

WETLAND AND WATERBODY DELINEATION AND ASSESSMENT



Submitted to Ms. Valerie Bond BHP Billiton Canada, Inc. 130 Third Avenue South Saskatoon, SK S7H 1L3 Canada

Submitted by BergerABAM 210 East 13th Street, Suite 300 Vancouver, Washington 98660 Proposed Grays Harbor Potash Export Facility – Proposed Wetland Mitigation Site: IDD #1 Wetland and Waterbody Delineation and Assessment 40600-HS-RPT-55108 Revision o 26 July 2018

Wetland and Waterbody Delineation and Assessment

Proposed Grays Harbor Potash Export Facility – Proposed Wetland Mitigation Site: IDD #1 Hoquiam, Washington

Submitted to

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Prepared by

Dan Gunderson Senior Scientist Professional Wetland Scientist (PWS) No. 2262

BergerABAM 210 East 13th Street, Suite 300 Vancouver, WA 98660

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1.0 INTRODUCTION

BHP Billiton Canada, Inc. has proposed to build and operate a bulk potash export facility at the Port of Grays Harbor (Port) Terminal 3 site in Hoquiam, Washington. To offset impacts to wetlands and aquatic habitats associated with the project, BHP is developing a comprehensive suite of compensatory mitigation activities, one of which would include wetland and aquatic enhancements to be conducted on portions of three tax parcels (Parcels Nos. 056400600102, 056400400100, and 056400400100). These parcels are currently owned by the Port of Grays Harbor (Port) and are referred to collectively as the IDD #1 site.

The purpose of this wetland and waterbody delineation and assessment report is to document the boundaries of jurisdictional wetlands and waterbodies on the IDD #1 as they are defined and regulated by the U.S. Army Corps of Engineers (USACE), the Washington State Department of Ecology (Ecology), and the City of Hoquiam (City), for purposes of designing a compensatory mitigation project at the site.

This report also assesses the relative quality of each wetland at the project site, as defined by the criteria established in Ecology's *Washington State Wetland Rating System for Western Washington – Revised* (Hruby 2014).

2.0 METHODS

This section of the report identifies the methods that were used to delineate the boundaries of wetlands and waters of the state/United States within the study area. Field investigations for this wetland and ordinary high water mark (OHWM) delineation were conducted on 14 and 15 June 2018 by two BergerABAM wetland scientists. The preliminary wetland boundaries, sample plot data, and wetland rating forms were provided to USACE and Ecology for preliminary review, and a field review site visit was conducted with USACE and Ecology staff on 2 July 2018.

2.1 Wetland Delineation Methods

Wetland delineation was conducted according to the procedures and protocols identified in the USACE 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2* (the regional supplement) (USACE 2010). According to the regional supplement, wetlands are defined as:

... areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The regional supplement uses three parameters in making wetland determinations: hydrophytic vegetation, hydric soils, and wetland hydrology.

- Hydrophytic vegetation consists of plants that, because of morphological, physiological, and/or reproductive adaptations, have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions.
- Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions.
- Wetland hydrology is present when an area is inundated or the water table is within 12 inches of the surface for at least 14 consecutive days of the growing season at a minimum frequency of 5 years in 10. The growing season is defined as the portion of the year when soil temperature at 19.7 inches below the soil surface is greater than biologic zero (5 degrees C).

Except in atypical situations as defined in the regional supplement, evidence of a minimum of one positive wetland indicator from each of the three parameters (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination. The BergerABAM wetland scientists used the routine, on-site, wetland delineation method.

The scientists also used the following information to develop a preliminary indication of where potential wetlands might exist and aid on-site data collection.

- National Wetland Plant List (Lichvar et al. 2016)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Online Mapper
- Preliminary Monthly Climate Data: Hoquiam, WA (National Weather Service, National Oceanic and Atmospheric Administration [NOAA])
- Washington State Wetland Rating System for Western Washington—Revised (Hruby 2014)
- Web Soil Survey (United States Department of Agriculture Natural Resources Conservation Service [USDA-NRCS])
- Wetlands Delineation Manual, Technical Report Y-87-1 (USACE 1987)
- Wetland Delineation Report Port of Grays Harbor Industrial Development District Property #1 (Parametrix 2006)
- Final Wetland Delineation Report Addendum Port of Grays Harbor Industrial Development District Property No. 1 Technical Memorandum (Parametrix 2008)

The scientists used the methodology discussed in the regional supplement and the technical guidance and documentation issued by the USACE and Ecology. The scientists traversed the study area on foot to observe vegetation, hydrologic, and soil conditions. Once the general locations of potential wetland areas were identified, the scientists established paired sample plots in areas that were representative of upland and wetland conditions at the wetland boundary. The scientists characterized vegetation within each

sample plot and inspected the soils at each sample plot to a depth of 16 inches (or more) to determine the presence or absence of hydric soil characteristics and/or wetland hydrology. The locations of the final wetland boundary and sample plot locations were recorded using a Trimble GeoXH GPS unit capable of post-processed submeter accuracy.

Each wetland delineated within the study area was classified according to both the USFWS classification system (Cowardin et al. 1979) and the hydrogeomorphic (HGM) classification system (Adamus 2001). Finally, the wetlands were rated using Ecology's revised *Washington State Wetland Rating System for Western Washington* (wetland rating system) (Hruby 2014).

2.2 Ordinary High Water Mark Delineation Methods

Two BergerABAM scientists also delineated the OHWM of Grays Harbor along the shoreline within the study area.

The OHWM is defined by Revised Code of Washington (RCW) 90.58.030(2)(c) as follows:

c) 'Ordinary high water mark' 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 salt water 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;

This "biological" OHWM is typically identifiable by visible biological and topographic indicators, including scour lines, debris wrack, topographical breaks, and changes in vegetation composition.

The nearest NOAA tidal station is in Aberdeen, Washington (NOAA Station 944187), approximately 1 mile east of the study area. The mean higher high water (MHHW) elevation at this station is reported as 8.47 feet (NAVD 88).¹ Mean lower low water level is reported as -1.64 feet NAVD88 (NOAA 2017b). BergerABAM scientists observed the shoreline of Grays Harbor at the site at both high- and low-tide conditions over the course of two days.

BergerABAM scientists walked the length of the shoreline at the site, and identified the OHWM consistent with the definition established in RCW 90.58.030(2)(c).

¹ The MHHW elevation is the upper limit of USACE jurisdiction in Grays Harbor. NAVD 88 = North American Vertical Datum of 1988

3.0 SITE CHARACTERISTICS

The IDD #1 site is approximately 45 acres in size, and is located on the north shore of Grays Harbor, on the western bank of the Hoquiam River at its mouth (Figure 1, all Figures included as Appendix A). The Puget Sound and Pacific Railroad rail line runs along the northern boundary of the site, and it is bounded to the east by the Hoquiam River, to the south by the waters of Grays Harbor, and on the west by a tidal inlet and shallow drainage. Most of the site surface is flat, though depressions on the surface of the site have formed that have allowed wetland areas to form over time.

The site consists of former tidelands of Grays Harbor that have been filled with dredge materials. The outer shoreline of the site consists of a constructed berm of quarry rock and riprap. The Hoquiam Reach of the Grays Harbor Navigation Improvement Project (Navigation Channel), passes in front of the site approximately 150 feet from shore.

A City sewer pump station is located on the central portion of the northern boundary of the site. Sewage is pumped west via an underground pipe to the City's wastewater treatment facility.

City stormwater drains eastward to the Hoquiam River via a series of two excavated ditches located along the northern boundary of the site. The outlet from the stormwater conveyance is controlled by a small tide gate. There is a third ditch located along the northwestern corner of the study area. This ditch may have formerly connected to the tidal inlet west of the site, but there is currently no surface connection.

There is a culvert and tidal water control structure located in the berm along the eastern boundary of the site. This structure is located at the outlet of a shallow ditch, which drains the central interior portion of the site. The structure consists of two culverts inside an excavated basin that keeps tidal water from entering the site except during higher high tides. One of the culverts associated with this structure is blocked and no longer functions.

3.1 Background

Most of the study area consists of open water, tidally influenced mudflats, and estuarine habitats of Grays Harbor prior to development. A cultural resources report prepared for the Washington State Department of Transportation indicates that until the late 1970s only 20 percent of the site was classified as upland, and the remaining portions consisted of marsh and tide flats (BOAS Inc. 2007).

Prior to Euro-American settlement, native people had villages in present day Hoquiam and used the Hoquiam River, Grays Harbor, and the surrounding area for traditional native resources. Euro-American settlement began in the mid-1800s, and land use at the site has generally been devoted to lumber milling operations since 1880. In the 1920s, the site was also the location of an electric company that began providing electricity to the lumber mills and was eventually developed as a secondary industry. During the Great Depression, a shanty town was developed along the northern border of the study, but was demolished in the 1960s as part of urban renewal program. In the mid-1900s, the site was used for the Greys Harbor Reduction Works, which produced a number of fish products initially (1945 through 1956) and then fertilizer (through 1965). In 1964, the site was acquired by the Port of Grays Harbor, and the plant was demolished. In the 1970s, the site was filled to create an upland surface suitable for development, and the existing dike was constructed around the perimeter of the site (BOAS Inc. 2007).

3.2 Hydrology

The growing season for Grays Harbor County averages 293 days, starting on 26 February and ending on 19 December. This growing season is defined in the soil survey of Grays Harbor County Area, Pacific County, and Wahkiakum County, Washington (Pringle 1986), and is based on the average range of time in which temperatures are above 28 degrees F, in 5 out of 10 years. According to the USACE wetland delineation manual and the regional supplement, flooding, ponding, or saturation in the upper 12 inches of the soil profile for a period of at least 14 consecutive days during the growing season is indicative of wetland hydrology.

Tables 1 and 2 below display precipitation data from data collected at NOAA's Hoquiam Bowerman Airport weather station (Station ID: WBAN:94225). This weather station is located at the Bowerman Airport, and likely provides an accurate representation of the measured and historic precipitation conditions at the study site.

Table 1 provides precipitation from the 14 days prior to and including the dates of each site visit, while Table 2 summarizes the measured precipitation amounts for the water year-to-date at the time of each site visit. These data provide a picture of the hydrologic conditions observed at the time of the site investigations.

| | | tation Summa | y Data | | | | | |
|--------|------------|--------------|--------|--|--|--|--|--|
| Date | Inches | Date | Inches | | | | | |
| May 31 | 0.00 | June 8 | 0.52 | | | | | |
| June 1 | 0.00 | June 9 | 0.14 | | | | | |
| June 2 | 0.00 | June 10 | 0.26 | | | | | |
| June 3 | 0.28 | June 11 | 0.00 | | | | | |
| June 4 | 0.09 | June 12 | 0.00 | | | | | |
| June 5 | 0.00 | June13 | 0.33 | | | | | |
| June 6 | 0.00 | June 14 | 0.05 | | | | | |
| June 7 | Trace | June 15 | 0.00 | | | | | |
| | Total 1.67 | | | | | | | |

Table 1 Daily Precinitation Summary Data

Source: NOAA 2017; 2018

| Table 2. | Water Year Summary Data |
|----------|-------------------------|
| | |

| May 10-12, 2017 | | | | | | | |
|--|--------|--|--|--|--|--|--|
| Date | Inches | | | | | | |
| Water Year to Date (1 October 2017- 15 June 2018) | 66.41 | | | | | | |
| Normal Value | 61.87 | | | | | | |
| +/- | +4.54 | | | | | | |

Source: NOAA 2017: 2018

The data shows that water levels recorded for water-year-to-date at the time of the June 2018 survey were slightly higher than average (+4.54 inches above normal), though generally within the typical range of variability.

As stated previously, the site was once intertidal and salt marsh habitat contiguous with the waters of Grays Harbor and the Hoquiam River. In its current state, however, the site is largely isolated from these hydrologic sources. There is an existing culvert and tide gate on the eastern boundary of the site that occasionally allows water to enter the site and back up into a narrow ditch. Existing wetlands at the site are largely supported by seasonal precipitation, which allows groundwater to perch near the existing ground surface during the early growing season. Groundwater monitoring conducted at the site in late June 2018 documented a water table that was greater than 4 to 6 feet below the soil surface across the majority of the site.

3.3 National Wetlands Inventory Wetlands

The NWI mapping for the site (USFWS 2018) identifies the following wetland types within the study area and vicinity (Figure 5).

- **R4SBC** Riverine (R), Intermittent (4), Streambed (SB), Seasonally Flooded (C)
- **R5UBH** Riverine (R), Unknown Perennial (5), Unconsolidated Bottom (UB), Permanently Flooded (H)
- **E1UBL** Estuarine (E), Subtidal (1), Unconsolidated Bottom (UB), Subtidal (L)
- **E2AB/USN** Estuarine (E), Intertidal (2), Aquatic Bed (AB), Unconsolidated Shore (US), Regularly Flooded (N)

This coarse scale mapping generally identifies the estuarine and freshwater riverine wetlands that border the study area, but does not identify any wetlands in the central portion of the site.

3.4 Soils

The available soil survey data (USDA-NRCS 2018; Pringle 1986) identifies the following soil map units within the study area (Figure 6). The descriptions are excerpted from the Grays Harbor Area, Pacific, and Wahkiakum Counties soil survey (Pringle 1986).

- **Fluvaquents, tidal (39).** This very deep, very poorly drained soil is typically found on flood plains and deltas. It is formed in alluvium. There is no single profile that is representative of this map unit, but one commonly observed profile in the survey area has a dark olive gray, very fine sand surface layer about 6 inches thick. The underlying material to a depth of 60 inches or more is a very dark, loamy, very fine sand. The underlying material ranges from loamy very fine sand to silty clay.
- Udorthents, level (147). These very deep, moderately well drained, somewhat excessively drained, and excessively drained soils are on diked tidelands. They formed in sandy and loamy river dredgings. No single profile is representative of these soils, but one commonly observed has a surface layer that is dark grayish brown sandy loam about 6 inches thick. The underlying material to a depth of 60 inches or

more is dark grayish brown sandy loam and loam. The underlying material has layers ranging in texture from sand and silt to loam.

The soil mapping at the site is generally representative of soil conditions historically present at the site prior to fill placement. Soils at the site currently, generally consist of a layer of dredged sands between 4 and 8 feet thick on average, over a layer of native sands, silts, and clays that would have represented the intertidal and salt marsh surface soil layers that existed historically at the site. A thin layer of mineral soil has formed or been placed over top of the dredged sand across much of the site, and existing vegetation is typically rooted in this upper soil profile. In some portions of the site, wood waste and other mixed fill material is also present in deeper portions of the soil profile.

3.5 Vegetation

Hydrophytic vegetation consists of plant species that have adapted to growing in periodically inundated or saturated substrates. Five basic groups of vegetation are recognized based on how frequently they occur in wetlands (Reed 1988 and 1993 supplement).² From the wettest to the driest plant communities, the categories are obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and obligate upland (UPL) plants. Hydrophytic vegetation is present when more than 50 percent of the dominant species have an indicator status of OBL, FACW, and/or FAC.

BergerABAM wetland scientists documented the visual percent cover of the dominant plant community species for key sample sites. The scientists investigated sample plots of varying proportions for dominant tree, shrub, herb, and woody vine species using soil pit locations as centers of reference. The composition and orientation of the plant communities within the plot determined the size and shape of each sample plot. Sample plots were set up so that their boundaries included a representative cross section of the plant community within the plot. Species dominance was calculated by estimating the percent aerial cover of each species within each stratum.

The scientists characterized the species from each stratum in descending order of percent cover and used the USACE's 50-20 technique to determine the predominance of hydrophytic vegetation. According to the 50-20 technique, when the most abundant plant species are ranked in descending order of abundance and cumulatively totaled, any species immediately exceeding 50 percent cover, plus any species comprising more than 20 percent cover, represent the dominant species. If more than 50 percent of the dominant species included by these criteria are FAC or wetter, the vegetation community is considered hydrophytic.

¹ Plant nomenclature in this report follows the Regional List of Plant Species that Occur in Wetlands: Northwest (Region 9) (Reed 1988 and 1993 supplement) and the 2016 update of the regional wetland plant list (Lichvar et al. 2016).

A prevalence index is used as another method of evaluating the presence or absence of hydrophytic vegetation based on the relative dominance of species within each indicator status. Using the prevalence index, vegetation percentages within each designation (OBL, FACW, FAC, FACU, and UPL) are added together and are given a different multiplier. Once calculated, the total in the multiplied column is divided by the original percentage total before multiplying. If the number given is less than or equal to 3.0, the vegetation community is considered hydrophytic. The vegetation community is not considered hydrophytic if the number is greater than 3.0.

Wetlands have formed throughout the central portion of the site on top of an area previously filled with dredged material. Reed canarygrass is the dominant emergent species across a significant percentage of the site, with lesser amounts of other emergent wetland and facultative species including horsetail (*Equisetum arvense*), soft rush (*Juncus effusus*), slough sedge (*Carex obnupta*), bird's-foot trefoil (*Lotus corniculatus*), velvet grass (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), Kentucky bluegrass (*Poa pratensis*), creeping buttercup (*Ranunculus repens*), hairy cat's-ear (*Hypochaeris radicata*), tall fescue (*Schedonorus arundinaceus*), Pacific silverweed (*Potentilla anserina*), English plantain (*Plantago lanceolata*), white clover (*Trifolium repens*), yellow glandweed (*Parentucellia viscosa*), sheep's sorrel (*Rumex acetosella*), bedstraw (*Galium trifidum*), foxtail (*Alopecurus aequalis*), tufted hairgrass (*Deschampsia caespitosa*), and field bindweed (*Convulvulus arvense*), among others. Small patches of Hooker's willow (*Salix hookeri*) are present in some of the wetland areas.

