigid** vegetation > 1/2 area of wetland points = 3 Dense, uncut, **rigid** vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	0
S	*Add the points in the boxes above*	3
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* — Wetland has surface runoff that drains to a river or stream that has flooding problems — Other____________________________________ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 70)* multiplier 2
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	6

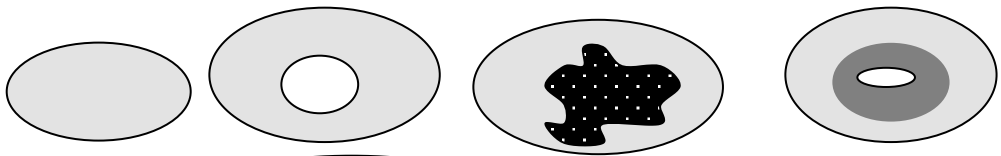
Comments

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ____Emergent plants ✓ Scrub/shrub (areas where shrubs have >30% cover) ✓ Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ✓ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure 1 2
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ____Seasonally flooded or inundated — 3 types present — points = 2 ____Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ✓ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure 1 1
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species — points = 2 *List species below if you want to:* 5 - 19 species — points = 1 < 5 species — points = 0 Athyrium filix-femina Tolmiea menziesii Lysichiton americanus Malus fusca Ribes bracteosum Alnus rubra Rubus spectabilis Sambucus racemosa Acer circinatum	1

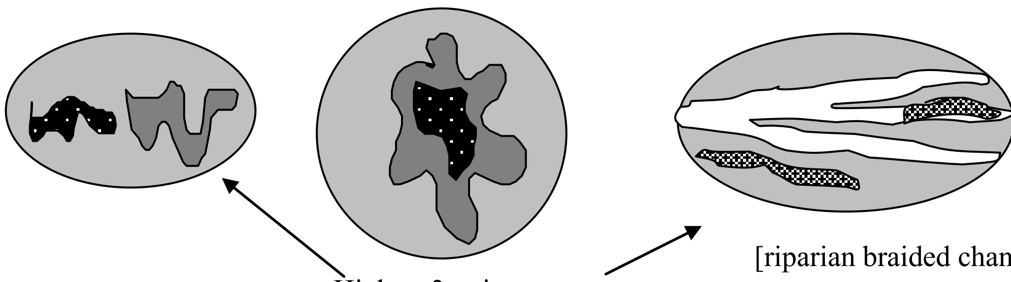
Total for page 4

H 1.4. Interspersion of habitats ***(see p. 76)*** — **Figure 1**

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points   Low = 1 point   Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Score: 1

H 1.5. Special Habitat Features: ***(see p. 77)***

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

✓ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

✓ Standing snags (diameter at the bottom > 4 inches) in the wetland

✓ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

✓ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Score: 4

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

Score: 9

Comments

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**. ✓ Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1 1
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors*, *heavily used gravel roads*, *paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ✓ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ✓ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	4

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	5
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	14
TOTAL for H 1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	23

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ✓	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating** **I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ✓ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ____not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands ***(see p. 93)*** Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

Wetland name or number Wetland 4

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland 4 Date of site visit: 1/24/2014

Rated by Lisa Danielski Trained by Ecology? Yes ✔ No ___ Date of training 2005

SEC: 23 TWNSHP: 17N RNGE: 9W Is S/T/R in Appendix D? Yes ___ No ✔

Map of wetland unit: Figure 1 **Estimated size** 0.02 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II ___ III ___ IV ✔

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	2
Score for Hydrologic Functions	6
Score for Habitat Functions	18
TOTAL score for Functions	26

Category based on SPECIAL CHARACTERISTICS of wetland

I ___ II ___ Does not Apply ✔

Final Category **(choose the "highest" category from above)** IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		**Wetland HGM Class used for Rating**	
Estuarine		**Depressional**	
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	✔
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* **animal or plant** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.	☐	✔
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* **animal** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).	☐	✔
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*	☐	✔
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	☐	✔

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
☑ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
☑ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
☑ NO – go to 4 ☐ **YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
✔ The wetland is on a slope (*slope can be very gradual*),
✔ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
✔ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
☐ NO - go to 5 ☑ **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☐ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO – go to 7 ☐ **YES –** The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☐ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number Wetland 4

S	**Slope Wetlands** WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	***(see p.64)***
S	S 1.1 Characteristics of average slope of unit: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance*) points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	0
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	No - 0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	**Figure** 1 1
S	**Total for S 1** *Add the points in the boxes above*	1
S	**S 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity*. ☐ Grazing in the wetland or within 150ft ☑ Untreated stormwater discharges to wetland ☐ Tilled fields, logging, or orchards within 150 feet of wetland ☑ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ☐ Other_____________________________________ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p.67)*** multiplier Yes
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	2

Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
	S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?	***(see p.68)***
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. points = 6 Dense, uncut, **rigid** vegetation > 1/2 area of wetland points = 3 Dense, uncut, **rigid** vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	No
S	*Add the points in the boxes above*	3
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ☑ Wetland has surface runoff that drains to a river or stream that has flooding problems ☐ Other______________________ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier Yes
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	6

Comments

Wetland name or number Wetland 4

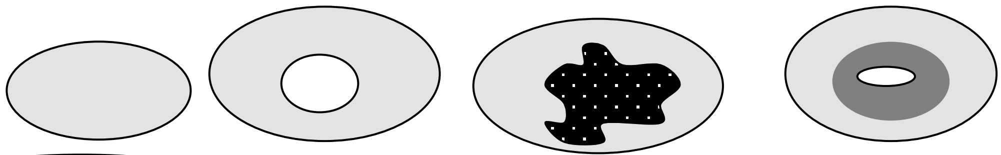
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ____Emergent plants ✔ Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure** 1 1 Struc. 0
H 1.2. <u>Hydroperiods</u> ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ____Seasonally flooded or inundated — 3 types present — points = 2 ____Occasionally flooded or inundated — 2 types present — point = 1 ✔ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland = 2 points*** ____***Freshwater tidal wetland = 2 points*** Map of hydroperiods	**Figure** 1 1 type 0
H 1.3. <u>Richness of Plant Species</u> ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species — points = 2 *List species below if you want to:* 5 - 19 species — points = 1 < 5 species — points = 0 Ribes bracteosum; Blechnum spicant Tolmiea menziesii; Oemleria cerasiformis Athyrium filix-femina; Rubus spectabilis Ranunculus repens; Acer circinatum Polypodium glycyrrhiza Sambucus racemosa Oplopanax horridus	5 -19 sp. 1