Himalayan blackberry (*Rubus armeniacus*) and Canada thistle (*Cirsium arvense*), are also distributed through upland and transitional areas throughout the site.

Along the southern, eastern, and southwestern boundaries of the site, the shoreline is armored with riprap and there is limited vegetation. Field bindweed, Himalayan blackberry, and oxeye daisy (*Leucanthemum vulgare*) are present along the top of the shoreward slope, and found growing up through the riprap.

Vegetation along the ditches on the northern boundary of the site consists primarily of reed canarygrass and Himalayan blackberry, with an overstory of red alder (*Alnus rubra*) and Hooker's willow.

4.0 WETLANDS AND JURISDICTIONAL WATERBODIES

BergerABAM scientists identified four wetlands and also identified and marked the OHWM of Grays Harbor and of diches along the northern boundary of the site. The data sheets, attached as Appendix B, show the data collected during each site visit. The numbers assigned to each data sheet corresponds to the numbered sample plots. Each wetland was rated using the wetland rating forms from Ecology's revised wetland rating system (Hruby 2014), which are included as Appendix C.

Figures 7 to 9 show the location of each wetland within the study area. Figure 10 depicts the OHWM of Grays Harbor and the ditches along the periphery of the site. Figure 11 provides a set of representative photographs of the study area.

4.1 Wetlands

4.1.1 Wetland A

Wetland A is an approximately 25.23-acre, palustrine emergent wetland that covers most of the study area; however, limited strips of upland are present along the western boundary, and in the northeast corner of the site. Vegetative species identified within Wetland A include horsetail, softrush, slough sedge, bird's-foot trefoil, velvet grass, sweet vernal grass, Kentucky bluegrass, creeping buttercup, tall fescue, English plantain, white clover, and bedstraw, among others.

Wetland A has been extensively modified over the course of the past 50 years, through placement of fill material, ditching, and construction of upland berms. While the area in which Wetland A is located was once in the historic tideflats of Grays Harbor, the existing wetland has formed on top of dredged sands, and other fill material.

Soils observed in Wetland A consisted primarily of a combination of relic fill material and decomposing wood waste. In a typical wetland soil profile, soils to a depth of 5 inches consisted of a very dark grayish brown (10YR 3/2) silt loam, followed by very dark grayish brown (10YR 3/2) sand with dark yellowish brown (10YR 3/6) redox concentrations in the matrix. This soil profile meets the criteria of the Sandy Redox (S5) hydric soil indicator. Indicators of hydrology observed within Wetland A included oxidized rhizospheres along living root channels (C3) and geomorphic position (D2).

Wetland Rating

Wetland A was rated according to the methodology described in Ecology's revised *Washington State Wetland Rating System for Western Washington* (Hruby 2014). The Ecology wetland rating system is used to determine a wetland's relative water quality and hydrologic and habitat functions, and is used to establish a wetland Category for each wetland. A complete set of wetland rating form data sheets are included as Appendix C.

Wetland A was rated using the "depressional" classification because the entire wetland unit is located in a shallow depression, potions of which pond water during certain times of the year. Wetland A has a highly constricted, and only occasionally flowing outlet in the form of a shallow ditch which is further controlled by a tidegate.

Wetland A received a low score for site potential and a moderate score for landscape potential to provide water quality functions. Wetland A has a low site potential for water quality functions because it is regularly mowed (lacks persistent plant cover), and most of the site is not seasonally inundated. It has moderate landscape potential to provide water quality functions because of the nature of its urban landscape position and its proximity to other sites and high intensity land uses that could generate pollutants. The wetland received a high score for its value relative to water quality because it is located within a subbasin for which a total maximum daily limit (TMDL) has been established for water quality concerns.

Wetland A received a moderate score for site potential relative to hydrologic functions due primarily to the nature of its outfall, and the size of the wetland relative to its contributing basin. Wetland A received a moderate score for landscape potential to provide hydrologic functions because more than 25 percent of the contributing basin of the wetland is covered with intensive human land uses. Wetland A received a low score for value relative to hydrologic function, due primarily to its position low within the subbasin (there are no downstream areas prone to flooding).

Wetland A received a low score for site potential relative to habitat function. Wetland A is not a structurally diverse wetland and has only two hydroperiods. Habitat interspersion within the wetland is low. Invasive species are distributed throughout the wetland, and plant species diversity is relatively low. Wetland A does not provides special habitat features, such as large woody debris, standing snags, or patches of thin-stemmed emergent vegetation in the understory within seasonally inundated areas. Wetland A received high scores for value relative to habitat function as there are three WDFWdefined Priority Habitats identified within 100 meters of the wetland (riparian habitats, instream habitats, and nearshore habitats), and it is mapped as a location for an individual WDFW priority species (purple martin).

Wetland A, however, received low scores for landscape potential relative to habitat function. Wetland A is largely isolated from other undisturbed habitats, and land use surrounding the wetland consists of predominantly high-intensity uses. It has limited landscape potential to provide high-quality habitat function.

Wetland A received a total score of 16 points under Ecology's rating system and, as such, is considered a Category III wetland.

4.1.2 Wetland B

Wetland B is an approximately 0.14-acre, palustrine wetland that is located in the northwest corner of the study area. Wetland B is an area that has developed upon fill material and which appears to be maintained by a combination of areas of high groundwater and slowly permeable soils. Wetland B received a score of 13 points under Ecology's *Washington State Wetland Rating System for Western Washington – Revised* (Hruby 2014) and is considered a Category IV wetland. Wetland B is a slope wetland that drains to the excavated ditch along the northwestern boundary of the site, part of which forms northern boundary of Wetland B. Vegetative species in Wetland B include Kentucky bluegrass, creeping buttercup, and reed canarygrass. Reed canarygrass is well established throughout most of the wetland.

In a typical profile, soils generally consist of a 16-inch layer of dark grey (10YR 4/1) silt loam. This soil profile meets the criteria for the Depleted Matrix (F3) hydric soil indicator.

Primary indicators of hydrology in Wetland B included saturation (A3) at the surface, algal mats or crust (B4), and sparsely vegetated concave surface (B8).

Wetland Rating

Wetland B was rated according to the methodology described in Ecology's revised *Washington State Wetland Rating System for Western Washington* (Hruby 2014). A complete set of wetland rating form data sheets are included as Appendix C.

Wetland B was rated using the "slope" classification because it is on a slope, water has a unidirectional flow through the wetland, and water leaves the wetland without being impounded. Water from Wetland B is conveyed the relic ditch along the northern border of the wetland.

Wetland B received low scores for site potential and landscape potential to provide water quality functions. Wetland B has a low potential to provide these functions due to the nature of its landscape position and its surface water outfalls, its vegetated condition (maintained through mowing), and because it is not located near to other industrial facilities that could generate pollutants. The wetland received a high score for its value relative to water quality because it is located within a subbasin for which a TMDL has been established for water quality concerns.

Wetland B received low scores for site and landscape potential relative to hydrologic functions due primarily to the nature of its vegetation, its position within the landscape, and the size of the wetland relative to its contributing basin. Wetland B received a low score for value relative to hydrologic function, due primarily to its position low within the subbasin (there are no downstream areas prone to flooding).

Wetland B received low scores for site and landscape potential relative to habitat function. Similar to Wetland A, Wetland B is not a structurally diverse wetland with only a single hydroperiod and Cowardin class. Plant species diversity is also low. Wetland B also does not provides special habitat features, such as the presence of large woody debris, standing snags, or patches of thin-stemmed emergent vegetation within seasonally inundated areas. Wetland B received a low score for landscape potential relative to habitat function because it is largely isolated from other undisturbed habitats, and land use surrounding the wetland consists of predominantly high intensity uses.

Wetland B received high scores for value relative to habitat function as there are three WDFW-defined Priority Habitats identified within 100 meters of the wetland (riparian habitats, instream habitats, and nearshore habitats).

Wetland B received a total score of 13 points under Ecology's rating system and, as such, is considered a Category IV wetland.

4.1.3 Wetland C

Wetland C is an approximately 0.16-acre, emergent wetland located in the northwestern corner of the study site. Wetland C received a score of 15 points under Ecology's

Washington State Wetland Rating System for Western Washington – Revised (Hruby 2014) and is considered a Category IV wetland.

Vegetation within Wetland C consists primarily of a regularly mowed stand of Hooker's willow. Emergent species including reed canarygrass and soft rush, exist along the margins of the wetland. Soils within Wetland C consist of very dark grayish brown (10YR 3/2) silt loam with dark yellowish brown (10 YR 4/6) redox concentrations in the matrix and along pore linings, all to a depth of 14 inches. This soil profile meets the criteria for the hydric soil indicator Redox Dark Surface (F6). Indicators of hydrology within Wetland C include oxidized rhizospheres along living roots (C3), and geomorphic position (D2).

Wetland Rating

Wetland C received a rating of Category IV under Ecology's *Washington State Wetland Rating System for Western Washington – Revised* (Hruby 2014). A complete set of wetland rating form data sheets are included as Appendix C.

Wetland C was rated using the "depressional" HGM classification because it is in a topographic depression in which water ponds, or is saturated to the surface at some time during the year.

Wetland C received low scores for site potential and landscape potential to provide water quality functions. Wetland C has a low potential to provide these functions due to the nature of its landscape position and its surface water outfalls, its vegetated condition (maintained through mowing), and because it is not located near to other industrial facilities that could generate pollutants. The wetland received a high score for its value relative to water quality because it is located within a subbasin for which a TMDL has been established for water quality concerns.

Wetland C received moderate scores for site and landscape potential relative hydrologic functions due primarily to its position within the landscape, and the size of the wetland relative to its contributing basin. Wetland C received low scores for value relative to hydrologic function, due primarily to its position low within the subbasin (there are no downstream areas prone to flooding).

Wetland C received low scores for site and landscape potential relative to habitat function. Similar to Wetlands A and B, Wetland C is not a structurally diverse wetland with a multilayered forest class or multiple hydroperiods, and has low habitat interspersion. Plant species diversity is low, and Wetland C also does not provides special habitat features, such as the presence of large woody debris, standing snags, or patches of thin-stemmed emergent vegetation within seasonally inundated areas.

Wetland C received a low score for landscape potential relative to habitat function because it is largely isolated from other undisturbed habitats, and land use surrounding the wetland consists of predominantly high intensity uses. Wetland C received high scores for value relative to habitat function as there are three WDFW-defined Priority Habitats identified within 100 meters of the wetland (riparian habitats, instream habitats, and nearshore habitats).

Wetland C received a total score of 15 points under Ecology's rating system and, as such, is considered a Category IV wetland.

4.1.4 Wetland D

Wetland D is a very small, approximately 0.01-acre, emergent wetland located adjacent to the western border of the site. Wetland C is in a slight topographic depression within an area that has developed upon fill material. Vegetation in Wetland D consists of slough sedge, softrush, bird's-foot trefoil, silverweed, tufted hairgrass, and reed canarygrass.

Soils within Wetland D consist of a 4-inch layer of very dark grayish brown (10YR 3/2) silt loam, followed by a layer of very dark greyish brown (10YR 3/2) silt loam with dark yellowish brown (10YR 3/6) redox concentrations in the matrix and along pore linings, to a depth of 16 inches. This soil profile meets the criteria for the hydric soil indicator Redox Dark Surface (F6). Indicators of hydrology within Wetland C include oxidized rhizospheres along living roots (C3), and geomorphic position (D2).

Wetland Rating

Wetland D received rating of Category IV under Ecology's *Washington State Wetland Rating System for Western Washington – Revised* (Hruby 2014). A complete set of wetland rating form data sheets are included as Appendix C.

Wetland D was rated using the "depressional" HGM classification because it is in a topographic depression in which water ponds, or is saturated to the surface at some time during the year.

Wetland D received low scores for site potential and landscape potential to provide water quality functions. Wetland D has a low potential to provide these functions due to the nature of its landscape position and its surface water outfalls, its vegetated condition (maintained through mowing), and because it is not located near to other industrial facilities that could generate pollutants. The wetland received a high score for its value relative to water quality because it is located within a subbasin for which a TMDL has been established for water quality concerns.

Wetland D received a low score for site potential relative hydrologic functions due primarily to its depth of water storage and the size of the wetland relative to its contributing basin. Wetland D received a moderate score for landscape potential relative to hydrologic functions primarily because more than 25 percent of the contributing basin of the wetland is covered with intensive human land uses. Wetland D received low scores for value relative to hydrologic function due primarily to its position low within the subbasin (there are no downstream areas prone to flooding). Wetland D received low scores for site and landscape potential relative to habitat function. Similar to the other wetlands identified within the study area, it is not a structurally diverse wetland with a multilayered forest class or multiple hydroperiods, and has low habitat interspersion. Plant species diversity is low, and Wetland D also does not provides special habitat features, such as the presence of large woody debris, standing snags, or patches of thin-stemmed emergent vegetation within seasonally inundated areas.

Wetland D received a low score for landscape potential relative to habitat function because it is largely isolated from other undisturbed habitats, and land use surrounding the wetland consists of predominantly high intensity uses.

Wetland D received high scores for value relative to habitat function as there are three WDFW-defined Priority Habitats identified within 100 meters of the wetland (riparian habitats, instream habitats, and nearshore habitats).

Wetland D received a total score of 14 points under Ecology's rating system and, as such, is considered a Category IV wetland.

4.1.5 Waterbodies (Ordinary High Water Mark Delineation)

The results of the OHWM delineation at the site indicate that the biological OHWM along the shoreline is located close to the 8.47 feet (NAVD 88) MHHW elevation established by NOAA at the site. The OHWM delineation was conducted during a tidal interval in which the lower high tides were between +8.27 and +8.41 feet (NAVD 88) which closely corresponds to the established MHHW elevation at the site. The shoreline was observed at the peak of the lower high tide and the waterline was closely associated with several markers of OHWM, including water and sediment lines on riprap, a relatively sharp transition in vegetation from unvegetated mudflat and macroalgae to sparse upland emergent grasses in and among the riprap, and wracked large wood and other debris.

The OHWM of the ditches along the northern and western boundaries of the site are characterized by incised channels and an associated transition from sparsely vegetated channel bottom, to adjacent reed canarygrass-dominated terraces.

5.0 REGULATORY REVIEW

This section provides an overview of some of the pertinent regulatory requirements as they pertain to wetlands and potentially jurisdictional waters.

5.1 Wetlands

At the local level, the study area is located within the jurisdiction of the City. Wetlands within the study area are subject to regulation under the provisions of the Hoquiam Shoreline Master Program (SMP). The City's SMP is intended to protect the environmentally sensitive resources within the shoreline jurisdiction of the city by establishing standards for development of properties that contain or border environmentally sensitive features and thus protect the public health, safety, and welfare of concerning critical areas, including wetlands.

The wetlands identified in this report would be subject to the regulations described in SMP Article VIII – Critical Areas Regulation. Section 11.05.820 of the SMP establishes regulations for the protection of wetland areas, and designates, classifies, and protects wetland areas. The ordinance establishes protective buffers associated with wetlands and requires that certain permits or approvals be obtained for development activities within wetlands and/or their respective buffers. The ordinance requires the use of Ecology's revised wetland rating system (Hruby 2014) to determine a wetland's category based on its score for habitat, water quality, and hydrologic functions, and to establish required buffer widths.

SMP Section 11.05.820(2)(a) states that buffers shall be required for all regulated activities adjacent to regulated wetlands. Buffer widths are determined based on wetland category and are measured perpendicularly from the wetland boundary as determined through a field survey.

In addition to the City's ordinances, the USACE and Ecology regulate jurisdictional wetlands at the federal and state levels under Sections 404 and 401 of the Clean Water Act, respectively. Any proposed impacts to the wetlands described in this document would require approval from USACE and Ecology.

The compensatory mitigation project being developed at the site would be part of the overall Proposed Grays Harbor Potash Facility project, so no separate application to or permit from the USACE, Ecology, or the City would be expected to be required for this project. This wetland delineation report would be submitted as an appendix to the compensatory mitigation plan, and would be reviewed by the USACE, Ecology, and the City as part of the overall project review that is currently underway.

6.0 CONCLUSIONS

BergerABAM scientists performed a wetland and OHWM delineation within the project study area. Four jurisdictional wetlands were identified within the study area (Figures 7 to 9). These include one Category III and two Category IV depressional freshwater wetland and one Category IV freshwater slope wetland. BergerABAM also delineated the OHWM of Grays Harbor along the shoreline at the site and within two associated linear ditch features and a third unconnected ditch (Figure 10).

It should be noted that the wetland boundaries and classification in this report were determined using the most appropriate field techniques and best professional judgment of the wetland scientists. The City, Ecology, and the USACE have the final authority in the determination of the boundaries, categories, and jurisdictional status of wetlands under their respective jurisdictions.