Total for page 1

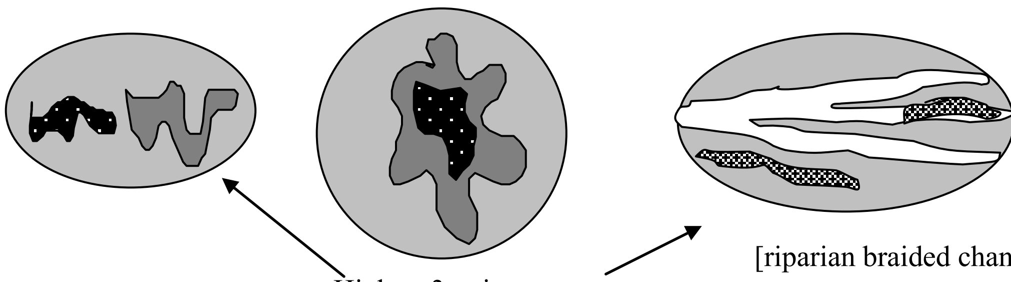
Wetland name or number Wetland 4

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points   Low = 1 point   Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Figure 1

None

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

✔ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____ Standing snags (diameter at the bottom > 4 inches) in the wetland

____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

✔ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

2

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

3

Comments

Wetland name or number Wetland 4

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ✔ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**. — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1 3
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors*, *heavily used gravel roads*, *paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: ✔ within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	Yes No No

Total for page 7

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ✔ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ✔ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	2 P.H. 3

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** ✔ There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 ☐ The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 ☐ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 ☐ The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 ☐ There is at least 1 wetland within ½ mile. points = 2 ☐ There are no wetlands within ½ mile. points = 0	5
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	15
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number Wetland 4

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands ***(see p. 86)*** Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ✔	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II** N/A

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ✔ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✔ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✔ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✔ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✔ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO ✔ not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

<table>
<tr><td>

SC 6.0 Interdunal Wetlands ***(see p. 93)***

Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?

YES - go to SC 6.1 NO ✔ not an interdunal wetland for rating

If you answer yes you will still need to rate the wetland based on its functions.

In practical terms that means the following geographic areas:

- Long Beach Peninsula- lands west of SR 103
- Grayland-Westport- lands west of SR 105
- Ocean Shores-Copalis- lands west of SR 115 and SR 109

SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger?

YES = Category II NO – go to SC 6.2

SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?

YES = Category III

</td><td>

Cat. II

Cat. III

</td></tr>
<tr><td>

Category of wetland based on Special Characteristics

Choose the "highest" rating if wetland falls into several categories, and record on p. 1.

If you answered NO for all types enter "Not Applicable" on p.1

</td><td>

N/A

</td></tr>
</table>

CULTURAL RESOURCES REPORT COVER SHEET

Author: Garth L. Baldwin, Stacie J. Pratschner, Keith F. Solmo and Jennifer Chambers

Title of Report: Cultural Resources Assessment for the Mill Creek Dam Improvements Project, Cosmopolis, Grays Harbor County, Washington

Date of Report: April 9, 2015

County: Grays Harbor Section: 23 Township: 17 N Range: 9W

Quad: Aberdeen, WA Acres: ~4

CD Submitted? ☐ Yes ☐ No PDF of Report? ☒

Archaeological Site(s)/Isolate(s) Found or Amended? ☒ Yes ☐ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

DAHP Archaeological Site #:
45GH226
______
______
______
______
______

DRAYTON ARCHAEOLOGY

Cultural Resources Assessment for the Mill Creek Dam Improvements Project, Cosmopolis, Grays Harbor County, Washington

By:

Garth L. Baldwin, M.A., RPA, Stacie J. Pratschner, B.A., Keith F. Solmo, B.A. and Jennifer Chambers, M.S.

Prepared For:

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HDR, Inc.
500 108th Ave NE, Suite 1200
Bellevue, WA 98004

Drayton Technical Report: 1113C
April 9, 2015

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Cultural Resources Assessment for the Mill Creek Dam Improvements Project, Cosmopolis, Grays Harbor County, Washington

Author:	Garth L. Baldwin, Stacie J. Pratschner, Keith F. Solmo, and Jennifer Chambers
Date:	April 9, 2015
Location:	Grays Harbor County, Washington
USGS Quad:	Aberdeen, WA (1957, Revised 1994) 7.5-minute quadrangle
STR:	Section 23, Township 17 North, Range 9 West, Willamette Meridian

INTRODUCTION

Drayton Archaeology (DA) conducted the following cultural resources assessment at the request of HDR, Inc. for the City of Cosmopolis (the City). The project intends to repair the Mill Creek Dam located at Mill Creek Park, which was breached by the falling of a tree during a rainstorm on November 12, 2008. Emergency repairs stabilized the breached channel of the creek, and the City continues to work towards improving the stream system pursuant to the Multi-Objective Plan (HDR 2012). The multi-objective plan includes restoration of the footbridge and loop trail above the dam, and removal or replacement of the dam.

The project will require a United States Army Corps of Engineers (USACE) permit for wetland impacts. As such, DA conducted the present study to satisfy partial compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended. As the lead agency having jurisdiction over the undertaking, the USACE is required under 36 Code of Federal Regulations (CFR) Part 800 of the NHPA to consider any potential effects to historic properties that the undertaking may cause.

DA's cultural resources assessment consisted of background review, field investigation, and production of this report. Background review determined the area of potential effects (APE) to be located in an area of moderate probability for historic properties. Field investigation included pedestrian and subsurface survey. One cultural resource was encountered in the APE: the Mill Creek Dam (recorded as 45GH226). Background research determined that the Mill Creek Dam was constructed in 1930. In accordance with DAHP reporting guidelines, the Mill Creek Dam was inventoried. Although the dam is aged over 50 years, it does not appear to have any qualities that would make it eligible for listing on the NRHP and, as such, is not considered a historic property. <u>It is therefore that the project, as proposed, does not appear to have the potential to affect historic properties, and no further cultural resources oversight is warranted. DA recommends that the USACE assert a determination of "No Historic Properties Affected" to the Washington State Historic Preservation Officer (SHPO) and any other interested parties.</u>

REGULATORY CONTEXT

The present review was conducted, in part, to satisfy regulatory requirements for Section 106 of the NHPA and the implementing regulations in 36 CFR Part 800. Section 106 requires Federal agencies take into account the effects of their undertakings on historic properties. A historic property is typically aged 50 years or older and is defined in 36 CFR part 800.16(l)(1) as follows:

> … any prehistoric [sic] or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

The procedures under Section 106 generally require the Federal agency involved in the undertaking to identify the APE, inventory any historic properties that may be located within the APE, and determine if the identified historic properties located within the APE may be eligible for listing on the NRHP. An APE is defined in 36 CFR 800.16(d), as follows:

> … the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

If NRHP-eligible historic properties are identified within the APE, then potential adverse effects to the historic properties must be assessed and a resolution of adverse effects must be recommended. Under Section 106, the responsible Federal agency must, at a minimum, consult with and seek comment from the State Historic Preservation Officer (SHPO) and/or the Tribal Historic Preservation Officer (THPO), as applicable, and consult with any affected or potentially affected Native American Tribe(s).

AREA OF POTENTIAL EFFECTS AND PROJECT DESCRIPTION

The APE is located at Mill Creek Park in Cosmopolis, Grays Harbor County, Washington in Section 23 of Township 17 North, Range 9 West, Willamette Meridian (Figure 1). The APE consists of the Mill Creek Dam, the previously flooded 2.5 acre reservoir located behind (south and east) of the dam, and a hillside and wetland loop trail area to the north (Figure 2).

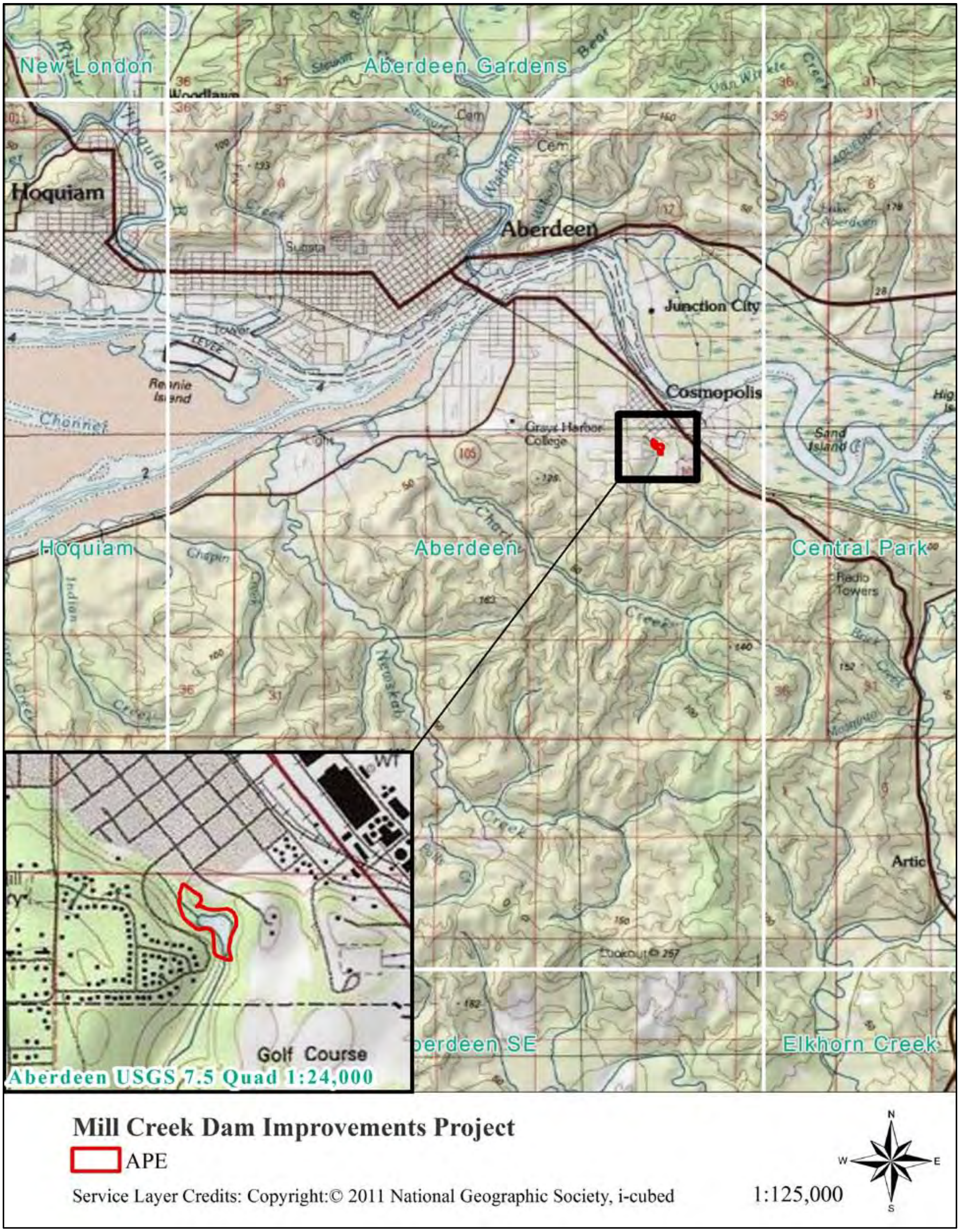

Figure 1. The APE illustrated on the United States Geological Survey (1994) Aberdeen, WA 7.5-minute quadrangle map.

Figure 2. Satellite image illustrating the APE and cultural resources survey.