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8.0 LIST OF ACRONYMS AND ABBREVIATIONS

| BMP | best management practice |
|---------|---|
| City | City of Hoquiam |
| Ecology | Washington State Department of Ecology |
| FAC | facultative |
| FACU | facultative upland |
| FACW | obligate wetland |
| HGM | hydrogeomorphic |
| MHHW | mean higher high water |
| NOAA | National Oceanic and Atmospheric Administration |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| NWI | National Wetlands Inventory |
| OBL | obligate wetland |
| OHWM | ordinary high water mark |
| Port | Port of Grays Harbor |
| RCW | Revised Code of Washington |
| SMP | Shoreline Master Program |
| UPL | obligate upland |
| USACE | U.S. Army Corps of Engineers |
| USDA | United States Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| WDFW | Washington Department of Fish and Wildlife |

Wetland and Waterbody Delineation and Assessment Proposed Grays Harbor Potash Export Facility Proposed Wetland Mitigation Site: IDD #1 Hoquiam, Washington

> Appendix A Figures





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PURPOSE: Wetland Delineation Report: IDD#1 Site

IN: Hoquiam COUNTY OF: Grays Harbor STATE: WA APPLICANT: BHP Billiton Canada Inc. ADJACENT PROPERTY OWNERS: USA, City of Hoquiam, Port of Grays Harbor, Adams Street Hoquiam LLC, Emerson Street Hoquiam LLC FIGURE 4: Historic Aerials 1953 and 1974



USACE Reference No:NWS-2017-715 PROJECT: Proposed Grays Harbor Potash Export Facility LATITUDE: 46° 58' 42" LONGITUDE: -123° 54' 44" DATUM: NAD_1983_StatePlane_Washington

Sheet 4 of 11

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July 2018



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APPLICANT: BHP Billiton Canada Inc. ADJACENT PROPERTY OWNERS: USA, City of Hoquiam, Port of Grays Harbor, Adams Street Hoquiam LLC, Emerson Street Hoquiam LLC

P 🕘 BergerABAM B

LONGITUDE: -123°52'56.30" DATUM: NAD_1983_StatePlane_Washington July 2018

Sheet 7 of 11

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Wetland A tide gate culvert - site interior at low tide



Wetland B facing east



Wetland A interior facing north



Wetland D facing northeast



Shoreline and berm from southwest corner of site



Western tidal inlet - facing north at low tide

PURPOSE: Wetland Delineation Report: IDD#1 Site IN: Hoquiam COUNTY OF: Grays Harbor STATE OF: WA APPLICATION BY: BHP Billiton Canada Inc. ADJACENT PROPERTY OWNERS: USA, City of Hoquiam, Port of Grays Harbor, Adams Street Hoquiam

LLC, Emerson Street Hoquiam LLC

FIGURE 11: Photosheet



USACE Reference No:NWS-2017-715 PROJECT: Proposed Grays Harbor Potash Export Facility LATITUDE: 46° 58' 42" LONGITUDE: -123° 54' 44" DATUM: NAD_1983_StatePlane_Washington Sheet 11 of 11

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July 2018

Wetland and Waterbody Delineation and Assessment Proposed Grays Harbor Potash Export Facility Proposed Wetland Mitigation Site: IDD #1 Hoquiam, Washington

> Appendix B Wetland Determination Data Forms

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

| Project/Site: IDD#1 | _ City/County: Hoquiam/ | Grays Harbor County | Sampling Date: 06/14/2018 |
|---|-------------------------|------------------------------|------------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | _ Sampling Point: <u>SP1</u> |
| Investigator(s): Dan Gunderson | _ Section, Township, Ra | nge: Section 11 and 12, | Township 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (concave, | convex, none): <u>convex</u> | Slope (%): _0 |
| Subregion (LRR): LRR A Lat: _4 | 46°58'20.65"N | Long: <u>123°53'7.86"W</u> | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, Level | | NWI classif | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time of | year?Yes 🖌 No _ | (If no, explain in | Remarks.) |
| Are Vegetation, Soil, or Hydrology significant | tly disturbed? Are " | Normal Circumstances" | present? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally p | problematic? (If ne | eded, explain any answ | ers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showin | ng sampling point le | ocations, transect | s, important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes <mark>✓</mark> Yes <mark>✓</mark> Yes | No No No∕ | Is the Sampled Area within a Wetland? | Yes | No |
|---|---|-----------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

VEGETATION – Use scientific names of plants.

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: 2 (A) |
| 2 | | | | Total Number of Device of |
| 3. | | | | Species Across All Strata: 3 (B) |
| A | | | | |
| T | | Tatal O | | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = 10tal Co | over | That Are OBL, FACW, or FAC: _00 (A/B) |
| none | | | | Prevalence Index worksheet: |
| I | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | FACW species $x^2 =$ |
| 4 | | | | |
| 5 | | | | |
| | | = Total Co | over | FACU species X 4 = |
| Herb Stratum (Plot size: 10') | | - | | UPL species x 5 = |
| 1. Phalaris arundinacea | 40 | yes | FACW | Column Totals: (A) (B) |
| 2. Poa pratensis | 20 | yes | FAC | Provolonce Index - B/A - |
| 3. Anthoxanthum odoratum | 20 | yes | FACU | Hydrophytic Vegetation Indicators: |
| A Holcus lanatus | 15 | | | 1 Danid Toot for Lludronby tio Vegetation |
| Equisetum arvense | 5 | | | |
| 3. <u> </u> | | | | $\underline{\checkmark}$ 2 - Dominance Test is >50% |
| б | | | | 3 - Prevalence Index is ≤3.01 |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11. | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 100 | - Total Co | vor | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: ^{10'}) | | <u> </u> | VCI | |
| 1, none | | | | Hydrophytic |
| 2 | | | | Vegetation |
| ۲ | | Tatal Ca | | Present? Yes V No |
| % Bare Ground in Herb Stratum ⁰ | | = 10 al Co | ver | |
| Remarks: | | | | 1 |
| | | | | |
| | | | | |

SOIL

| Depth | Matrix | | Red | ox Feature | es | | | |
|---|---|------------------|--------------------|---|--|--|--|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
| 1-12 1 | 10YR 3/2 | 100 | none | | | | Silt loam | with rock fill |
| 12-18 1 | 10YR 4/1 | 90 | 10YR 4/6 | 10 | С | М | sandy loam | |
| | | | | | | · | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | · | | |
| | | | | | | · | | |
| | | | | | | <u> </u> | 2. | |
| ype: C=Cono | centration, D=Deple | tion, RM | =Reduced Matrix, C | S=Covere | ed or Coate | ed Sand Grai | ins. ² Lo Indicato | cation: PL=Pore Lining, M=Matrix. |
| Histosol (A | (1) | Jie to un | Sandv Redox | (S5) | iou., | | 2 cr | m Muck (A10) |
| Histic Epip | , bedon (A2) | | Stripped Matri | x (S6) | | | Red | d Parent Material (TF2) |
| Black Histi | ic (A3) | | Loamy Mucky | Mineral (F | 1) (excep | t MLRA 1) | Ver | y Shallow Dark Surface (TF12) |
| _ Hydrogen \$ | Sulfide (A4) | | Loamy Gleyed | Matrix (F | 2) | | Oth | er (Explain in Remarks) |
| Depleted E | Below Dark Surface | (A11) | Depleted Matr | ix (F3) | | | | |
| _ Thick Dark | c Surface (A12) | | Redox Dark S | urface (F6 |) | | ³ Indicate | ors of hydrophytic vegetation and |
| Sandy Muc | cky Mineral (S1) | | Depleted Dark | Surface (| F7) | | wetla | and hydrology must be present, |
| | | | | | | | | |
| Sandy Gle | eyed Matrix (S4) | | Redox Depres | sions (F8) | | | unles | ss disturbed or problematic. |
| Sandy Gle | eyed Matrix (S4) yer (if present): | | Redox Depres | sions (F8) | | | unles | ss disturbed or problematic. |
| Sandy Gle | yed Matrix (S4) yer (if present): | | Redox Depres | sions (F8) | • | | unles | ss disturbed or problematic. |
| Sandy Gle Restrictive La Type: Depth (inche | eyed Matrix (S4) yer (if present): es): | | Redox Depres | sions (F8) | | | unles Hydric Soi | ss disturbed or problematic. |
| Sandy Gle Restrictive Lay Type: Depth (inche Remarks: | eyed Matrix (S4) yer (if present): es): | | Redox Depres | sions (F8) | | | unles | ss disturbed or problematic. |
| Sandy Gle Restrictive Lay Type: Depth (inche Remarks: | eyed Matrix (S4) yer (if present): es): | | Redox Depres | sions (F8) | <u> </u> | | unles | ss disturbed or problematic. |
| Sandy Gle Restrictive Lay Type: Depth (inche Remarks: | eyed Matrix (S4) yer (if present): es): | | Redox Depres | sions (F8) | , | | unles | ss disturbed or problematic. |
| Sandy Gle Restrictive Lay Type: Depth (inche Remarks: | eyed Matrix (S4) yer (if present): es): | | Redox Depres | sions (F8) | | | unles | ss disturbed or problematic. |
| Sandy Gle estrictive La Type: Depth (inche emarks: /DROLOG | yed Matrix (S4) yer (if present): es): | | Redox Depres | sions (F8) | | | unles | I Present? Yes <u>No</u> |
| Sandy Gle testrictive Lay Type: Depth (inche temarks: YDROLOG Vetland Hydro | yed Matrix (S4) yer (if present): es): Y ology Indicators: | | Redox Depres | sions (F8) | , | | unles | I Present? Yes <u>No</u> No |
| Sandy Gle estrictive La Type: Depth (inche emarks: //DROLOG /etland Hydro rimary Indicate | yed Matrix (S4) yer (if present): es): Y ology Indicators: tors (minimum of one | <u> </u> | Redox Depres | sions (F8) | , | | Unles Hydric Soil | ndary Indicators (2 or more required) |
| Sandy Gle estrictive La Type: Depth (inche emarks: //DROLOG` /etland Hydro rimary Indicate Surface Wa | yed Matrix (S4) yer (if present): es): Y ology Indicators: tors (minimum of one 'ater (A1) | <u>e require</u> | Redox Depres | sions (F8) | ves (B9) (e | except | Unles Hydric Soil | I Present? Yes No I ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 |
| Sandy Gle estrictive La Type: Depth (inche emarks: //DROLOG /etland Hydro rimary Indicate Surface Wa High Water | yed Matrix (S4) yer (if present): es): Y ology Indicators: tors (minimum of one fater (A1) rr Table (A2) | e require | Redox Depres | bly) ained Leav | ves (B9) (6 and 4B) | except | Hydric Soil | I Present? Yes <u>No</u> No Indary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| Sandy Gle testrictive Lay Type: Depth (inche temarks: //DROLOG //etland Hydro rimary Indicate Surface Wa High Water Saturation | yed Matrix (S4) yer (if present): es): y Y ology Indicators: tors (minimum of one fater (A1) r Table (A2) (A3) | <u>e require</u> | Redox Depres | bly) ained Leav 1, 2, 4A, t (B11) | ves (B9) (¢ and 4B) | except | Unles Hydric Soil | I Present? Yes <u>No</u> No Indary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| Sandy Gle estrictive Lay Type: Depth (inche emarks: //DROLOG //etland Hydro rimary Indicate Surface Wa High Water Saturation Water Mark | yed Matrix (S4) yer (if present): es): yes): ye | <u>e require</u> | Redox Depres | bly) ained Leav (1, 2, 4A, t (B11) nvertebrate | ves (B9) (e and 4B) es (B13) | except | Unles Hydric Soil Unles | I Present? Yes No I Present? Yes No Indary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Orainage Patterns (B10) Ory-Season Water Table (C2) |
| Sandy Gle estrictive Lay Type: Depth (inche emarks: // // // // // // // // // // // // // | yed Matrix (S4) yer (if present): es): y y ology Indicators: tors (minimum of one fater (A1) rr Table (A2) (A3) rks (B1) Deposits (B2) | <u>e require</u> | Redox Depres | bly) ained Leav 1, 2, 4A, at (B11) nvertebration Sulfide C | ves (B9) (¢ and 4B) es (B13) 0dor (C1) | except | Unles Hydric Soil Seco Understand | I Present? Yes No I Present? Yes No Indary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| Sandy Gle testrictive Lay Type: Depth (inche temarks: /DROLOG // DROLOG // DROLOG | yed Matrix (S4) yer (if present): es): y y ology Indicators: tors (minimum of one /ater (A1) er Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) | <u>e require</u> | Redox Depres | bly) ained Leav 1, 2, 4A, it (B11) nvertebrat n Sulfide C Rhizospho | ves (B9) (e and 4B) es (B13) Odor (C1) eres along | except | Unles Hydric Soil Seco Under U | I Present? Yes No I Present? Yes No Indary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Seomorphic Position (D2) |
| Sandy Gle Restrictive La Type: Depth (inche Remarks: YDROLOG YUPTIAND Hydro Primary Indicat Surface Wa High Water Saturation Water Mari Sediment I Drift Depos Algal Mat of | yed Matrix (S4) yer (if present): es): y y ology Indicators: tors (minimum of one fater (A1) or Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) | e require | Redox Depres | bly) ained Leav 1, 2, 4A , it (B11) nvertebration Sulfide C Rhizospho e of Reduc | ves (B9) (¢ and 4B) es (B13) odor (C1) eres along ed Iron (C | except | Unles Hydric Soil Seco Unles U | I Present? Yes No I Present? Yes No Indary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Orainage Patterns (B10) Ory-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) |
| Sandy Gle Restrictive La Type: Depth (inche Remarks: YDROLOG Yetland Hydro Yetland Hydro Crimary Indicate Surface Wa Ligh Water Saturation Water Mari Sediment I Drift Depos Algal Mat c Iron Depos | yed Matrix (S4) yer (if present): es): Y ology Indicators: tors (minimum of one fater (A1) er Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) | <u>e require</u> | Redox Depres | bly) ained Leav 1, 2, 4A, at (B11) nvertebrat Sulfide C Rhizospho of Reduction Reduction Reduction | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C tion in Tille | except | Unles Hydric Soil Seco Unles | A present? Yes No No Present? Yes No No No No No No No No No No |
| Sandy Gle Restrictive La Type: Depth (inche Remarks: YDROLOG Yetland Hydro Primary Indicate Surface Wa Ligh Water Marl Sediment I Drift Depos Algal Mat c Iron Depos Surface Sc | yed Matrix (S4) yer (if present): es): yer (if present): es): y y y ology Indicators: tors (minimum of one fater (A1) er Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) pil Cracks (B6) | <u>e require</u> | Redox Depres | bly) ained Leav 1, 2, 4A , t (B11) nvertebrat n Sulfide C Rhizosphi e of Reduct on Reduct | ves (B9) (e and 4B) es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E | Except Except A) Ed Soils (C6) | Unles Hydric Soil Seco Unles | I Present? Yes No I Present? Yes No I adary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Orainage Patterns (B10) Ory-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Sandy Gle Restrictive Lay Depth (inche Remarks: YDROLOG YOROLOG Yotland Hydro Yotland Hydro Yotland Hydro Yotland Hydro Yotland Hydro Yotland Hydro Saturation Water Marl Sediment I Drift Depos Algal Mat c Iron Depos Surface Sc Inundation | yed Matrix (S4) yer (if present): es): y Y ology Indicators: tors (minimum of one (ater (A1) er Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) oil Cracks (B6) Visible on Aerial Im | e require | Redox Depres | bly) ained Leav 1, 2, 4A , t (B11) nvertebrate Sulfide C Rhizosphie on Reduct on Reduct on Reduct on Reduct | ves (B9) (c and 4B) es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E emarks) | except Living Roots 4) ed Soils (C6) 01) (LRR A) | Unles Hydric Soil Hydric Soil Seco C C C C C C C C C C C C C | I Present? Yes No I Present? I Present? Yes No I Present? I Present? I Present I P |
| Sandy Gle testrictive Lay Depth (inchu temarks: //DROLOG //etland Hydro rimary Indicate Surface Wa Surface Wa Saturation Sediment I Sediment I Sediment I Sediment I Sediment I Sediment I Surface So Igal Mat co Iron Depos Surface So Inundation Sparselv V | yed Matrix (S4) yer (if present): es): yer (if present): es): y y ology Indicators: tors (minimum of one (ater (A1) or Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) oil Cracks (B6) visible on Aerial Im (egetated Concave S | <u>e require</u> | Redox Depres | bly) ained Leav A 1, 2, 4A, it (B11) nvertebrate a Sulfide C Rhizosphe e of Reduct on Reduct on Reduct or Stressed cplain in R | ves (B9) (¢ and 4B) es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E emarks) | except Living Roots 4) ed Soils (C6) 01) (LRR A) | Unles Hydric Soil Hydric Soil Seco C C C C C C C C C C C C C | I Present? Yes No I Present? Yes No I Present? Yes No I Present? Yes No I Present? Yes No No Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Orainage Patterns (B10) Ory-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

| Field Observations: | | | | | | | | | |
|--|-----|------|----------------------------------|----------------------------|-----|------|--|--|--|
| Surface Water Present? | Yes | No 🖌 | Depth (inches): none | | | | | | |
| Water Table Present? | Yes | No | Depth (inches): none | | | | | | |
| Saturation Present? (includes capillary fringe) | Yes | No 🖌 | _ Depth (inches): <u>>18"</u> | Wetland Hydrology Present? | Yes | No 🖌 | | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | | | | | | | |
| | | | | | | | | | |
| Remarks: | | | | | | | | | |
| | | | | | | | | | |
| Project/Site: IDD#1 | City/County: Hoquiam/G | rays Harbor County | Sampling Date: 06/14/2018 |
|---|-----------------------------|---------------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP2 |
| Investigator(s): Dan Gunderson | _ Section, Township, Rang | ge: <u>Section 11 and 12, 1</u> | Township 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, co | onvex, none): <u>concave</u> | Slope (%): |
| Subregion (LRR): LRR A Lat: _40 | δ°58'21.07"N | Long: <u>123°53'9.28"W</u> | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, Level | | NWI classific | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | ear? Yes 🖌 No | (If no, explain in R | Remarks.) |
| Are Vegetation, Soil, or Hydrology significantly | y disturbed? Are "N | ormal Circumstances" p | present? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | roblematic? (If nee | ded, explain any answe | ers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point lo | cations, transects | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes ✓ No Yes ✓ No Yes No ✓ | Is the Sampled Area within a Wetland? | Yes No |
|---|--|---------------------------------------|--------|
| Remarks: | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: | |
|--|----------|--------------|-----------|---|--------|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species | |
| 1. none | | | | That Are OBL, FACW, or FAC: 1 | (A) |
| 2 | | | | Tatal Number of Deminent | |
| 3. | | | | Species Across All Strata: 1 | (B) |
| 4 | | | | | (2) |
| | | Tatal Ca | | Percent of Dominant Species | |
| Sapling/Shrub Stratum (Plot size: 10') | | | ver | That Are OBL, FACW, or FAC: 100 (| (A/B) |
| 1 none | | | | Prevalence Index worksheet: | |
| 1 | | | | Total % Cover of: Multiply by: | |
| 2 | | | | OBL species x 1 = | |
| 3 | | | | FACW species x 2 = | |
| 4 | | | | | |
| 5 | | | | FAC species X 3 = | |
| | | = Total Co | ver | FACU species x 4 = | |
| Herb Stratum (Plot size: 10') | | | | UPL species x 5 = | |
| 1. Phalaris arundinacea | 85 | yes | FACW | Column Totals: (A) | (B) |
| 2. Poa pratensis | 10 | | | Dravalance ladev D/A | |
| Cirsium arvense | 2 | | | Prevalence Index = B/A = | |
| A Rubus armeniacus | 2 | | | Hydrophytic vegetation indicators: | |
| - Equisatum anyanco | | | | 1 - Rapid Test for Hydrophytic Vegetation | |
| 5. <u>Equisetuin aivense</u> | | | | ✓ 2 - Dominance Test is >50% | |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ | |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide suppo | orting |
| 8 | | | | data in Remarks or on a separate sheet) | • |
| 9. | | | | 5 - Wetland Non-Vascular Plants ¹ | |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |) |
| 10. | | | | | , |
| 11 | | | | ¹ Indicators of hydric soil and wetland hydrology mu | ist |
| 11 | | | | ¹ Indicators of hydric soil and wetland hydrology mube present, unless disturbed or problematic. | ust |
| 11 | | _= Total Cov | ver | ¹ Indicators of hydric soil and wetland hydrology mube present, unless disturbed or problematic. | ust |
| 11 (Plot size: 10') | | = Total Cov | ver | ¹ Indicators of hydric soil and wetland hydrology mu be present, unless disturbed or problematic. | ust |
| 11 (Plot size: | | _= Total Cov | /er | ¹ Indicators of hydric soil and wetland hydrology mu be present, unless disturbed or problematic. Hydrophytic | ust |
| 11. <u>Woody Vine Stratum</u> (Plot size: <u>10'</u>) 1. <u>none</u> 2. | | _= Total Cov | /er | ¹ Indicators of hydric soil and wetland hydrology mu be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes No | ust |
| 11 | | _= Total Cov | ver | ¹ Indicators of hydric soil and wetland hydrology mu be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes No | ust |
| 11 | | _= Total Cov | /er | ¹ Indicators of hydric soil and wetland hydrology mu be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes No | ust |
| 11 | | _= Total Cov | /er | ¹Indicators of hydric soil and wetland hydrology mube present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>Ves</u> No | ust |

| | Matrix | | Redo | ox Feature | s | | | |
|---|--|--|--|---|---|--|---|--|
| inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
|)-10 | 10YR 3/2 | 100 | | | | | Silt loam | with rocky fill |
| 10-16 | 10YR 3/2 | 98 | 10YR 4/1 | 1 | R | Μ | silt loam | |
| | | | 10YR 4/6 | 1 | С | М | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| ype: C=Co | oncentration, D=Dep | oletion, RN | I=Reduced Matrix, C | S=Covere | d or Coate | ed Sand Gr | rains. ² Lo | cation: PL=Pore Lining, M=Matrix. |
| /dric Soil I | Indicators: (Applic | cable to al | I LRRs, unless othe | rwise not | ed.) | | Indicate | ors for Problematic Hydric Soils ³ : |
| _ Histosol | (A1) | | Sandy Redox (| S5) | | | 2 c | m Muck (A10) |
| _ Histic Ep | pipedon (A2) | | Stripped Matrix | (S6) | | | Rec | d Parent Material (TF2) |
| Black Hi | istic (A3) | | Loamy Mucky | Mineral (F | 1) (excep | t MLRA 1) | Ver | y Shallow Dark Surface (TF12) |
| Hydroge | en Sulfide (A4) | (| Loamy Gleyed | Matrix (F2 | 2) | | Oth | ier (Explain in Remarks) |
| _ Depleted | d Below Dark Surfac | ce (A11) | Depleted Matri | х (F3) итера (БС) | | | 31 | |
| _ TRICK Da | Ark Surface (A12) | | Redox Dark St | Inace (F6) | 7) | | Indicati | ors of hydrophytic vegetation and |
| Sandy G | Played Matrix (S4) | | Depieted Dark | Sunace (r | -7) | | wella | and hydrology must be present, |
| estrictive I | aver (if present): | | | 50115 (1 0) | | | unie | ss disturbed of problematic. |
| Type: | | | | | | | | |
| Dopth (in | choc): | | | | | | Hydric Soi | Prosont2 Vos |
| Depth (inc | ches). | | | | | | Hyunc Sol | |
| | | | | | | | | |
| | | | | | | | | |
| DROLO | GY | | | | | | | |
| DROLO | GY drology Indicators | | | | | | | |
| DROLO | GY drology Indicators cators (minimum of d | : one require | ed; check all that app | ly) | | | <u>Seco</u> | ndary Indicators (2 or more required) |
| DROLO Vetland Hydrimary Indic | GY drology Indicators cators (minimum of o Water (A1) | : one require | ed; check all that app | ly) iined Leav | es (B9) (¢ | xcept | <u>Seco</u> \ | ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 |
| /DROLO /etland Hyd rimary Indic _ Surface _ High Wa | GY drology Indicators cators (minimum of o Water (A1) ater Table (A2) | : one require | ed; check all that app Water-Sta MLRA | ly) ined Leav 1, 2, 4A, i | es (B9) (¢ | xcept | <u>Seco</u> \ | ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| /DROLO /etland Hyd rimary Indic Surface High Wa Saturatic | GY drology Indicators cators (minimum of o Water (A1) ater Table (A2) on (A3) | : one require | ed; check all that app Water-Sta MLRA Salt Crusi | ly) iined Leav 1, 2, 4A, ; ; (B11) | es (B9) (¢ and 4B) | xcept | <u>Seco</u> \ | ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| /DROLO /etland Hyo rimary Indic Surface High Wa Saturatic Water M | GY drology Indicators cators (minimum of o Water (A1) ater Table (A2) on (A3) farks (B1) | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir | l <u>y)</u> ained Leav 1, 2, 4A, 5 (B11) avertebrate | es (B9) (¢ and 4B) es (B13) | xcept | <u>Seco</u> \ [| ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| DROLO Vetland Hyd <u>rimary Indic</u> _ Surface _ High Wa _ Saturatic _ Water M Sedimer | GY drology Indicators cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) | : one require | ed; check all that app Water-Sta Salt Crust Salt Crust Aquatic Ir Hydrogen | ly) ined Leav 1, 2, 4A , 5 : (B11) ivertebrate Sulfide O | es (B9) (€ and 4B) es (B13) dor (C1) | xcept | <u>Seco</u> \ [[| ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1 , 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| DROLO Vetland Hyd <u>rimary Indic</u> _ Surface _ High Wa _ Saturatic _ Water M _ Sedimer Drift Dec | GY drology Indicators cators (minimum of a Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) | : one require | ed; check all that app Water-Sta Salt Crusi Salt Crusi Aquatic Ir Hydrogen Oxidized | ly) ained Leav 1, 2, 4A , i : (B11) ivertebrate Sulfide O Rhizosphe | es (B9) (6 and 4B) es (B13) dor (C1) res along | xcept | <u>Seco</u> \ [[[5 ots (C3) 0 | ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) |
| DROLO Vetland Hyd <u>rimary Indic</u> Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma | GY drology Indicators cators (minimum of of Water (A1) ater Table (A2) on (A3) flarks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen Oxidized Presence | ly) nined Leav 1, 2, 4A , i (B11) vertebrate Sulfide O Rhizosphe of Reduce | es (B9) (e and 4B) es (B13) dor (C1) res along ed Iron (C | xcept | <u>Seco</u> \ [[[5 ots (C3) 0 | ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) |
| /DROLO /etland Hyd rimary Indic Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep | GY drology Indicators cators (minimum of o Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Irc | ly) ined Leav 1, 2, 4A , i (B11) ivertebrate Sulfide O Rhizosphe of Reduce | es (B9) (c and 4B) es (B13) dor (C1) res along ed Iron (C- on in Tille | xcept Living Roc 4) d Soils (C6 | <u>Seco</u> \ [[[5 ots (C3) 0 5 | ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1 , 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Algal Mag | GY drology Indicators cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | : one require | ed; check all that app Water-Sta Salt Crust Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Ird Stunted o | ly) ained Leav 1, 2, 4A, (B11) avertebrate Sulfide O Rhizosphe of Reduce on Reduct r Stressed | es (B9) (e and 4B) es (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D | xcept Living Roc 4) d Soils (C6 1) (LRR A | <u>Seco</u> V []] [[[]] [[]] []] | ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Prince Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio | GY drology Indicators cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Ira Stunted o 37) Other (Ex | ly) ined Leav 1, 2, 4A, (B11) wertebrate Sulfide O Rhizosphe of Reduce on Reduct r Stressed plain in Re | es (B9) (e and 4B) es (B13) dor (C1) res along ed Iron (C on in Tille Plants (D emarks) | Except Living Roc 4) d Soils (C6 1) (LRR A | Seco \ []]]]]]]]]]]]]]]]]] | Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| DROLO /etland Hyd /imary Indic Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatic Sparsely | GY drology Indicators cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav | : one require Imagery (f | ed; check all that app Water-Sta MLRA Salt Cruss Aquatic Ir Hydrogen Oxidized Presence Recent Ira Stunted o 37) Other (Ex (B8) | ly) ained Leav 1, 2, 4A , i (B11) wertebrate Sulfide O Rhizosphe of Reduce of Reduce r Stressed plain in Re | es (B9) (c and 4B) es (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D emarks) | Living Roc 4) d Soils (C6 1) (LRR A | Seco \ []]]]]]]]]]]]]]]]]] | Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1 , 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Inundatii Surface High Wa Saturatio Saturatio Drift Dep Algal Ma Iron Dep Surface Inundatii Sparsely ield Obserr | GY drology Indicators cators (minimum of o Water (A1) ater Table (A2) on (A3) flarks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav vations: | : one require Imagery (I re Surface | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Ira Stunted o 37) Other (Ex (B8) | ly) ained Leav 1, 2, 4A , i (B11) avertebrate Sulfide O Rhizosphe of Reduct on Reduct r Stressed plain in Re | es (B9) (e and 4B) dor (C1) res along ed Iron (C- on in Tille Plants (D emarks) | Eiving Roc 4) d Soils (C6 1) (LRR A | <u>Seco</u> \ []]] _ [[[]]] _ [[]]]]]]]]]]]]]]]]]]] | ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Inundatio Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatio Sparsely ield Observ | GY drology Indicators cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav vations: er Present? | Imagery (f re Surface | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Ira Stunted o 37) Other (Ex (B8) | ly) ained Leav 1, 2, 4A , i (B11) avertebrate Sulfide O Rhizosphe of Reduct of Reduct r Stressed plain in Re | es (B9) (e and 4B) es (B13) dor (C1) res along ed Iron (C on in Tille Plants (D emarks) one | xcept Living Roc 4) d Soils (C6 1) (LRR A | <u>Seco</u> V []] [[]] []] | ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| YDROLO Vetland Hyd Yrimary Indic Surface High Wa Saturatic Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatic Sparsely Vield Obser Surface Water Vater Table | GY drology Indicators cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav vations: er Present? | Imagery (I re Surface res | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Ira Stunted o 37) Other (Ex (B8) No Depth (ir Depth (ir | ly) ined Leav 1, 2, 4A, i (B11) ivertebrate Sulfide O Rhizosphe of Reduce of Reduce plain in Re plain in Re aches): <u>no</u> | es (B9) (c and 4B) es (B13) dor (C1) ares along ed Iron (C on in Tille Plants (D emarks) one ne | Except Living Roc 4) d Soils (C6 1) (LRR A | Seco \ []] [[]] [[]]] | Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

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

Remarks:

| Project/Site: IDD#1 | City/County: Hoquiam/Gra | ays Harbor County | Sampling Date: 06/14/2018 |
|---|------------------------------|----------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP3 |
| Investigator(s): Dan Gunderson | _ Section, Township, Range | e: Section 11 and 12, | Fownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, cor | nvex, none): <u>none</u> | Slope (%): _0 |
| Subregion (LRR): LRR A Lat: _46 | δ°58'21.49"N L | .ong: <u>123°53'7.90"W</u> | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classific | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | ear? Yes 🖌 No 🔄 | (If no, explain in R | Remarks.) |
| Are Vegetation, Soil, or Hydrology significantly | y disturbed? Are "No | ormal Circumstances" | oresent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | roblematic? (If need | ed, explain any answe | ers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loc | ations, transects | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes Yes Yes | No No _✓ No _✓ | Is the Sampled Area within a Wetland? | Yes | No |
|---|-------------------|----------------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 10 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 1 (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strata: 1 (B) |
| 4 | | | | |
| 4 | | | · | Percent of Dominant Species |
| Sopling/Shrub Stratum (Plat aiza: 10') | | = Total Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| | | | | Prevalence Index worksheet: |
| 1 | | | · | Total % Cover of: Multiply by: |
| 2 | | | · | OBL species x 1 = |
| 3 | | | . <u></u> | |
| 4 | | | | FACW species x 2 = |
| 5. | | | | FAC species x 3 = |
| ·· | | - Total Co | wor | FACU species x 4 = |
| Herb Stratum (Plot size: ¹⁰) | - | | | UPL species x 5 = |
| 1 Phalaris arundinacea | 90 | yes | FACW | Column Totals: (A) (B) |
| 2 Ranuculus repens | 8 | · | FAC | |
| | | | FAC | Prevalence Index = B/A = |
| 3. <u>Equisetuin arvense</u> | 2 | | FAC | Hydrophytic Vegetation Indicators: |
| 4 | | | · | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | | | | ✓ 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8. | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 10 | | | · | ¹ Indicators of hydric soil and wetland hydrolegy must |
| 11 | | | · | be present, unless disturbed or problematic. |
| | 100 | = Total Co | ver | |
| Woody Vine Stratum (Plot size: 10) | | | | |
| 1. none | | | · | Hydrophytic |
| 2 | | | | Vegetation |
| | | = Total Co | ver | Present? res V No |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| Depth | Matrix | | Redo | ox Feature | s | | | |
|---|--|--|---|--|--|---|-----------------------|--|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
| 0-12 | 10YR 3/2 | 100 | | | | | silt loam | with rock fill |
| 12-16 | 10YR 3/2 | 95 | 10YR 3/3 | 5 | С | Μ | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | <u></u> | | | | | |
| | | | | | | | | |
| Type: C=Co | oncentration. D=De | pletion. RN | /=Reduced Matrix. C | S=Covered | d or Coate | ed Sand Gr | ains. ² Lo | cation: PL=Pore Lining, M=Matrix. |
| ydric Soil I | ndicators: (Appli | cable to al | II LRRs, unless othe | rwise not | ed.) | | Indicat | ors for Problematic Hydric Soils ³ : |
| Histosol | (A1) | | Sandy Redox (| S5) | | | 2 c | m Muck (A10) |
| Histic Ep | pipedon (A2) | | Stripped Matrix | (S6) | | | Re | d Parent Material (TF2) |
| Black Hi | stic (A3) | | Loamy Mucky | Mineral (F | 1) (excep | t MLRA 1) | Ve | ry Shallow Dark Surface (TF12) |
| _ Hydroge | n Sulfide (A4) | | Loamy Gleyed | Matrix (F2 | 2) | | Oth | ner (Explain in Remarks) |
| _ Depleted | d Below Dark Surface | ce (A11) | Depleted Matri | x (F3) | | | | |
| _ Thick Da | ark Surface (A12) | | Redox Dark Su | rface (F6) | | | ³ Indicat | ors of hydrophytic vegetation and |
| Sandy M | lucky Mineral (S1) | | Depleted Dark | Surface (F | 7) | | wetla | and hydrology must be present, |
| | | | | cione (E8) | | | unle | ss disturbed or problematic. |
| _ Sandy N _ Sandy G | ileyed Matrix (S4) | | Redox Depres | 50115 (1 0) | | | 1 | |
| Sandy R Sandy G Restrictive L | ayer (if present): | | Redox Depres | | | | | |
| Sandy W Sandy G Restrictive L Type: | ileyed Matrix (S4) .ayer (if present): | | Redox Depres | | | | | 1 |
| Sandy W Sandy G Cestrictive L Type: Depth (inc | ileyed Matrix (S4) ayer (if present): ches): | | Redox Depres: | | | | Hydric Soi | il Present? Yes No |
| Sandy W Sandy G Restrictive I Type: Depth (inc Remarks: | ayer (if present): | | Redox Depres: | | | | Hydric Soi | il Present? Yes No |
| Sandy W Sandy G Restrictive L Type: Depth (inc Remarks: Comparison Type: Depth (inc Remarks: | GY | | Redox Depres: | | | | Hydric Soi | I Present? Yes No _✓ |
| Sandy W Sandy G Restrictive I Type: Depth (inc Remarks: Properties of the second Primary Indice | GY GY GY Given (if present): Ches): GY GY GY Chrology Indicators cators (minimum of | : one require | ed; check all that app | ly) | | | Hydric Soi | Il Present? Yes No |
| Sandy W Sandy G estrictive I Type: Depth (inc emarks: //DROLO //etland Hyc rimary Indic Surface | GY GY GY Gate (If present): Ches): | : one require | ed; check all that app Water-Sta | ly) | es (B9) (e | xcept | Hydric Soi | Il Present? Yes No |
| Sandy W Sandy G estrictive I Type: Depth (inc emarks: //DROLO //etland Hyc //etland Hyc rimary Indic Surface High Wa | GY GY GY Water (A1) ter Table (A2) Gay Matrix (S4) Matrix (S4) | : one require | ed; check all that app Water-Sta | ly) 1.2.4Α. <i>ε</i> | es (B9) (e | xcept | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A. and 4B) |
| Sandy W Sandy G estrictive L Type: Depth (inc emarks: //DROLO //etland Hyc rimary Indic Surface High Wa Saturatic | GY GY GY Water (A1) ter Table (A2) on (A3) Gay Matrix (S4) Matrix (S4) Matr | : one require | ed; check all that app ed; check all that app Water-Sta MLRA Salt Crust | ly) ined Leav 1, 2, 4A, a (B11) | es (B9) (¢ and 4B) | xcept | Hydric Soi | Il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| Sandy W Sandy G [estrictive I Type: Depth (inc emarks: //DROLO //etland Hyd rimary Indic Surface High Wa Saturatic Water M | GY GY drology Indicators sators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) | : one require | ed; check all that app Water-Sta Salt Crust Aquatic Ir | ly) iined Leav 1, 2, 4A, a (B11) vertebrate | es (B9) (e and 4B) s (B13) | xcept | Hydric Soi | Il Present? Yes No No No Mater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| Sandy W Sandy G Sandy G testrictive I Type: Depth (inc temarks: //DROLOG // // Vetland Hyc // Vetland Hyc // High Wa Saturatic Water M Sedimer | GY GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) arks (B1) at Deposits (B2) | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo | es (B9) (e and 4B) s (B13) dor (C1) | xcept | Hydric Soi | Il Present? Yes No |
| Salidy W Salidy W Salidy W Salidy W Salidy W Type: Depth (ind) Type: Depth (ind) Type: Depth (ind) Comparison of the second seco | GY drology Indicators Eators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) ht Deposits (B2) posits (B3) | : one require | ed; check all that app ed; check all that app Water-Sta MLRA Salt Crusi Aquatic Ir Hydrogen Oxidized | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe | es (B9) (e and 4B) s (B13) dor (C1) res along | xcept | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) |
| Salidy W Salidy W Salidy W Salidy W Experience of the second s | GY GY GY Grology Indicators Eators (minimum of Water (A1) tter Table (A2) on (A3) arks (B1) arks (B1) the Deposits (B2) posits (B3) at or Crust (B4) | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Aquatic Ir Hydrogen Oxidized Presence | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- | xcept Living Roc | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) |
| Sandy W Sandy G estrictive I Type: Depth (inc emarks: // // // // // // // // // // // // // | GY GY GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) arks (B1) nt Deposits (B2) posits (B3) tt or Crust (B4) posits (B5) | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Hydrogen Oxidized Presence Recent Irc | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oc Rhizosphe of Reduce on Reducti | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille | xcept Living Roc 4) d Soils (C6 | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Sandy W Sandy G Lestrictive I Depth (inc lemarks: // // // // // // // // // // // // // | GY drology Indicators ators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) th Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | : one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Ir Aquatic Ir Oxidized Presence Recent Iro Stunted o | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti r Stressed | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
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| Sandy w Sandy G Restrictive I Type: Depth (inc Remarks: YDROLO Ydrand Hyc Primary Indic Primary Indic Saturatic Saturatic Saturatic Saturatic Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatic Sparsely "ield Obsern | GY GY GY Grology Indicators cators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) arks (B1) arks (B2) bosits (B3) ark or Crust (B4) osits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav vations: | : one require Imagery (F re Surface | ed; check all that app water-Sta MLRA Salt Crust Aquatic Ir Aquatic Ir Oxidized Presence Recent Iro Stunted o B7) Other (Ex (B8) | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oc Rhizosphe of Reducti r Stressed plain in Re | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D emarks) | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy w Sandy G Restrictive I Type: Depth (inc Remarks: YDROLO YDROLO Yetland Hyc Primary Indic Surface T Saturatic Saturatic Saturatic Saturatic Sedimer Sedimer Sedimer Sedimer Surface Surface Sparsely Surface Wate | GY GY GY drology Indicators cators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) ot Deposits (B2) posits (B3) tt or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav vations: er Present? | imagery (f re Surface | ed; check all that app — Water-Sta MLRA — Salt Crust — Aquatic Ir — Hydrogen — Oxidized — Presence — Recent Ira — Stunted o B7) — Other (Ex (B8) | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oc Rhizosphe of Reduce on Reducti r Stressed plain in Re | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D marks) ne | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy W Sandy G Sestrictive I Type: Depth (inc Remarks: YDROLO Vetland Hyc Primary Indic Saturatic Surface Water M Sedimer Drift Dep Saturatic Sedimer Drift Dep Surface Inundatic Sparsely Vield Obsern Surface Water Surface Water | GY drology Indicators ators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) tt Deposits (B2) oosits (B3) at or Crust (B4) oosits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav vations: er Present? | Imagery (F ve Surface Yes Yes | ed; check all that app Water-Sta MLRA | ly) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti r Stressed plain in Re aches): <u>no</u> aches): <u>no</u> | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D marks) ne ne | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | Il Present? Yes No No No Nater-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy W Sandy G Restrictive I Type: Depth (inc temarks: YDROLO Vetland Hyc Primary Indic Surface Naturatic Sedimer Sedimer Naturatic | GY drology Indicators ches): drology Indicators cators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) nt Deposits (B2) oosits (B3) arks (B3) arks (B4) oosits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav vations: er Present? Present? resent? | Imagery (I ve Surface Yes Yes | ed: check all that app Water-Sta MLRA | ly) ined Leav 1, 2, 4A, a (B11) vertebrate of Reduce of Reduce on Reducti r Stressed plain in Re iches): <u>no</u> iches): <u>>1</u> | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D marks) ne ne 6" | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) gy Present? Yes No |

| Project/Site: IDD#1 | City/County: Hoquiam/Gray | s Harbor County | Sampling Date: 06/14/2018 |
|--|-----------------------------|---------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP4 |
| Investigator(s): Dan Gunderson | Section, Township, Range: | Section 11 and 12, T | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (concave, conv | ex, none): <u>concave</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: 46 | δ°58'21.63"N Lo | ng: <u>123°53'7.84</u> "W | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classifica | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No | _ (If no, explain in Re | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | v disturbed? Are "Norr | nal Circumstances" p | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pro | oblematic? (If needed | d, explain any answer | s in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | y sampling point loca | tions, transects, | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes | Is the Sampled Area within a Wetland? | Yes No |
|---|-----|---------------------------------------|--------|
| Remarks: | | | |

| 401 | Absolute | Dominant Inc | dicator C | Dominance Test works | heet: |
|--|----------|---------------|-------------------|--|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? St | tatus N | Number of Dominant Spe | ecies |
| 1. none | | | T | That Are OBL, FACW, or | FAC: <u>1</u> (A) |
| 2 | | | T | Fotal Number of Domina | ~* |
| 3. | | | S S | Species Across All Strata | a: 1 (B) |
| 4 | | | | | (-) |
| | | Total Cavar | F | Percent of Dominant Spe | ecies |
| Sapling/Shrub Stratum (Plot size: ^{10'}) | | | | That Are OBL, FACW, or | FAC: 100 (A/B) |
| 1 none | | | F | Prevalence Index works | sheet: |
| · | | · · | | Total % Cover of: | Multiply by: |
| 2 | | | | OBL species | x 1 = |
| 3 | | | F | ACW species | x 2 = |
| 4 | | | | | × 3 – |
| 5 | | | | | X 3 = |
| | | = Total Cover | | | X 4 = |
| Herb Stratum (Plot size: 10') | | - | | JPL species | x 5 = |
| 1. Phalaris arundinacea | 85 | yes FA | ACW C | Column Totals: | (A) (B) |
| 2. Poa pratensis | 10 | | | Drovalance Index | D/A |
| Ranunculus repens | 5 | | | | = D/A = |
| A. | | | r | | i indicators. |
| 4 | | | | | |
| - | | | | 1 - Rapid Test for Hy | dropnytic vegetation |
| 5 | | | | ✓ 2 - Dominance Test | is >50% |
| 56 | | | | 1 - Rapid Test for Hy ✓ 2 - Dominance Test 3 - Prevalence Index | arophytic vegetation is >50% : is ≤3.0 ¹ |
| 5 6 7 | | | | 1 - Rapid Test for Hy 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad | varophytic vegetation is >50% t is ≤3.0 ¹ laptations ¹ (Provide supporting |
| 5 6 7 8 | | | <u></u> | 1 - Rapid Test for Hy 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad data in Remarks of | arophytic vegetation is >50% t is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) |
| 5 6 7 8 9. | | | - - - | 1 - Rapid Test for Hy 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad data in Remarks o 5 - Wetland Non-Vas | arophytic vegetation is >50% a is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ |
| 5 6 7 8 9 10. | | | 2 | 1 - Rapid Test for Hy 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad data in Remarks o 5 - Wetland Non-Vas Problematic Hydroph | arophytic vegetation is >50% (is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) |
| 5 6 7 8 9 10 11 | | | 2 | ✓ 1 - Rapid Test for Hy ✓ 2 - Dominance Test 3 - Prevalence Index 4 - Morphological Ad data in Remarks of 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil a | arophytic Vegetation is >50% (is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must |
| 5. 6. 7. 8. 9. 10. 11. | | | | 1 - Rapid Test for Hy 2 - Dominance Test 3 - Prevalence Index 4 - Morphological Ad data in Remarks of 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil abe present, unless disturb | arophytic Vegetation is >50% (is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must bed or problematic. |
| 5 6 7 8 9 10 11 Woody Vine Stratum (Plot size: 10') | 100 | | | ✓ 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad data in Remarks of 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil ab present, unless disturb | arophytic Vegetation is >50% t is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must bed or problematic. |
| 5 6 7 8 9 10 11 <u>Woody Vine Stratum</u> (Plot size: <u>10'</u>) 1. none | 100 | | | 1 - Rapid Test for Hy 2 - Dominance Test 3 - Prevalence Index 4 - Morphological Ad data in Remarks of 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil a be present, unless disturb | arophytic Vegetation is >50% a is ≤3.0 ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must bed or problematic. |
| 5 | 100 | | | | arophytic Vegetation is >50% (is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must bed or problematic. |
| 5 | 100 | | | Y - Rapid Test for Hy 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad data in Remarks o 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil a be present, unless disturf Hydrophytic Vegetation Present? Yes | arophytic Vegetation is >50% (is ≤3.0 ¹ (Provide supporting or on a separate sheet) (acular Plants ¹ (Explain) (Explain) (and wetland hydrology must bed or problematic. |
| 5. | 100 | | | Y - Rapid Test for Hy 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad data in Remarks o 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil a be present, unless disturb Hydrophytic Vegetation Present? Yes | is >50% is >50% is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must bed or problematic. |
| 5. | 100 | = Total Cover | | ✓ 2 - Dominance Test i 3 - Prevalence Index 4 - Morphological Ad data in Remarks of 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil a be present, unless disturf Hydrophytic Vegetation Present? Yes | is >50% is >50% is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must bed or problematic. |
| 5. | | = Total Cover | | Y - Rapid Test for Hy 2 - Dominance Test 3 - Prevalence Index 4 - Morphological Ad data in Remarks of 5 - Wetland Non-Vas Problematic Hydroph Indicators of hydric soil a be present, unless disturb Hydrophytic Vegetation Present? Yes | is >50% is >50% is ≤3.0 ¹ laptations ¹ (Provide supporting or on a separate sheet) scular Plants ¹ hytic Vegetation ¹ (Explain) and wetland hydrology must bed or problematic. |

| Depth | Matrix | | Red | ox Featur | es | | | , |
|---|---|--------------|---|---|--|------------------------------------|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
|)-16 | 10YR 4/1 | 80 | 7.5Y 4/6 | 20 | С | Μ | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Type: C=C | oncentration, D=De Indicators: (Appl | epletion, RN | M=Reduced Matrix, C | S=Covere | ed or Coat ted.) | ed Sand Gr | ains. ² Locati | on: PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ : |
| Histoso Histic E Black H Hydroge Deplete Thick D Sandy № Sandy Ø | l (A1) pipedon (A2) iistic (A3) en Sulfide (A4) d Below Dark Surfa ark Surface (A12) Mucky Mineral (S1) Gleyed Matrix (S4) | ace (A11) | Sandy Redox Stripped Matrix Loamy Mucky Loamy Gleyed ✓ Depleted Matrix Redox Dark Stripped Dark Depleted Dark Redox Depress | (S5) x (S6) Mineral (F Matrix (F Matrix (F3) urface (F6 Surface (sions (F8) | =1) (excer 2) 3) (F7) | ot MLRA 1) | 2 cm M Red Pa Very S Other (³ Indicators wetland unless d | luck (A10) arent Material (TF2) hallow Dark Surface (TF12) Explain in Remarks) of hydrophytic vegetation and hydrology must be present, listurbed or problematic. |
| Type: | Layer (if present): | | | | | | Hydric Soil Dr | |
| emarks: | | | | | | | Hyune Son Ph | esent: 165 <u>v</u> 10 <u></u> |
| | | | | | | | | |
| YDROLO | GY | | | | | | | |
| Vetland Hy | drology Indicators | 5: | | | | | | |
| rimary Indi | cators (minimum of | one requir | ed; check all that app | <u></u> | | | <u>Seconda</u> | iry Indicators (2 or more required) |
| _ Surface | Vvater (A1) | | Water-Sta | ained Lea | ves (B9) (| except | Wate | er-Stained Leaves (B9) (MLRA 1, 2 |
| | ater rable (AZ) | | | 1, ∠, 4A, + (₽11) | anu 4B) | | 4 | \mathbf{A} , and $\mathbf{4D}$ |
| | | | | с (D Г 1) | (D40) | | | |
| vvater N | narks (B1) | | Aquatic Ir | Aquatic Invertebrates (B13) | | | | Season water Table (C2) |
| Sedime | nt Deposits (B2) | | Hydroger | | Jaor (C1) | | | iration visible on Aerial Imagery (C |
| Drift Deposits (B3) | | | Oxidized | Rhizosph | eres along | LIVING ROC | ots (C3) Geo | morphic Position (D2) |
| Drift Deposits (B3) | | | Presence | of Reduc | ced Iron (C | (4) | Shal | low Aquitard (D3) |
| ✓ Algal M | | | | | — | | | |
| ✓ Algal M Iron De | posits (B5) | | Recent In | on Reduc | tion in Tille | ed Soils (C6 | 6) FAC | -Neutral Test (D5) |
| ✓ Algal M _ Iron De _ Surface | posits (B5) Soil Cracks (B6) | | Recent In Stunted c | on Reduc or Stresse | tion in Tille d Plants (I | ed Soils (C6 D1) (LRR A | 6) FAC) Rais | -Neutral Test (D5) ed Ant Mounds (D6) (LRR A) |
| ✓ Algal Ma ✓ Iron De ✓ Surface ✓ Inundat | posits (B5) Soil Cracks (B6) ion Visible on Aeria | l Imagery (| B7) — Other (Ex | on Reduc or Stresse cplain in R | tion in Tille d Plants (I temarks) | ed Soils (C6 D1) (LRR A | 6) FAC) Rais Fros | -Neutral Test (D5) ed Ant Mounds (D6) (LRR A) t-Heave Hummocks (D7) |

| Field | Observations: |
|--------|---------------|
| i ieiu | Observations. |
| | |