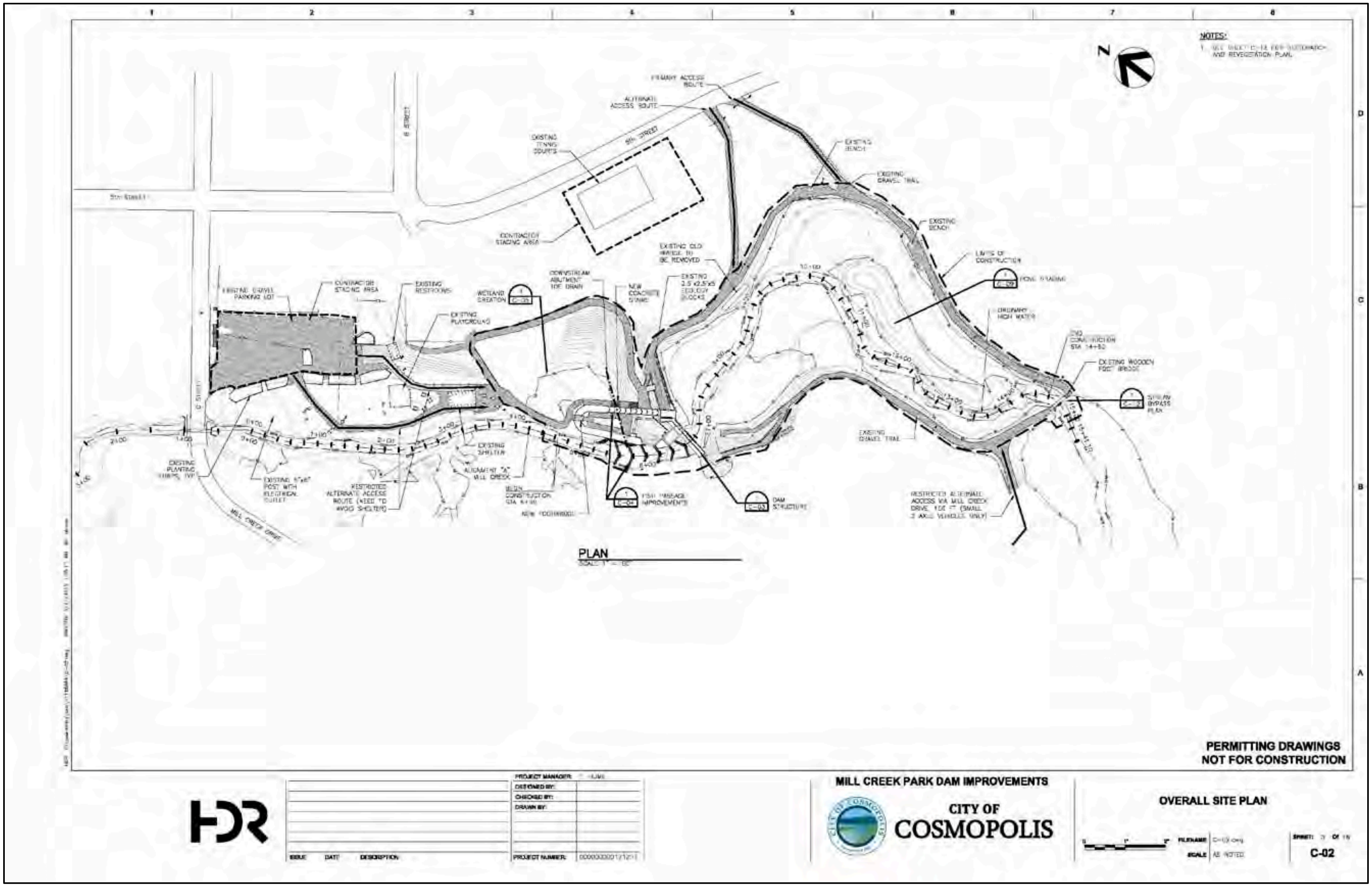

Figure 3. A site plan detailing the site conditions an d proposed work.

In 2008, flooding breeched the dam and destroyed a wooden pedestrian bridge that crossed the dam. Up until then, the dam served as flood control for Cosmopolis, as well as created a two acre recreational fish pond in the reservoir that developed behind the dam. Since the failure of the dam, Mill Creek has carved a meandering channel through accumulated sediment and the reservoir has fully drained. Vegetation has reestablished in the reservoir area, consisting of tall grasses and a stand of young alders.

Two project options are presently being considered to improve the Mill Creek Dam. One option would replace the dam and footbridge, thereby refilling the reservoir; and replacing the footbridge and reestablishing the loop trail. This option would essentially restore the area to its pre-2008 condition. Another option being considered is to restore the Mill Creek channel to its pre-dam condition and improve native fish habitat; a footbridge would be constructed over the channel to complete the loop trail. This latter option would require creek restoration efforts such as carving creek meanders and placing large woody debris and/or other erosion control devices along the creek banks. DA’s cultural resources assessment for this project took into account both of these proposed options.

BACKGROUND REVIEW

Determining the probability for cultural resources within the APE was based largely upon review and analysis of past environmental and cultural contexts and previous cultural resource studies and sites. This included a review of project files; local geologic data to better understand the depositional environment; archaeological, historic, and ethnographic records made available on the Washington Information System for Architectural and Archaeological Records Data (WISAARD) database; and selected published local historic records.

Environmental context

The APE is located within western Grays Harbor County in the Willapa Hills physiographic province. The Willapa Hills are a geological and physiographic province comprised of upper tertiary sedimentary rock and basalt (Alt and Hyndman 1990: 227-234), and situated south of the Olympic Mountains, west of the Puget Lowland and North of the Columbia River.

The regional geomorphology in the APE was largely shaped by Pleistocene and early Holocene glacial events. During the Pleistocene, glacial melt and stream water overflowed through the lower Chehalis River depositing outwash sands and gravels across the landscape. Further alluvial deposition also occurred as melt water from glacial lakes, formed at the southern margin near present-day Olympia and Tacoma, drained through the lower Chehalis River and deposited in Grays Harbor. At the end of the Pleistocene, sea levels began to rise causing the lower Chehalis River to become inundated and eventually, to form an estuary. During the Holocene, several rapid flooding events filled estuaries with brackish water from the Pacific Ocean, evidenced by the widespread death of cedar stands along the shoreline. Sea levels are estimated to have risen nearly 110 meters in the Grays Harbor area over the past 13,000 years. Contemporary sea levels have been stabilized since 3000 years ago (Peterson and Phillips 1992).

The APE is situated within the *Tsuga hetrophylla* Vegetation Zone as defined by Franklin and Dyrness (1973:44-5). Local native vegetation would have included, but not have been limited to Douglas fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), salal (*Gaultheria shallon*) and vine maple (*Acer circinatum*). Other locally important and available species would have included bracken fern (*Pteridium aquilinum*), blackcap (*Rubus occidentalis*), currants (*Ribes spp*.), deer fern (*Blechnum spicant*), devil's club (*Oplopanax horridus*), gooseberries (*Ribes spp*.), huckleberries (*Vaccinium spp.*), Indian Plum (*Oemleria cerasiformis*), oceanspray (*Holodiscus discolor*), Red elderberry (*Sambucus racemosa*), snowberry (*Symphoricarpos albus*), sword fern (*Polystichum munitum*) and trailing blackberry (*Rubus ursinus*) (Franklin and Dyrness 1973:44-5; Pojar and MacKinnon 1994).

According to the United States Department of Agriculture, Natural Resources Conservation Service (USDA NRCS), sediment in the APE consists of a Mopang silt loam with 30 to 65 percent slopes (USDA NRCS n.d.). Mopang silt loams are of the Order Andesol, Suborder Udands. Andesols are soils that form in volcanic ash or other volcanic ejecta. They tend to be very dark in color and contain high amounts of glass and other short-range order colloidal weathering products (silica rich minerals). Properties unique to Andisols include a high water holding capacity and the ability to fix large amounts of phosphorus. Andisols are the least extensive soil Order, comprising approximately one percent of icefree land on earth. The Suborder Udand refers to Andisols formed in humid climates. Mopang silt loams consist of deep sediment above cemented till. They are well to moderately well drained soils and form in glaciofluvial sediments on ground moraines and outwash terraces on till plains. Mopang soils form between 5 to 90 percent slopes. They are highly acidic, and contain andic soil properties typical of most Andisols. A generalized profile of soils documented in the APE are presented in Table 1.

Table 1. A generalized profile of soils documented in the APE.