| Field Observations: | | | | | |
|--|------------|------------|--------------------------------------|----------------------------|----------|
| Surface Water Present? | Yes | _ No 🗸 | Depth (inches): | | |
| Water Table Present? | Yes | _ No _ ✓ | Depth (inches): | | 1 |
| Saturation Present? (includes capillary fringe) | Yes 🗸 | _ No | Depth (inches): <u>10"</u> | Wetland Hydrology Present? | Yes 🖌 No |
| Describe Recorded Data (str | eam gauge, | monitoring | well, aerial photos, previous inspec | tions), if available: | |
| | | | | | |
| Pomorko: | | | | | |
| Remarks. | | | | | |
| | | | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Gra | ys Harbor County | Sampling Date: 06/14/2018 |
|---|------------------------------|-------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP5 |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range | Section 11 and 12, T | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, con | vex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: 46 | 3°58'11.13"N Lo | ong: 123°52'58.34"W | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classific | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | ear? Yes 🖌 No | (If no, explain in R | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | y disturbed? Are "Nor | rmal Circumstances" p | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If neede | ed, explain any answe | rs in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loca | ations, transects | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes ✓ No Yes ✓ No Yes ✓ No | Is the Sampled Area within a Wetland? | Yes | No |
|---|--|---------------------------------------|-----|----|
| Remarks: | | | | |

| Tree Stratum (Plot size: 10 % Cover Species? Status Number of Dominant Species 1. none | |
|--|----|
| 1. none | |
| 2. | |
| 3 Species Across All Strata: (B) | |
| | |
| | |
| Total Cover | D) |
| Sapling/Shrub Stratum (Plot size: 10') | В) |
| 1 none Prevalence Index worksheet: | |
| Total % Cover of: Multiply by: | |
| 2 OBL species x 1 = | |
| 3 FACW species x 2 = | |
| 4 FAC species x 3 = | |
| 5 FACU species x 4 = | |
| = Total Cover | |
| Herb Stratum (Plot size: 10 X 3 = 0 FL species (A) | |
| 1. Holcus lanatus 40yesFAC Column Totals: (A) (B | 5) |
| 2. <u>Anthoxanthum odoratum</u> <u>15</u> <u>yes</u> <u>FACU</u> Prevalence Index = B/A = | |
| 3. Lotus corniculatus 15 yes FAC Hydrophytic Vegetation Indicators: | |
| 4. Carex obnupta 15 yes OBL 1 - Rapid Test for Hydrophytic Vegetation | |
| 5. Poa pratensis 13 FAC 2. Dominance Test is >50% | |
| 6 Hypochaeris radicata 2 FAC 2 Dominiance results 2007 | |
| | |
| 4 - Morphological Adaptations" (Provide supporti data in Remarks or on a separate sheet) | ng |
| 6 | |
| 9 0 Weitalia Horr Vascular Hants | |
| | |
| 11. Indicators of hydric soil and wetland hydrology must | |
| $\frac{100}{100} = \text{Total Cover}$ | |
| Woody Vine Stratum (Plot size: 10) | |
| 1. none Hydrophytic | |
| 2 Vegetation | |
| = Total Cover | |
| % Bare Ground in Herb Stratum | |
| Remarks: | |
| | |

| Profile Desc | ription: (Describe | to the dep | th needed to docun | nent the | indicator | or confirm | the absenc | e of indicators.) |
|------------------------|------------------------|-------------|--------------------------|----------------|---------------------|-------------------|-----------------------|---|
| Depth | Matrix | | Redox | k Feature | S | <u> </u> | | |
| (inches) | Color (moist) | | Color (moist) | % | Type' | Loc ² | Texture | Remarks |
| 0-4 | 10YR 3/3 | 100 | | | | | Silt loam | |
| 4-16 | 10YR 3/2 | 90 | 10YR 4/1 | 5 | R | Μ | Sand | |
| | | | 10YR 3/4 | 5 | С | М | | |
| | | · | | | · | · | | |
| | | · | | | | | | · |
| | | | | | | <u> </u> | | |
| | | . <u> </u> | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| ¹ Type: C=C | oncentration. D=Dep | letion. RM: | =Reduced Matrix. CS | =Covere | d or Coate | ed Sand Gr | ains. ² Lo | cation: PL=Pore Lining, M=Matrix. |
| Hydric Soil | Indicators: (Applic | able to all | LRRs, unless other | wise not | ed.) | | Indicat | ors for Problematic Hydric Soils ³ : |
| Histosol | (A1) | | ✓ Sandy Redox (S | \$5) | | | 2 c | cm Muck (A10) |
| Histic Ep | bipedon (A2) | | Stripped Matrix | (S6) | | | Re | d Parent Material (TF2) |
| Black Hi | stic (A3) | | Loamy Mucky M | lineral (F | 1) (excep | t MLRA 1) | Ve | ry Shallow Dark Surface (TF12) |
| Hydroge | en Sulfide (A4) | | Loamy Gleyed M | Matrix (F2 | 2) | | Otl | her (Explain in Remarks) |
| Deplete | d Below Dark Surface | e (A11) | Depleted Matrix | (F3) | | | | |
| Thick Da | ark Surface (A12) | | Redox Dark Sur | face (F6) | | | ³ Indicat | tors of hydrophytic vegetation and |
| Sandy N | Aucky Mineral (S1) | | Depleted Dark S | Surface (F | =7) | | wetl | and hydrology must be present, |
| Sandy G | Bleyed Matrix (S4) | | Redox Depress | ions (F8) | | | unle | ess disturbed or problematic. |
| Restrictive | Layer (if present): | | | | | | | |
| Type: | | | | | | | | |
| Depth (in | ches): | | | | | | Hydric So | il Present? Yes <u>▼</u> No |
| Remarks: | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| HYDROLO | GY | | | | | | | |
| Wetland Hy | drology Indicators: | | | | | | | |
| Primary India | cators (minimum of o | ne reauire | d: check all that apply | /) | | | Seco | ondary Indicators (2 or more required) |
| Surface | Water (A1) | | Water-Stai | ned Leav | res (B9) (e | xcent | | Water-Stained Leaves (B9) (MI RA 1 2 |
| High Wa | ater Table (A2) | | MIRA | 1 2 4A | and 4B) | Noopt | | 4A and 4B) |
| Saturatio | (A3) | | Salt Crust | (B11) | unu 40) | | | Drainage Patterns (B10) |
| Water M | larks (B1) | | Aquatic Inv | (ertebrate | es (B13) | | | Dry-Season Water Table (C2) |
| Sedimer | nt Deposits (B2) | | Hydrogen S | Sulfide O | dor (C1) | | | Saturation Visible on Aerial Imagery (C9) |
| Drift Der | (B3) | | Oxidized R | hizosphe | eres along | Living Roo | ts (C3) | Geomorphic Position (D2) |
| Algal Ma | at or Crust (B4) | | Presence of | of Reduce | ed Iron (C | 4) | | Shallow Aguitard (D3) |
| Iron Der | posits (B5) | | Recent Iro | n Reduct | ion in Tille | ., d Soils (C6 | ;) | FAC-Neutral Test (D5) |
| Surface | Soil Cracks (B6) | | Stunted or | Stressed | l Plants (D | 1) (LRR A |) | Raised Ant Mounds (D6) (LRR A) |
| Inundati | on Visible on Aerial I | magery (B | 7) Other (Exp | lain in Re | emarks) | | | Frost-Heave Hummocks (D7) |
| Sparsely | Vegetated Concave | e Surface (| B8) | | Jinanoj | | | |
| Field Obser | vations: | o Ganado (| 20) | | | | | |
| Surface Wat | er Present? Y | es | No 🗸 Depth (inc | thes). | | | | |
| Water Table | Present? V | | No V Depth (inc | | | — | | |
| | | | | hos) | 6" | Woth | | av Brasant2 Vas |
| (includes car | pillary fringe) | 65 | | nes): <u> </u> | - | | anu nyarolo | |
| Describe Re | corded Data (stream | gauge, mo | onitoring well, aerial p | hotos, pi | evious ins | spections), | if available: | |
| | | | | | | | | |
| Remarks: | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| Project/Site: IDD#1 | _ City/County: Hoquiam/Gra | ys Harbor County | Sampling Date: 06/14/2018 |
|---|------------------------------|-------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP6 |
| Investigator(s): Dan Gunderson and Grace Roberts | _ Section, Township, Range | Section 11 and 12, 1 | Fownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, con | vex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: _4 | .6°58'15.41"N Lo | ong: 123°52'45.15"W | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classific | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | /ear? Yes 🖌 No | (If no, explain in R | emarks.) |
| Are Vegetation, Soil, or Hydrology significant | ly disturbed? Are "Nor | rmal Circumstances" p | oresent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally p | roblematic? (If neede | ed, explain any answe | ers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showin | g sampling point loca | ations, transects | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes Yes Yes | No No _✓ No _✓ | Is the Sampled Area within a Wetland? | Yes | No |
|---|-------------------|----------------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|------------|------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 2 (A) |
| 2 | | | | Total Number of Deminent |
| 3. | | | | Species Across All Strata: 2 (B) |
| 4 | | | | |
| -T | | Tatal Ca | | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: ^{10'}) | | | iver | That Are OBL, FACW, or FAC: (A/B) |
| 1 none | | | | Prevalence Index worksheet: |
| 1 | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | FACW species $x^2 =$ |
| 4 | | | | |
| 5 | | | | FAC species x 3 = |
| | | = Total Co | ver | FACU species x 4 = |
| Herb Stratum (Plot size: 10') | | - | | UPL species x 5 = |
| 1. Lotus corniculatus | 35 | yes | FAC | Column Totals: (A) (B) |
| 2. Holcus lanatus | 35 | yes | FAC | Dravelence Index - P/A - |
| 3 Poa pratensis | 10 | | FAC | Hydrophytic Vogotation Indicators: |
| A Schedonorus arundinaceus | 10 | | FAC | A Danid Test for Lludrents tie Ve getation |
| 5 Potentilla anserina | 5 | | OBL | |
| c. Rubus armeniacus | 5 | | FACW | |
| | | | | 3 - Prevalence Index is ≤3.0' |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sneet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11. | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 100 | = Total Co | ver | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10') | | | | |
| 1. none | | | | Hydrophytic |
| 2 | | | | Vegetation |
| | | Total Car | | Present? Yes V No |
| % Bare Ground in Herb Stratum | . <u> </u> | | vei | |
| Remarks: | | | | 1 |
| | | | | |
| | | | | |

| Ueptn (inches) | Color (moist) | 0/_ | Color (moist) | <u>x Feature</u> % | <u>S</u> Type ¹ | loc^2 | Toxturo | Pemarks |
|--|--|--------------------------------|---|---|--|--|---|---|
| <u>(incries)</u> 0-10 | 10YR 3/2 | 100 | | 70 | Type | LUC | Silt loam | Remarks |
| 10-16 | 10YR 3/2 | 80 | 10YR 4/1 | 10 | R | M | Silt loam | |
| 10-10 | 1011(0/2 | | | 10 | - <u> </u> | | Silt loom | |
| | | | 10YR 4/6 | 10 | <u> </u> | | Slit Ioam | |
| | | | | | | | | |
| | | | | | | | | |
| Type: C=C | oncentration, D=Dep | letion, RM | I=Reduced Matrix, CS | 3=Covere | d or Coate | ed Sand G | rains. ² L | ocation: PL=Pore Lining, M=Matrix. |
| lydric Soil | Indicators: (Applic | able to al | I LRRs, unless othe | rwise not | ed.) | | Indica | tors for Problematic Hydric Soils ³ : |
| Histosol | (A1) | | Sandy Redox (| S5) | | | 2 | cm Muck (A10) |
| Histic Ep | pipedon (A2) | | Stripped Matrix | (S6) | | | R | ed Parent Material (TF2) |
| Black HI | istic (A3) | | Loamy Mucky N | Mineral (F | 1) (excep | t MLRA 1) |) V | ery Shallow Dark Surface (1F12) |
| Hyuruye | 3N Suilide (A4) | ··· (A11) | Loany Gleyeu | Matrix (F∠ ∞ (E3) | <u>'</u>) | | 0 | ther (Explain in Remarks) |
| Thick Dr | ark Surface (A12) | | Redox Dark Su | (F3) Inface (F6) | ١ | | ³ Indica | ators of hydrophytic vegetation and |
| Sandy N | Aucky Mineral (S1) | | Depleted Dark | Surface (F | F7) | | we | tland hydrology must be present, |
| Sandy C | Reved Matrix (S4) | | <u> </u> | | , | | | |
| | | | Redox Depress | sions (F8) | | | unl | ess disturbed or problematic. |
| Restrictive | Layer (if present): | | Redox Depress | sions (F8) | | | unl | ess disturbed or problematic. |
| Restrictive | Layer (if present): | | Redox Depress | sions (F8) | | | unl | ess disturbed or problematic. |
| Restrictive Type: Depth (ind | Layer (if present): | | Redox Depress | sions (F8) | | | uni Hydric So | ess disturbed or problematic. |
| Restrictive Type: Depth (ind Remarks: | ches): | | Redox Depress | sions (F8) | | | uni Hydric So | ess disturbed or problematic. |
| Restrictive Type: Depth (in Remarks: | ches): | | Redox Depress | sions (F8) | | | uni Hydric So | ess disturbed or problematic. |
| Restrictive Type: Depth (in Remarks: | Layer (if present): | | | sions (F8) | | | uni | ess disturbed or problematic. |
| Restrictive Type: Depth (in Remarks: YDROLO Wetland Hyd | GY | | Redox Depress | | | | uni | ess disturbed or problematic. |
| Restrictive Type: Depth (in Remarks: IYDROLO Wetland Hy Primary India | Layer (if present): ches): GY drology Indicators: cators (minimum of c | <u>ne require</u> | | sions (F8) | | | Uni Hydric So | ess disturbed or problematic. Dil Present? Yes No |
| Restrictive Type: Depth (in/ Remarks: IYDROLO Wetland Hyd Primary India Surface | GY GY Gy Water (A1) | ne require | <u>Hedox Depress</u> <u>Hedox Depress</u> <u>Hedox Depress</u> | y) | | except | Uni Hydric So | ess disturbed or problematic. bil Present? Yes No wondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, |
| Restrictive Type: Depth (in Remarks: Remarks: Primarks: Primary Indic Surface High Wa | IGY drology Indicators: cators (minimum of of Water (A1) ater Table (A2) | ne require | <u>Hedox Depress</u> <u>MLRA</u> | y) 1, 2, 4A, a | ·es (B9) (e and 4B) | except | Uni Hydric So Sec | ess disturbed or problematic. Dil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| Restrictive Type: Depth (in Remarks: YDROLO YDROLO Wetland Hyu Primary India Surface High Wa Saturatia | In the second se | ne require | Redox Depress <u>;d; check all that appl</u> Water-Sta WLRA Salt Crust | y) ined Leav (B11) | 'es (B9) (e and 4B) | except | Uni Hydric So | ess disturbed or problematic. bil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) |
| Restrictive Type: Depth (in Remarks: YDROLO Wetland Hyd Primary India Primary India Surface High Wa Saturatia Water M | Layer (if present): ches): GY drology Indicators: cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) | yne require | <u>Redox Depress</u> <u>ed; check all that apple <u>water-Sta</u> <u>MLRA</u> Salt Crust Aquatic In</u> | <u>y)</u> ined Leav (B11) vertebrate | 'es (B9) (€ and 4B) ⊮s (B13) | except | Uni Hydric So | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| Restrictive Type: Depth (in- Remarks: YDROLO Wetland Hyd Primary India Surface High Wa Saturatia Water M Sedimer | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) | one require | | <u>y)</u> ined Leav 1, 2, 4A , a (B11) vertebrate Sulfide O | /es (B9) (e and 4B) ⊮s (B13) dor (C1) | except | Uni Hydric So | ess disturbed or problematic. oil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) |
| Restrictive Type: Depth (in Remarks: YDROLO Wetland Hyd Primary India Surface High Wa Saturatia Water M Sedimer Drift Dep | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) | one require | Redox Depress id; check all that appl Water-Sta MLRA Salt Crust Aquatic In: Hydrogen Oxidized F | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe | /es (B9) (€ and 4B) ⊮s (B13) dor (C1) ⊮res along | except | Unl Hydric So <u>Sec</u> | ess disturbed or problematic. Dil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) |
| Restrictive Type: Depth (in Remarks: YDROLO YDROLO Wetland Hyu Primary Indio Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) | <u>ne require</u> | Redox Depress Water-Sta MLRA Salt Crust Aquatic In: Qxidized F Presence | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce | res (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- | except | Unl Hydric So Sec | ess disturbed or problematic. Dil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) |
| Restrictive Type: Depth (in Remarks: YDROLO YDROLO Wetland Hyu Primary India Surface High Wa Saturatia Water M Saturatia Unift Dep Algal Ma Iron Dep | And the second s | ne require | Redox Depress | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce n Reducti | res (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille | except Living Rod 4) d Soils (Cd | Unl Hydric So Sec | ess disturbed or problematic. Dil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Restrictive Type: Depth (in Remarks: YDROLO Wetland Hy Primary India Surface High Wa Saturatia Water M Sedimer Drift Dep Algal Ma Iron Dep Surface | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | <u>me require</u> | | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce n Reducti | res (B9) (€ and 4B) ≥s (B13) dor (C1) ≥res along ≥d Iron (C- ion in Tille I Plants (D | Eiving Rod 4) cd Soils (Cd 91) (LRR A | Unl Hydric So Sec | ess disturbed or problematic. bil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Restrictive Type: Depth (in Remarks: Primary India Surface High Wa Saturatia Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundati | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial | <u>ne require</u> | Redox Depress id; check all that appl Water-Sta MLRA | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduct n Reducti Stressed plain in Re | res (B9) (€ and 4B) ≥s (B13) dor (C1) ≥res along ≥d Iron (C- ion in Tille Plants (D ∋marks) | Except Living Rod 4) Ind Soils (Co 1) (LRR A | Unl Hydric So Sec ots (C3) 6) | ess disturbed or problematic. bil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Restrictive Type: Depth (in Remarks: YDROLO Wetland Hy Primary India Surface High Wa Saturatia Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundati Sparsely | IGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav | <u>ne require</u> | Redox Depress Redox Depress <td>y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reducti Or Reducti Stressed plain in Re</td> <td>res (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille Plants (D emarks)</td> <td>Eiving Roo 4) d Soils (Co 2) (LRR A</td> <td>Unl Hydric So Sec </td> <td>ess disturbed or problematic. bil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7)</td> | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reducti Or Reducti Stressed plain in Re | res (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille Plants (D emarks) | Eiving Roo 4) d Soils (Co 2) (LRR A | Unl Hydric So Sec | ess disturbed or problematic. bil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Restrictive Type: Depth (in Remarks: IYDROLO Wetland Hyu Primary India Water Ma Saturatia Water Ma Sedimer Drift Dep Algal Ma Iron Dep Surface Inundati Sparsely Field Obser | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav vations: | me require | Redox Depress Ed; check all that appl Water-Sta MLRA Salt Crust Aquatic Im Oxidized F Presence Recent Iro Stunted or 37) Other (Exp | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce in Reducti Stressed | res (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille Plants (D emarks) | except Living Rod 4) d Soils (C0 01) (LRR A | Unl Hydric So Sec | ess disturbed or problematic. Dil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Restrictive Type: Depth (in Remarks: IYDROLO Wetland Hyn Primary India Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundati Sparsely Field Obser Surface Wat | GY GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) farks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav vations: er Present? | me require | Kedox Depress Minor Control Contro Control Control Control Control Control Control Control Control | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce in Reducti Stressed blain in Re ches): <u>no</u> | res (B9) (c and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille I Plants (D emarks) one | except Living Rod 4) d Soils (Cd 01) (LRR A | Unl Hydric So Sec Ots (C3) 6) | ess disturbed or problematic. Dil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Restrictive Type: Depth (in Remarks: IYDROLO Wetland Hyu Primary India Surface High Wa Saturatia Water M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundati Sparsely Field Obser Surface Water Water Table | GY GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav vations: er Present? Y Present? | imagery (E e Surface 'es | Edi; check all that appl Water-Sta MLRA Salt Crust Aquatic In Oxidized F Presence Recent Iro Stunted or 37) Other (Exp (B8) No ✓ Depth (in No ✓ Depth (in | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce in Reducti Stressed blain in Re ches): <u>no</u> ches): <u>no</u> | /es (B9) (€ and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille I Plants (D emarks) one ne | Eiving Rod 4) d Soils (Cd 01) (LRR A | unl Hydric So | ess disturbed or problematic. Dil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