HORIZON	DEPTH	DESCRIPTION
Oi	0 – 2 inches (0 – 5 cm)	Slightly decomposed Western Hemlock detritus and mosses
Oa	2 – 4 inches (5 – 10 cm)	Highly decomposed needles and twigs
A	4 – 10 inches (10 – 25.5 cm)	5YR 3/2 dark reddish brown medial silt loam, highly acidic (pH 4)
Bw1	10 – 25 inches (25.5 - 63.5 cm)	5YR 3/4 dark reddish brown medial silty clay loam, extremely acidic (pH 4.4)

HORIZON	DEPTH	DESCRIPTION
Bw2	25 – 47 inches (63.5 – 119 cm)	7.5YR 4/4 brown medial silty clay loam, very strongly acid (pH 4.6)
2Bw3	47 – 55 inches (119 – 140 cm)	7.5YR 5/6 strong brown very gravelly silt loam, very strongly acid (pH 4.6)
2Bsm	55 – 64 inches (140 – 162.5 cm)	7.5YR 5/6 strong brown dense glacial drift that crushes to extremely gravelly medial silt loam, very strongly acid (pH 4.6)

Cultural context

The APE is located in the traditional territory of the Lower Chehalis (Ruby and Brown 1986:105). The Lower Chehalises lived primarily around the south side of the Chehalis River and Grays Harbor. The Lower Chehalises shared close affinal ties and relationships with the Chinooks, Humptulipses, Copalises, Quinaults, Wynoochees, and Satsops (Ruby and Brown 1986:105). Eight principle ethnographic native villages have been reported as located on the south side of Grays Harbor, and five on the lower Chehalis where subsistence resources were readily available (Gibbs 1877, as cited by Schneyder et al 2010).

In 1792, Captain Robert Gray entered what is now known as Grays Harbor. Gray originally named the bay Bulfinch’s Harbor after his ship’s owner but six months later Lieutenant Joseph Whidbey from the Vancouver expedition renamed the area Grays Harbor in his honor. William O’Leary is the first non-native credited to have settled on the south side of Grays Harbor in 1848 (Van Syckle 1982). In 1853 territorial status was granted to Washington, which promoted further non-native settlement of Grays Harbor.

Non-native settlement drastically impacted the native Lower Chehalises. In 1854 and 1855, following negotiations between Indian tribes and the United States government, various treaties led to the abandonment of most southern Puget Sound villages and compelled natives to relocate to reservation. The Lower Chehalis were not included in a treaty; however, the United States government still managed to obtain title to land occupied by the Lower Chehalis and established a reservation for them near the confluence with the Chehalis River and the Black River (Ruby and Brown 1986:106). Today, the Lower Chehalis do not exist as a tribe and instead are grouped with non-Quinault neighbors (Chinooks, Humptulipses, Hoquiams, and Satsops) on the Quinault Reservation (Ruby and Brown 1986:106).

Cosmopolis is the oldest town on Grays Harbor (Kirk and Alexander 1990:452). In 1852, a donation land claim (DLC) was filed at the site of the present town by James Pilkinton however it was eventually abandoned after negations between local tribes and the United States government failed (Kirk and Alexander 1990:452-453). The area was then utilized for homesteading and other attempted development ventures including a brickyard, a tannery, and a waterpowered gristmill (Kirk and Alexander 1990:453). It wasn't until the gristmill was converted to a sawmill that an industry became locally successful. In 1882 the mill was purchased by Pope and Talbot who created a subsidiary called Grays Harbor Commercial Company. In 1920 the Grays Harbor Commercial Company was owned by Neil Cooney. The Grays Harbor Commercial Company was responsible for improvements to the town including the water system (Stevenson 1983).

In 1929, during the depression, the Grays Harbor Commercial Company closed; the property was eventually purchased by Wayerhaeuser who built a pulp mill. GLO maps indicate the APE was owned in 1935 by the Cosmopolis Water Company, in 1941 by the Grays Harbor Commercial Company, and in 1952 by St. Regis Paper Company (Metsker 1935, 1941, 1952). Today, Cosmopolis is a quiet, residential community but has had a recent revitalization by the building of a modern sawmill and a wood pulp plant. The APE was developed for use as a park.

Previous Cultural Resource Studies and Sites

Review of the WISAARD database (accessed July 7, June 10, and August 2, 2014) has indicated that the APE has not been previously surveyed for cultural resources and that no archaeological sites, historic properties, cemeteries, or historic properties listed on the NRHP have been previously recorded in the APE.

In 1987, a cultural resources assessment was conducted approximately one half mile north of the APE along the Chehalis River (Larson 1987a). The assessment consisted of pedestrian survey and subsurface testing with a backhoe. As a result of the assessment, two archaeological sites, 45GH100 and 45GH101 were identified. 45GH100 is described as a scatter of historic debris including wagon frames, machinery, and car parts that are associated with the waterfront and Main Street of Cosmopolis (Larson 1987b). 45GH101 is described as a continuous lens of crumbled shell and bone fragments below layers of historic occupation (Larson 1987c). 45GH101 likely represent the back of a Lower Chehalis ethnohistoric village site that maintained a population adjacent to the city of Cosmopolis (Larson 1987c).

Other sites previously recorded in the vicinity of the APE include the Forest Hill Cemetery located approximately one half mile west of the APE and the Neil Cooney Mansion located at 802 East 5th Street just south of the APE. The Neil Cooney Mansion was built in 1910 overlooking the lumber mills on the Chehalis River. The building showcases the available local timber products of its time and today functions as a bed and breakfast. The Neil Cooney Mansion was listed on the NRHP in 1983 (Stevenson 1983). Additionally, several historic property inventory (HPI) forms have been prepared for buildings aged 50 years or older within a one-mile radius of the APE, generally as part of a legacy project conducted for the DAHP. No previously recorded historic properties or NRHP eligible properties will be affected by this project.

EXPECTATIONS FOR HISTORIC PROPERTIES

Based on review of the project scope and environmental and cultural contexts, the APE is considered to be located in an area of moderate probability for historic properties. The APE is located near a freshwater drainage, Mill Creek. Although no ethnographic sites were found to have been previously recorded here it was likely an attractive location for resource acquisition and processing. Additionally, the APE is located on lands formerly owned by the Cosmopolis Water Company, the Grays Harbor Commercial Company, and by St. Regis Paper Company indicating the area was likely the source of historic logging and/or milling activities. Further, the Mill Creek Dam, as included in the APE, was constructed in 1930. As such, artifacts that might be present in the APE could include evidence of historic trash scatters, logging operations, and/or structural remains associated with the dam. Artifacts could be deeply buried as a result of historic and modern creek sedimentation and construction of the dam.