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

Remarks:

| Project/Site: IDD#1 | _ City/County: Hoquiam/Gray | s Harbor County | Sampling Date: 06/14/2018 | | |
|---|---|---------------------------|---------------------------|--|--|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP7 | | |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range: Section 11 and 12, Township 17N Range 10W | | | | |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, conv | ex, none): <u>none</u> | Slope (%): 0 | | |
| Subregion (LRR): LRR A Lat: _4 | 6°58'15.26"N Lo | ng: <u>123°52'44.93"W</u> | Datum: WGS 84 | | |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classifica | ation: none | | |
| Are climatic / hydrologic conditions on the site typical for this time of y | /ear? Yes 🖌 No | _ (If no, explain in Re | emarks.) | | |
| Are Vegetation, Soil, or Hydrology significantl | y disturbed? Are "Norr | nal Circumstances" pr | resent? Yes 🖌 No | | |
| Are Vegetation, Soil, or Hydrology naturally p | roblematic? (If needed | l, explain any answer | s in Remarks.) | | |
| SUMMARY OF FINDINGS – Attach site map showin | g sampling point loca | tions, transects, | important features, etc. | | |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes | Is the Sampled Area within a Wetland? | Yes _ 🖌 No |
|---|-----|---------------------------------------|------------|
| Remarks: | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|-------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: 1 (A) |
| 2 | | | | Total New Jon of Device of |
| 3. | | | | Species Across All Strata: 1 (B) |
| 1 | | | | |
| T | | Table | | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = 1 otal Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| none | | | | Prevalence Index worksheet: |
| I. <u></u> | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | FACW species x 2 = |
| 4 | | | | |
| 5 | | | | FAC species x 3 = |
| | | = Total Co | ver | FACU species x 4 = |
| Herb Stratum (Plot size: 10') | | | | UPL species x 5 = |
| 1. Schedonorus arundinaceus | 75 | yes | FAC | Column Totals: (A) (B) |
| 2. Holcus lanatus | 15 | | FAC | Drovolance Index D/A |
| 3 Lotus corniculatus | 10 | | FAC | Hydrophytic Vegetation Indicators: |
| A Ranunculus repens | 3 | | FAC | A Denid Test for Undershutin Venetation |
| - Plantago lanceolata | 2 | | FACU | |
| 5. <u> </u> | | | | <u>√</u> 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ⁺ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10. | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11. | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 105 | - Total Co | | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: ^{10'}) | | _ 10tal 00 | VEI | |
| 1 none | | | | Lu droph tio |
| ·· | | | | Vegetation |
| 2 | | | | Present? Yes No |
| | | THE | | |
| % Bare Ground in Herb Stratum | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | _= Total Co | ver | |
| % Bare Ground in Herb Stratum Remarks: | | _= Total Co | ver | |

| SOIL | |
|------|--|
| | |

| Depth | Matrix | | Red | ox Featur | es | | | |
|--|---|------------------|---|--|--|---|------------------|--|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Textur | e Remarks |
| 0-8 | 10YR 3/2 | 100 | | | | | Silt loar | n |
| 8-16 | 10YR 4/2 | 80 | 10YR 4/6 | 20 | С | M/PL | Sand | |
| | | | | | | | | |
| | | | | | | · | | |
| | | | | | | · | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | · | | |
| Type: C=C | Concentration, D=De | pletion, RN | M=Reduced Matrix, C | S=Covere | ed or Coat | ed Sand Gr | ains. | ² Location: PL=Pore Lining, M=Matrix. |
| Histoso | | | Sandy Roday | (\$5) | | | mu | 2 cm Muck (A10) |
| Histic F | nipedon (A2) | | Stripped Matri | (33) x (S6) | | | | Red Parent Material (TF2) |
| Black H | listic (A3) | | Loamv Muckv | Mineral (F | -1) (exce r | t MLRA 1) | | Verv Shallow Dark Surface (TF12) |
| Hydroge | en Sulfide (A4) | | Loamy Gleyed | Matrix (F | 2) | - / | | Other (Explain in Remarks) |
| Deplete | d Below Dark Surfac | ce (A11) | Depleted Matr | ix (F3) | , | | | |
| Thick D | ark Surface (A12) | | Redox Dark S | urface (F6 | 5) | | ³ Ind | cators of hydrophytic vegetation and |
| _ Sandy M | Mucky Mineral (S1) | | Depleted Dark | Surface (| F7) | | v | vetland hydrology must be present, |
| _ Sandy (| Gleyed Matrix (S4) | | Redox Depres | sions (F8 |) | | u | nless disturbed or problematic. |
| Restrictive | Layer (if present): | | | | | | | |
| | • • • • | | | | | | | |
| Туре: | | | | | | | | / |
| Type: Depth (in | nches): | | | | | | Hydric | Soil Present? Yes 🖌 No |
| Type: Depth (in Remarks: | nches): | | | | | | Hydric | Soil Present? Yes 🖌 No |
| Type: Depth (in Remarks: | nches): | | | | | | Hydric | Soil Present? Yes 🖌 No |
| Type: Depth (in emarks: | nches): | | | | | | Hydric | Soil Present? Yes 🖌 No |
| Type: Depth (in emarks: | iches): | | | | | | Hydric | Soil Present? Yes <u>No</u> No |
| Type: Depth (in emarks: | oches): | | | | | | Hydric | Soil Present? Yes <u>No</u> No |
| Type: Depth (in emarks: /DROLO /etland Hy | DGY | | | | | | Hydric | Soil Present? Yes <u>V</u> No |
| Type: Depth (in emarks: //DROLO /etland Hy rimary Indi | OGY /drology Indicators /cators (minimum of | : one require | ed; check all that app | Dly) | | | Hydric | Soil Present? Yes <u>No</u> No |
| Type: Depth (in emarks: /DROLO /etland Hy rimary Indi Surface | DGY vdrology Indicators icators (minimum of v water (A1) | : one require | ed; check all that app Water-St | bly) ained Lea | ves (B9) (i | except | Hydric | Soil Present? Yes <u>No</u> No <u>econdary Indicators (2 or more required)</u> _ Water-Stained Leaves (B9) (MLRA 1, 2) |
| Type: Depth (in emarks: //DROLO /etland Hy rimary Indi Surface High Wa | DGY rdrology Indicators icators (minimum of Water (A1) ater Table (A2) | : one require | ed; check all that app Water-St Water-St | bly) ained Lea | ves (B9) ((and 4B) | except | Hydric S | Soil Present? Yes <u>No</u> No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| Type: Depth (in emarks: //DROLO /etland Hy rimary Indi Surface High Wa Saturati | DGY rdrology Indicators icators (minimum of Water (A1) ater Table (A2) ion (A3) | : one require | ed; check all that app Water-St Water-St MLRA Salt Crus | bly) ained Lea A 1, 2, 4A, st (B11) | ves (B9) ((and 4B) | except | Hydric S | Soil Present? Yes <u>No</u> No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| Type: Depth (in emarks: //DROLO /etland Hy rimary Indi Surface High Wa Saturati Water M | DGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) | : one require | ed; check all that app Water-St MLRA Salt Crus Aquatic h | bly) ained Lea A 1, 2, 4A, it (B11) nvertebrat | ves (B9) ((and 4B) es (B13) | except | Hydric | Soil Present? Yes No No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| Type: Depth (in emarks: //DROLC //etland Hy rimary Indi Surface High Wa Saturati Water M Sedime | DGY rdrology Indicators cators (minimum of r Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) | : one require | ed; check all that app Water-St Water-St Salt Crus Aquatic Iu Hydroger | bly) ained Lea A 1, 2, 4A, it (B11) nvertebrat n Sulfide C | ves (B9) ((and 4B) es (B13) Odor (C1) | except | Hydric S | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS |
| Type: Depth (in emarks: //DROLC /etland Hy imary Indi Surface High Wa Saturati Water M Sedime Drift De | DGY rdrology Indicators icators (minimum of a Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) | : one require | ed; check all that app Water-St Salt Crus Salt Crus Aquatic II Hydroger Oxidized | bly) ained Lea A 1, 2, 4A, it (B11) nvertebrat n Sulfide C Rhizosph | ves (B9) (0 and 4B) es (B13) Odor (C1) eres along | except | Hydric | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 / Geomorphic Position (D2) |
| Type: Depth (in emarks: /DROLC /etland Hy rimary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma | DGY vdrology Indicators icators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) | : one require | ed; check all that app Water-St Salt Crus Salt Crus Aquatic Iu Hydroger Oxidized Presence | bly) ained Lea A 1, 2, 4A, at (B11) nvertebrat n Sulfide C Rhizosph e of Reduc | ves (B9) ((and 4B) es (B13) Odor (C1) eres along red Iron (C | except | Hydric | Soil Present? Yes No No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) |
| Type: Depth (in emarks: //DROLC //etland Hy rimary Indii Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dei | DGY rdrology Indicators icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) | : one require | ed; check all that app Water-St Water-St Salt Crus Aquatic In Hydroger Oxidized Presence Recent In | bly) ained Lea A 1, 2, 4A , at (B11) nvertebrat n Sulfide C Rhizosph e of Reduc | ves (B9) (r and 4B) es (B13) Odor (C1) eres along eed Iron (C tion in Tille | except Living Roo 4) ed Soils (C6 | Hydric S | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 / Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Type: Depth (in emarks: //DROLC /etland Hy rimary Indii Surface High Wa Saturati Saturati Vater M Sedime Drift De Algal Ma Iron De Surface | DGY rdrology Indicators icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | : one require | ed; check all that app Water-St Water-St Salt Crus Aquatic Iu Hydroger Oxidized Presence Recent Ir Stunted o | oly) ained Lea A 1, 2, 4A, at (B11) nvertebrat n Sulfide C Rhizosph of Reduc on Reduc on Reduc | ves (B9) (r and 4B) es (B13) Odor (C1) eres along red Iron (C tion in Tille d Plants (I | except Living Roo 4) ed Soils (C6 01) (LRR A) | Hydric | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS / Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Type: Depth (in temarks: //DROLC /etland Hy rimary Indi Surface High Wa Saturati Water M Sedime Drift De Algal M: Iron De Surface Iron De | DGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) a Soil Cracks (B6) ion Visible on Aerial | : one require | ed; check all that app Water-St Water-St Salt Crus Aquatic lu Hydroger Oxidized Presence Recent Ir Stunted co B7) Other (E) | bly) ained Lea A 1, 2, 4A, at (B11) nvertebrat of Sulfide C Rhizosph e of Reduc on Reduc on Reduc or Stresse xplain in R | ves (B9) (and 4B) es (B13) Odor (C1) eres along red Iron (C tion in Tille d Plants (I emarks) | except Living Roo 4) d Soils (C6 01) (LRR A) | Hydric | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

| Field Observations: | | | | | | | | | |
|--|-------------|----------|-------|-----------------------------|------------------|----------------------------|-------|---|----|
| Surface Water Present? | Yes | No | ✓ | Depth (inches): n | ione | | | | |
| Water Table Present? | Yes | No | ✓ | Depth (inches): n | one | | | / | |
| Saturation Present? (includes capillary fringe) | Yes | No | ✓ | Depth (inches): <u>></u> | ·16" | Wetland Hydrology Present? | Yes _ | ✓ | No |
| Describe Recorded Data (stre | am gauge, n | nonitori | ing w | ell, aerial photos, p | previous inspect | tions), if available: | | | |
| Remarks: | | | | | | | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Gray | ys Harbor County | Sampling Date: 06/14/2018 |
|---|----------------------------|-------------------------|---------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA S | Sampling Point: SP8 |
| Investigator(s): Dan Gunderson and Grace Roberts | _ Section, Township, Range | Section 11 and 12, To | wnship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (concave, con | vex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: _4 | 6°58'13.31"N Lo | ong: 123°53'2.25"W | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classifica | tion: <u>none</u> |
| Are climatic / hydrologic conditions on the site typical for this time of y | /ear? Yes 🖌 No | (If no, explain in Re | marks.) |
| Are Vegetation, Soil, or Hydrology significantl | y disturbed? Are "Nor | mal Circumstances" pro | esent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally p | roblematic? (If neede | d, explain any answers | in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showin | g sampling point loca | ations, transects, | important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✔ No Yes _ ✔ No Yes _ ✔ No | Is the Sampled Area within a Wetland? | Yes No |
|---|--|---------------------------------------|--------|
| Remarks: | | | |

| 401 | Absolute | Dominan | t Indicator | Dominance Test worksheet: |
|--|----------|--------------|-------------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 2 (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strata: 3 (B) |
| 4 | | | · | |
| 4 | | | | Percent of Dominant Species |
| Sopling/Shrub Stratum (Distaire: 10') | · | _ = Total Co | over | That Are OBL, FACW, or FAC: 66 (A/B) |
| <u>Saping/Shrub Stratum</u> (Flot size) | | | | Prevalence Index worksheet: |
| 1 | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | |
| 4 | | | | FACW species x 2 = |
| 5. | | | | FAC species x 3 = |
| | | - Total C | over | FACU species x 4 = |
| Herb Stratum (Plot size: ¹⁰) | | 10(a) 0(| 5761 | UPL species x 5 = |
| Anthoxanthum odoratum | 30 | yes | FACU | Column Totals: (A) (B) |
| 2 Holcus lanatus | 30 | ves | FAC | |
| 2. Carex obnunta | 20 | Ves | OBI | Prevalence Index = B/A = |
| | 15 | 900 | | Hydrophytic Vegetation Indicators: |
| | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. Infolium repens | 5 | | FAC | ✓ 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7. | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 3 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 10 | | | | ¹ Indicators of hydric coil and wetland hydrology must |
| 11 | | | | be present, unless disturbed or problematic. |
| | 100 | = Total Co | over | |
| Woody Vine Stratum (Plot size: 10) | | | | |
| 1. <u>none</u> | | | | Hydrophytic |
| 2 | | | | Vegetation |
| | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| SOIL | |
|------|--|
| | |