FIELD INVESTIGATION

Field investigation was conducted on the southern portion of the APE by DA archaeologists Keith Solmo, Corrine Michel, and Matthew McBride on June 2nd, 2014 under overcast, cool weather conditions. Field investigation was conducted on the northern portion of the APE by DA archaeologist Beth Mathews on March 22nd, 2015 under rainy weather conditions. Field investigation consisted of a combination of efforts including visual reconnaissance, pedestrian survey, and subsurface testing. Visual reconnaissance consisted of observing topographical and other aboveground features that could provide indication to the absence and/or presence of potential historic properties in the APE. Pedestrian survey consisted of walking accessible areas of the APE to investigate the potential for buried and/or aboveground historic properties to be present. Subsurface testing consisted of excavating shovel probes (SP / SPs) to confirm soil types and to investigate the presence/absence of buried archaeological material and/or deposits. Field notes, maps and photographs detailing observations and data were maintained throughout the investigation. SPs consisted of cylindrical pits averaging 40 - 50 centimeters (cm) in diameter and were excavated to a depth determined by the conditions present in each SP. Excavated sediment from each SP was then screened through quarter-inch hardware screen mesh. Details regarding the location, depth, sediments encountered, and general setting were recorded for each SP. Finally, each SP was backfilled and their locations marked with a GPS and on an APE site sketch map.

The APE is characterized as a rural recreational area (Photos 1-2). From the southern extent of the APE, Mill Creek winds and weaves through the loosely compacted silt of the former reservoir, flowing around the south side of the breached dam at the center the APE and exiting the APE on the north side. Low growing vegetation including grasses, shrubs, and hydrophytic plants abut the creek channel. Beyond the grasses and shrubs is a towering woodland of coniferous and deciduous trees.

Photo 1. Overview of southern portion of APE.

Photo 2. Overview of northern portion of APE.

A total of 16 SPs were excavated across the APE, excluding the saturated areas within the creek, adjacent low-lying sediment, and extreme steep slopes (Figure 4). Observed sediments primarily consisted of deep silt deposits resulting from siltation within the former reservoir, and modern stream flood events (Photo 3). The observed profiles within the reservoir area were consistent with expectations for a formerly, long-term, inundated reservoir with abundant amounts of low-energy fine silty sedimentation overlying the native soils. No native sediment (older than the dam installation) was encountered in the reservoir area. Exposures in recently carved cut banks indicated that more than one meter of sediment has accumulated across the reservoir. Imported gravel materials, modern refuse, and organics were observed up to 79 cm below surface (cmbs) near Mill Creek, indicating that recent flood events have impacted sediments to the water table. The observed natural stratigraphy matched the descriptions offered by the NRCS for the area (NRCS 2014). No evidence for cultural resources was encountered during subsurface testing. A description of the soil profiles from each shovel probe is provided in Appendix A.

Figure 4. Satellite image illustrating the APE and cultural resources survey.

Photo 3. Example of subsurface deposits encountered across the APE.

Near the center of the APE is the failed Mill Creek dam (Photo 4). The Mill Creek Dam was constructed in 1930 (Washington State Department of Ecology 2011, as cited in HDR 2012. It is considered an earth-filled concrete gravity dam (HDR 2012). Gravity dams are designed so that every dam section is stable, independent of any other dam section. Prior to the 2008 breach, the dam was 200-feet wide by 20-feet tall (HDR 2012). The profile of the dam appears to be trapezoidal. The dam was breached along the right bank. On the left side of the dam is a concrete spillway and two culverts estimated to be 24 inches in diameter (HDR 2012). Canal gates, manufactured by Waterman Industries, have been installed on the upstream end of the culverts to provide the ability to draw down the reservoir (HDR 2012). Following the breach, sandbags were placed along the upstream face of the dam and ecology blocks were placed along the right side of the dam in an attempt to secure the dam and adjacent hillslope. The wooden footbridge has also since been removed from the location and is set aside offsite.

Photo 4. Overview of Mill Creek Dam.

The dam is aged 50 years or older and, as such, is required by the DAHP to be inventoried; the prepared site form as submitted is provided in Appendix B. Considering that the condition of the dam is poor as it is in ruins, and it does not appear to have any structural features that would make it eligible for listing on the NRHP, it is not considered a historic property as defined in 36 CRF part 800.16(1)(1). No other cultural resources that may be considered a historic property were encountered in the APE.

RESULTS AND RECOMMENDATIONS

DA's cultural resources assessment consisted of background review, field investigation, and production of this report. Background review determined the APE to be located in an area of moderate probability for historic properties. Field investigation included pedestrian and subsurface survey. One cultural resource, 45GH226, was recorded in the APE: the Mill Creek Dam. Background research determined that the Mill Creek Dam was constructed in 1930. In accordance with DAHP reporting guidelines, the Mill Creek Dam was inventoried. Although the dam is aged over 50 years, it does not appear to have any qualities that would make it eligible for listing on the NRHP and, as such, is not considered a historic property. <u>It is therefore that the project, as proposed, does not appear to have the potential to affect historic properties, and no further cultural resources oversight is warranted. DA recommends that the USACE assert a</u>

determination of “No Historic Properties Affected” to the Washington State Historic Preservation Officer (SHPO) and any other interested parties.

It should also be recognized that Washington State law provides for the protection of all archaeological resources under RCW Chapter 27.53, Archaeological Sites and Resources, which prohibits the unauthorized removal, theft, and/or destruction of archaeological resources and sites. This statute also provides for prosecution and financial penalties covering consultation and the recovery of archaeological resources. Additional legal oversight is provided for Indian burials and grave offerings under RCW Chapter 27.44, Indian Graves and Records. RCW 27.44 states that the willful removal, mutilation, defacing, and/or destruction of Indian burials constitute a Class C felony. A recent addition to Washington legal code, RCW 68.50.645, Notification, provides a strict process for the notification of law enforcement and other interested parties in the event of the discovery of any human remains regardless of perceived patrimony. The assessment of the property has been conducted by a professional archaeologist and meets or exceeds the criteria set forth in RCW: 27.53 for professional archaeological reporting and assessment.

In the event that archaeological materials are encountered during the project, work should be halted in the vicinity of the find and an archaeologist should immediately be notified. Work would only proceed after the materials is inspected and assessed. At that time the appropriate persons are to be notified of the exact nature and extent of the resource so that measures can be taken to secure them. In the event of inadvertently discovered human remains or indeterminate bones, work must stop immediately. Any remains should be covered and secured against further disturbance; communication should then be established with the local police department, DAHP and local tribes.

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APPENDIX A: SHOVEL PROBE INDEX

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	CONTENTS
Shovel Probe 1		
0 – 44	10YR 3/3 dark brown silt/clay loam	No Cultural Material
44 – 52	2.5Y 4/1 dark gray fine sand/clay loam	No Cultural Material
52 – 104	2.5Y 4/2 very dark grayish brown clay loam w/ buried organics	No Cultural Material
Notes/GPS Location: Easting 441281 Northing 5199810		
Shovel Probe 2		
0 – 15	10YR 3/3 dark brown silt/clay loam	No Cultural Material
15 - 70	2.5Y 4/2 very dark grayish brown clay loam w/ buried organics and angular gravel	No Cultural Material
Notes/GPS Location: Easting 441288 Northing 5199817		
Shovel Probe 3		
0 – 51	10YR 3/3 dark brown silt/clay loam w/ angular gravel and buried organics	No Cultural Material
Notes/GPS Location: Groundwater at 45 cmbs. Easting 441278 Northing 5199848		
Shovel Probe 4		
0 – 30	10YR 3/3 dark brown silt/clay loam	No Cultural Material
30 - 82	2.5Y 4/2 very dark grayish brown clay loam w/ buried organics	No Cultural Material
Notes/GPS Location: Groundwater at 76 cmbs. Easting 441288 Northing 5199892		
Shovel Probe 5		
0 - 55	10YR 3/3 dark brown silt/clay loam	Plastic canister and duct tape at 10cmbs.
Notes/GPS Location: Log impasse at 55 cmbs. Easting 441265 Northing 5199901		
Shovel Probe 6		
0 – 25	10YR 3/3 dark brown silt/clay loam	No Cultural Material
25 – 50	10YR 3/1 very dark gray silt/clay loam	No Cultural Material
Notes/GPS Location: Easting 441241 Northing 5199910		
Shovel Probe 7		
0 - 78	10YR 3/3 dark brown silt/clay loam	No Cultural Material
Notes/GPS Location: Easting 441266 Northing 5199897		
Shovel Probe 8		
0 – 67	10YR 3/3 dark brown silt/clay loam	No Cultural Material
67 - 80	10YR 3/1 very dark gray silt/clay loam	No Cultural

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	CONTENTS
		Material
Notes/GPS Location: Easting 441247 Northing 5199916		
Shovel Probe 9		
0 – 56	10YR 3/3 dark brown silt/clay loam	No Cultural Material
Notes/GPS Location: Water drainage pipe at 56 cmbs. Easting 441233 Northing 5199915		
Shovel Probe 10		
0 – 21	10YR 3/3 dark brown silt/clay loam	No Cultural Material
21 - 39	10YR 3/6 dark yellowish brown fine sand	No Cultural Material
39 – 58	10YR 4/1 dark gray fine to medium sand	No Cultural Material
Notes/GPS Location: Groundwater at 47 cmbs. Easting 441275 Northing 5199822		
Shovel Probe 11		
0 - 31	10YR 3/3 dark brown silt/clay loam	No Cultural Material
31 - 46	2.5Y 4/2 very dark grayish brown clay loam w/ buried organics	No Cultural Material
Notes/GPS Location: Groundwater at 44 cmbs. Easting 441286 Northing 5199852		
Shovel Probe 12		
0 - 8	10YR 3/3 dark brown silt/clay loam w/ rounded to sub-rounded gravels	Imported gravel
8 - 90	10 YR 5/4 yellowish brown silt/clay loam w/ buried organics and rounded to sub-rounded gravels	Imported gravel, clear bottle glass fragment at 60cmbs
Notes/GPS Location: Groundwater at 79 cmbs. Easting 441162 Northing 5200022		
Shovel Probe 13		
0 - 3	10YR 3/3 dark brown silt/clay loam	Imported gravel
3 - 50	10 YR 5/4 yellowish brown silt/clay loam w/ rusty and gley mottling, buried organics and rounded to sub-rounded gravels	Imported gravel
Notes/GPS Location: Groundwater at 30 cmbs. Easting 441154 Northing 5200004		
Shovel Probe 14		
0 - 3	10YR 3/3 dark brown silt/clay loam	Imported gravel
3 - 73	10 YR 5/4 yellowish brown silt/clay loam w/ rusty and gley mottling, buried organics and rounded to sub-rounded gravels	Imported gravel
Notes/GPS Location: Groundwater at 50 cmbs. Easting 441154 Northing 5199992		
Shovel Probe 15		
0 - 3	10YR 3/3 dark brown silt/clay loam	Imported gravel
3 -35	10YR 3/3 dark brown silt/clay loam and 10YR 5/4 yellowish brown silt/clay colluvial mixing w/rounded to sub-rounded gravels	No Cultural Material

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	CONTENTS
35 - 55	10 YR 5/4 yellowish brown silt/clay loam w/ buried organics and rounded to sub-rounded gravels	No Cultural Material
Notes/GPS Location: Easting 441157 Northing 5199973		
Shovel Probe 16		
0 - 16	Compacted angular chipped gravel with 10YR 4/3 brown silt/clay loam	Imported gravel
16 - 49	Highly compacted angular chipped gravel with 7.5YR 5/6 strong brown silt/clay loam	Imported gravel
Notes/GPS Location: Easting 441195 Northing 5199956		

APPENDIX B: WASHINGTON STATE SITE INVENTORY FORM (AS SUBMITTED TO DAHP.

STATE OF WASHINGTON
ARCHAEOLOGICAL SITE INVENTORY FORM

Smithsonian No.: 45GH226
***County:** Grays Harbor

***Date:** 8/4/2014 ***Compiler:** Jennifer Chambers **Human Remains?** No
Location Information Restrictions *(Yes/No/Unknown)*: No **DAHP Case No.:**

SITE DESIGNATION

Site Name: Mill Creek Dam
Field/ Temporary ID:
***Site Type(s)**: Historic Water Structure

SITE LOCATION

***USGS Quad Map Name(s):** Aberdeen, WA (1994)

***Legal Description:** T17 R 09 E/W: West Section(s): 23
Quarter Section(s):

UTM: Zone 10T Easting: 441187mE Northing: 5199912mN
Latitude: Longitude: Elevation (ft/m): 9 m

Other Maps: Type:
Scale: Source:
Drainage, Major: Mill Creek Drainage, Minor: River Mile:
Aspect: Slope:

*Location Description ***(General to Specific)*:**
Located in Mill Creek Park in Cosmopolis, Grays Harbor County, Washington.

***Directions** *(For Relocation Purposes)*: From Aberdeen, take US-101 to C Street in Cosmopolis. Turn right on C Street and Continue to near end of 5th Street. Mill Creek Park will be on the right. Follow loop (pedestrian) trail northwest direction until reach Mill Creek Dam. Access to dam is currently restricted.

SITE DESCRIPTION

***Narrative Description** *(Overall Site Observations)*: The Mill Creek Dam was constructed in 1930 (Washington State Department of Ecology 2011, as cited in HDR 2012. It is considered an earth-filled concrete gravity dam (HDR 2012). Prior to a breach in 2008, the dam was 200-feet wide by 20-feet tall (HDR 2012). The profile of the dam appears to be trapezoidal. The dam was breached along the right bank. On the left side of the dam is a concrete spillway and two culverts estimated to be 24 inches in diameter (HDR 2012). Canal gates, manufactured by Waterman Industries, have been installed on the upstream end of the culverts to provide the ability to draw down the reservoir (HDR 2012). Following the breach, sandbags were placed along the upstream face of the dam and ecology blocks were placed along the right side of the dam in an attempt to secure the dam and adjacent hill slope. A wooden footbridge, once located across the dam, has also since been removed from the location and is set aside offsite. The footbridge is of modern construction.

***Site Dimensions** *(Overall Site Dimensions)*:

notes: intact measurements // too dangerous to measure in disturbed condition

***Height:** 20 feet ***Direction:** N/A x ***Width:** 200 feet ***Direction:** NE-SW

***Method of Measurements:** Records

***Vegetation** *(On Site)*: grasses, shrubs, forest

Local: **Regional:**

Landforms *(On Site)*: **Local:**

Water Resources *(Type)*: Creek **Distance:** **Permanence:** Perennial

CULTURAL MATERIALS AND FEATURES

***Narrative Description** *(Specific Inventory Details)*: No artifacts on site.

***Method of Collection:** No artifacts collected.

***Location of Artifacts** *(Temporary/Permanent)*: N/A

SITE AGE

***Component:** Historic Water Structure ***Dates** *(Overall Site Age Approximation)*: 1930 - 2008

***Dating Method:** Documented records **Phase:** Historic **Basis for Phase Designation:** Dates

(Only those historic sites that meet the minimum National Register (36CFR60) age threshold (50 years of age or older) will be retained as historic archaeological records and assigned Smithsonian Trinomials by DAHP.)

SITE RECORDERS

Observed by: Keith Solmo **Address:**

***Date Recorded:** 6/2/2014

***Recorded by** *(Professional Archaeologist)*: Garth Baldwin

***Organization:** Drayton Archaeology ***Organization Phone Number:** (360) 739-3921

***Organization Address:** P.O. Box 5424, Bellingham, WA 98227

***Organization E-mail:** Garth@draytonarchaeology.com

Date Revisited: N/A **Revisited By:** N/A

SITE HISTORY

***Previous Archaeological Work** *(Done at Site)*: None

LAND OWNERSHIP

***Owner:** City of Cosmopolis

***Address:** PO Box 2007, Cosmopolis, WA 98537

***Tax Lot/ Parcel No:** 417092321009

RESEARCH REFERENCES

***Items/Documents Used In Research** *(Specify)*:

HDR
2012 City of Cosmopolis: Mill Creek Multi-Objective Plan. Prepared for the City of Cosmopolis, Grays Harbor County, Washington.

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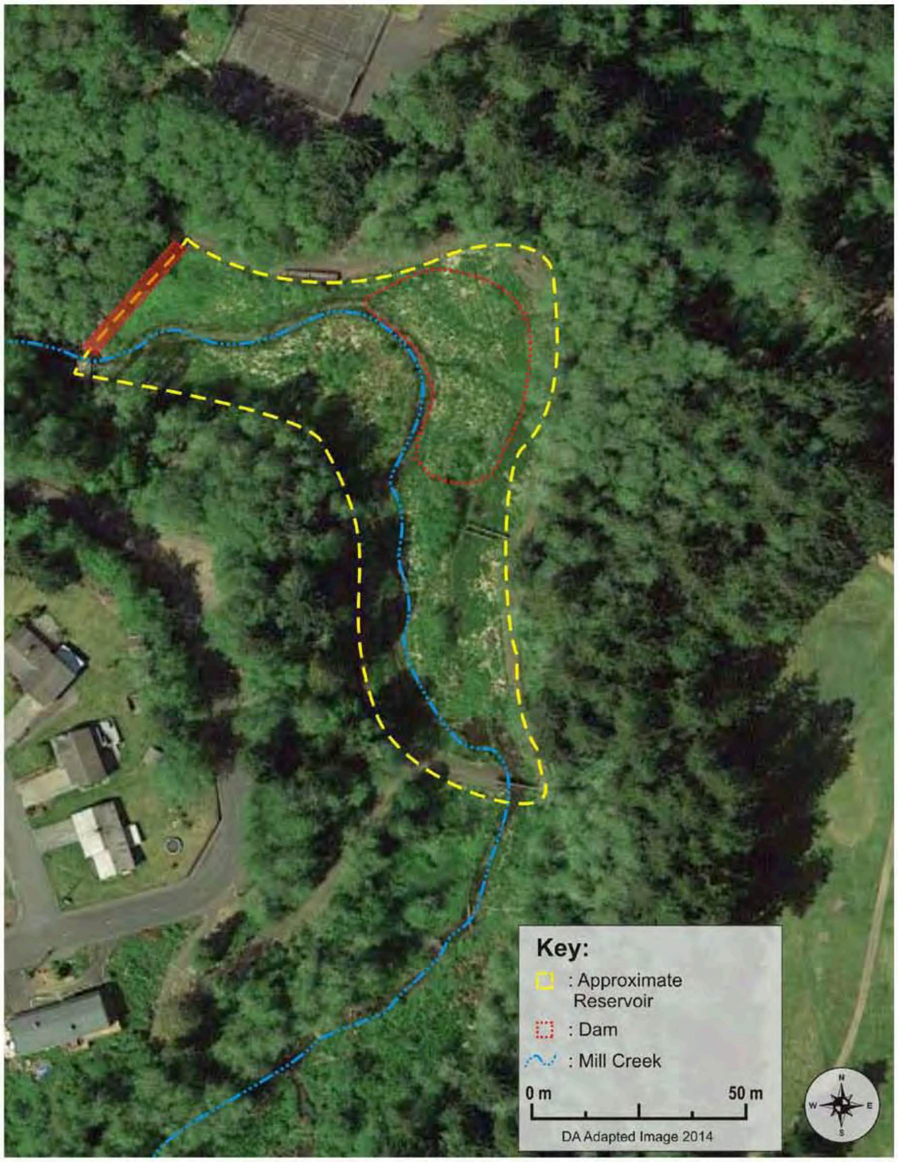
1994 *Aberdeen, Washington.* 1:24,000. 7.5-Minute Series. USGS, Washington, D.C.

USGS MAP

***Quad Name(s):** Aberdeen, WA ***Series:** 7.5 Minute ***Date(s):** 1994

SKETCH MAP

***Sketch Map Description:** An adapted aerial photo illustrating the remnant dam location



PHOTOGRAPH(S)

***Photograph Description(s)** *(Include a representative sample of inventoried archaeological material and features, site location overviews, etc)*:

Photo 1. Overview of the Mill Creek Dam, view south.