| Donth | Motrix | e to the de | Put needed to docui | v Footuro | | | | of indicators.) |
|---|--|--|--|---|---|---|---|--|
| (inches) | Color (moist) | % | Color (moist) | <u>% reature</u> % | | Loc ² | Texture | Remarks |
| 0-3 | 10YR 3/2 | 100 | | | | | Silt loam | |
| 3-16 | 10YR 3/2 | 90 | 10YR 3/6 | 10 | С | Μ | Sand | |
| | | | | | | | | |
| | | | | | - <u> </u> | | | |
| | | | | | | | | |
| ¹ Type: C=Co Hydric Soil I | oncentration, D=De | pletion, RM | A=Reduced Matrix, CS | S=Covere rwise not | d or Coate ed.) | ed Sand Gi | rains. ² Lo Indicate | cation: PL=Pore Lining, M=Matrix. |
| Histosol | (A1) | | ✓ Sandy Redox (| S5) | | | 2 c | m Muck (A10) |
| Histic Ep | pipedon (A2) | | Stripped Matrix | (S6) | | | Red | d Parent Material (TF2) |
| Black His | stic (A3) | | Loamy Mucky N | Mineral (F | 1) (excep | t MLRA 1) | Ver | y Shallow Dark Surface (TF12) |
| Hydroge | n Sulfide (A4) | (.) | Loamy Gleyed | Matrix (F2 | 2) | | Oth | ner (Explain in Remarks) |
| Depleted | d Below Dark Surfa | ce (A11) | Depleted Matrix | x (F3) wfaaa (FC) | | | 31 | and of hundrands, the upperturbed and |
| I NICK Da Sandy M | Ark Surface (A12) Aucky Mineral (S1) | | Redox Dark Su | Ifface (F6) Surface (F | =7) | | Indicate | ors of hydrophytic vegetation and |
| Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) wetland hydrology must be j | | | | | | | unle | ss disturbed or problematic |
| Sandy G | over (if present): | | | | | | | |
| Sandy G | _aver (ii present): | | | | | | | |
| Sandy G Restrictive L | _ayer (ii present): | | | | | | | _ |
| Sandy G Restrictive L Type: Depth (inc | _ayer (ii present): | | | | | | Hvdric Soi | I Present? Yes ✔ No |
| Sandy G Restrictive L Type: Depth (inc Remarks: | ches): | | | | | | Hydric Soi | I Present? Yes 🖌 No |
| Sandy G Restrictive L Type: Depth (inc Remarks: | ches): | | | | | | Hydric Soi | I Present? Yes 🖌 No |
| Sandy G Restrictive L Type: Depth (inc Remarks: | ches): | | | | | | Hydric Soi | I Present? Yes 🖌 No |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOO Wetland Hyd | GY | :: | ad: check all that and | | | | Hydric Soi | I Present? Yes <u>No</u> No |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOG Wetland Hyd Surface V | GY GY Motor (A1) | :: one require | ed; check all that appl | y) | | vcent | Hydric Soi | I Present? Yes <u>No</u> <u>No</u> |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOO Wetland Hyc Primary Indic Surface V High Wa | GY GY Water (A1) ter Table (A2) | :: one require | ed; check all that appl Water-Sta | y) ined Leav | es (B9) (€ | xcept | Hydric Soi | I Present? Yes <u>No</u> <u>No</u> Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 44 and 48) |
| Sandy G Restrictive L Type: Depth (inc Remarks: Primarks: Primary Indic Surface V High War Saturatio | GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) | :: one require | ed; check all that appl Water-Sta MLRA Salt Crust | y) ined Leav 1, 2, 4A, (B11) | es (B9) (€ and 4B) | xcept | Hydric Soi | I Present? Yes <u>No</u> <u>No</u> <u>endary Indicators (2 or more required)</u> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOO Wetland Hyd Primary Indic Surface V High Wa' Saturatio Water Mi | GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) larks (B1) | : one require | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In | y) ined Leav 1, 2, 4A , i (B11) vertebrate | es (B9) (e and 4B) es (B13) | xcept | Hydric Soi | I Present? Yes <u>No</u> <u>No</u> Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| Sandy G Restrictive L Type: Depth (inc Remarks: PYDROLOG Wetland Hyd Primary IndicSurface VHigh Wa'SaturatioWater M:Sedimen | GY GY drology Indicators cators (minimum of Water (A1) atter Table (A2) on (A3) larks (B1) att Deposits (B2) | : one require | ed; check all that appl Water-Sta Water-Sta Salt Crust Aquatic In Hvdrogen | y) ined Leav 1, 2, 4A , 3 (B11) vertebrate Sulfide O | res (B9) (c and 4B) es (B13) dor (C1) | xcept | Hydric Soi | I Present? Yes No ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) |
| Sandy G Restrictive L Type: Depth (inc Remarks: PTDROLOO Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water M: Sedimen Drift Dep | GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) | :: one require | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen ✓ Oxidized F | y) ined Leav 1, 2, 4A , i (B11) vertebrate Sulfide O Rhizosphe | res (B9) (c and 4B) es (B13) dor (C1) eres along | xcept | Hydric Soi | I Present? Yes No Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOO Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water M: Sedimen Drift Dep Algal Ma | GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) | : one require | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce | res (B9) (c and 4B) es (B13) dor (C1) eres along ed Iron (C | xcept | Hydric Soi Hydric Soi Seco _ | I Present? Yes No endary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOG Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water M: Sedimen Drift Dep Algal Ma Iron Dep | GY drology Indicators cators (minimum of Water (A1) ther Table (A2) on (A3) larks (B1) th Deposits (B2) posits (B3) at or Crust (B4) posits (B5) | :: one require | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc | y) ined Leav 1, 2, 4A , i (B11) vertebrate Sulfide O Rhizosphe of Reduce | es (B9) (6 and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille | xcept Living Roc 4) d Soils (Cé | Hydric Soi | I Present? Yes No Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Sandy G Restrictive L Type: Depth (inc Remarks: PYDROLOG Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water M: Sedimen Drift Dep Algal Ma Iron Dep Surface S | GY GY Grology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | : one require | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted of | y) ined Leav 1, 2, 4A , i (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reduct r Stressed | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C ion in Tille Plants (D | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | I Present? Yes No Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Sandy G Restrictive L Type: Depth (inc Remarks: PYDROLOO Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water M: Sedimen Drift Dep Algal Ma Iron Dep Surface S Inundatic | GY GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial | :: one require | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Presence Recent Irc Stunted of 37) Other (Exj | y) ined Leav 1, 2, 4A, (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reduct r Stressed plain in Re | res (B9) (c and 4B) es (B13) dor (C1) eres along ed Iron (C ion in Tille Plants (D emarks) | xcept Living Roo 4) d Soils (Cé 1) (LRR A | Hydric Soi Hydric Soi Seco Seco Soits (C3) ✓ C Soits (C3 | No No No No No No No No No No No |
| Sandy G Restrictive L Type: Depth (inc Remarks: PTDROLOO Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water M: Sedimen Drift Dep Algal Ma Iron Dep Surface S Inundatic Sparsely | GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav | i: one require Imagery (I | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted of 37) Other (Exp (B8) | y) ined Leav 1, 2, 4A, i (B11) vertebrate Sulfide O Rhizosphe of Reduct on Reduct r Stressed plain in Re | res (B9) (e and 4B) dor (C1) eres along ed Iron (C ion in Tille I Plants (D emarks) | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi Hydric Soi Seco _ | I Present? Yes No endary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOG Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water Ma Sedimen Drift Dep Algal Ma Iron Dep Surface S Inundatic Sparsely Field Observer | GY drology Indicators cators (minimum of Water (A1) ter Table (A2) on (A3) larks (B1) to Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav vations: | :: one require one require ve Surface | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted of 37) Other (Exp (B8) | y) ined Leav 1, 2, 4A , i (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reduct r Stressed plain in Re | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- tion in Tille Plants (D emarks) | xcept Living Roo 4) d Soils (C6 1) (LRR A | Hydric Soi | I Present? Yes No Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy G Restrictive L Type: Depth (inc Remarks: YDROLOO Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water Ma Sedimen Drift Dep Algal Ma Iron Dep Surface S Inundatic Sparsely Field Observ Surface Wate | GY GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav vations: er Present? | Imagery (I ve Surface Yes | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted ou 37) Other (Exp (B8) No Depth (in | y) ined Leav 1, 2, 4A, i (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reduct r Stressed plain in Re | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C ion in Tille Plants (D emarks) one | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | I Present? Yes No Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy G Restrictive L Type: Depth (inc Remarks: TYDROLOO Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water Ma Sedimen Drift Dep Algal Ma Iron Dep Surface S Inundatic Sparsely Field Observ Surface Water Water Table | GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) arks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concar vations: er Present? Present? | Imagery (f ve Surface Yes Yes | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted on 37) Other (Exp (B8) No Depth (in No Depth (in | y) ined Leav 1, 2, 4A, 3 (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reduct r Stressed plain in Re ches): <u>no</u> ches): <u>no</u> | res (B9) (c and 4B) es (B13) dor (C1) eres along ed Iron (C ion in Tille Plants (D emarks) one ne | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | No No No No Nater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy G Restrictive L Type: Depth (inc Remarks: PTDROLOG Wetland Hyc Primary Indic Surface V High Wa' Saturatio Water M: Sedimen Drift Dep Algal Ma Iron Dep Surface S Inundatic Sparsely Field Observ Surface Water Water Table I Saturation Pr (includes cap | GY drology Indicators cators (minimum of Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial v Vegetated Concav vations: er Present? Present? present? pillary frince) | Imagery (I ve Surface Yes Yes | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Stunted of 37) Other (Exp (B8) No Depth (in No Depth (in | y) ined Leav 1, 2, 4A, i (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reduce r Stressed plain in Re ches): <u>no</u> ches): <u>>1</u> | res (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C ion in Tille Plants (D emarks) one ne 6" | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | I Present? Yes No Indary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

Remarks:

| Project/Site: IDD#1 | _ City/County: Hoquiam/Gra | ays Harbor County | Sampling Date: 06/14/2018 |
|---|----------------------------|-----------------------------|-----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | _ Sampling Point: SP9 |
| Investigator(s): Dan Gunderson and Grace Roberts | _ Section, Township, Range | e: Section 11 and 12, | Township 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (concave, cor | ivex, none): <u>none</u> | Slope (%): _0 |
| Subregion (LRR): LRR A Lat: | 46°58'12.96"N L | .ong: <u>123°53'2.32</u> "W | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classifi | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time of | year? Yes 🖌 No _ | (If no, explain in F | Remarks.) |
| Are Vegetation, Soil, or Hydrology significant | tly disturbed? Are "No | rmal Circumstances" | present? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally p | problematic? (If need | ed, explain any answe | ers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showir | ng sampling point loc | ations, transects | s, important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes Yes Yes | No <u>✓</u> No <u>✓</u> No <u>✓</u> | Is the Sampled Area within a Wetland? | Yes | No |
|---|-------------------|---|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: 2 (A) |
| 2 | | | | Tatal Number of Deminant |
| 3. | | | | Species Across All Strata: 5 (B) |
| A | | | | |
| | | Total Ca | | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = 10tal CC | iver | That Are OBL, FACW, or FAC: 40 (A/B) |
| none | | | | Prevalence Index worksheet: |
| I | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | FACW species x 2 = |
| 4 | | | | FAC species x 3 - |
| 5 | | | | |
| | | = Total Co | ver | FACU species X 4 = |
| Herb Stratum (Plot size: 10' | | | | UPL species x 5 = |
| 1. Poa sp. | 20 | yes | FAC | Column Totals: (A) (B) |
| 2. Parentucellia viscosa | 15 | yes | FAC | Prevalence Index - B/A - |
| 3. Anthoxanthum odoratum | 15 | yes | FACU | Hydrophytic Vegetation Indicators: |
| A Plantago lanceolata | 15 | yes | FACU | 1 Papid Toot for Hydrophytic Vegetation |
| 5 Rumex acetosella | 15 | ves | FACU | |
| s | 10 | <u>,</u> | NI | 2 - Dominance Test Is >50% |
| - Trifolium ropons | | | EAC | 3 - Prevalence Index is ≤3.0 |
| 7. Thiolium repens | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8. Hypochaeris radicata | 5 | | FACU | data in Remarks or on a separate sneet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11. | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 100 | = Total Co | ver | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10') | | | | |
| 1. none | | | | Hydrophytic |
| 2 | | | | Vegetation |
| | | - Total Ca | | Present? Yes No V |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | 1 |
| | | | | |
| | | | | |

| inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
|---|---|---|---|--|---|---|-----------------------|--|
|)-2 | 10YR 3/2 | 100 | | | | | Silt loam | |
| 2-6 | 10YR 4/2 | 90 | 10YR 4/3 | 10 | С | М | sand | |
| 6-16 | 10YR 4/2 | 70 | 10YR 4/3 | 30 | С | Μ | sand | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | · | | | |
| | | | | | | | | |
| | | | | | | | | |
| ype: C=Co | oncentration, D=De | oletion, RN | l=Reduced Matrix, CS | S=Covere | d or Coate | ed Sand Gr | ains. ² Lo | ocation: PL=Pore Lining, M=Matrix. |
| ydric Soil | Indicators: (Applie | cable to al | I LRRs, unless othe | rwise not | ed.) | | Indicat | ors for Problematic Hydric Soils ³ : |
| _ Histosol | (A1) | | Sandy Redox (| S5) | | | 2 c | m Muck (A10) |
| _ Histic Ep | pipedon (A2) | | Stripped Matrix | (S6) | 4) (| | Re | d Parent Material (TF2) |
| Black Hi | stic (A3) | | Loamy Mucky N | Vineral (F | 1) (excep i)) | (MLRA 1) | Vei | ry Shallow Dark Sufface (TF12) |
| _ Hyuroge Denleter | d Below Dark Surfa | re (A11) | Loanny Gleyed | (F3) | -) | | 0 | |
| Thick Da | ark Surface (A12) | ~ (****) | Redox Dark Su | rface (F6) | | | ³ Indicat | tors of hydrophytic vegetation and |
| Sandy M | lucky Mineral (S1) | | Depleted Dark | Surface (F | -7) | | wetla | and hydrology must be present, |
| | | | Podey Depres | ions (F8) | | | unle | ess disturbed or problematic. |
| _ Sandy G | Bleyed Matrix (S4) | | Redux Depress | | | | | • |
| Sandy G Sandy G estrictive I | Bleyed Matrix (S4) | | | | | | | |
| Sandy G Sandy G estrictive I Type: | Bleyed Matrix (S4) Layer (if present): | | | | | | | 1 |
| Sandy G Sandy G Cestrictive I Type: Depth (ind Cemarks: | Gleyed Matrix (S4) Layer (if present): ches): | | Redux Depress | | | | Hydric Soi | il Present? Yes No _✓ |
| Sandy G Sandy G Restrictive I Type: Depth (ind remarks: /DROLO | Gleyed Matrix (S4) Layer (if present): ches): GY | | | | | | Hydric Soi | il Present? Yes No |
| Sandy G estrictive I Type: Depth (ind emarks: /DROLO /etland Hyd | GY GY Gleyed Matrix (S4) Layer (if present): Ches): GY | | | | | | Hydric Soi | il Present? Yes No |
| Sandy G estrictive I Type: Depth (ind emarks: //DROLO /etland Hyd rimary Indid | Gleyed Matrix (S4) Layer (if present): ches): GY drology Indicators cators (minimum of | : one require | Redux Depress | y) | | | Hydric Soi | Il Present? Yes No |
| Sandy G estrictive I Type: Depth (ind emarks: //DROLO /etland Hyd rimary India Surface | Gleyed Matrix (S4) Layer (if present): ches): GY drology Indicators cators (minimum of water (A1) | : one require | ed; check all that appl | y) ined Leav | es (B9) (e | xcept | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 |
| Sandy G estrictive I Type: Depth (ind emarks: //DROLO /etland Hyd rimary Indid Surface High Wa | Gleyed Matrix (S4) Layer (if present): ches): GY drology Indicators cators (minimum of Water (A1) ater Table (A2) | : one require | ed; check all that appl Water-Sta | y) ined Leav 1, 2, 4A, a | es (B9) (e and 4B) | xcept | Hydric Soi | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| Sandy G estrictive I Type: Depth (ind emarks: //DROLO /etland Hyd rimary India Surface High Wa Saturatia | Gleyed Matrix (S4) Layer (if present): ches): GY GY drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) | : one require | ed; check all that appl water-Sta MLRA Salt Crust | <u>y)</u> ined Leav 1, 2, 4A , a (B11) | es (B9) (e and 4B) | xcept | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| Sandy G estrictive I Type: Depth (ind emarks: //DROLO //etland Hyd rimary Indid Surface High Wa Saturatid Water M | Gleyed Matrix (S4) Layer (if present): ches): GY drology Indicators cators (minimum of r Water (A1) ater Table (A2) on (A3) larks (B1) | : one require | ed; check all that appl water-Sta MLRA Salt Crust Aquatic In | y) ined Leav 1, 2, 4A , a (B11) vertebrate | res (B9) (e and 4B) es (B13) | xcept | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| Sandy G estrictive I Type: Depth (ind emarks: // // // // // // // // // // // // // | Gleyed Matrix (S4) Layer (if present): ches): ches): drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) | : one require | ed; check all that appl | <u>y)</u> ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O | res (B9) (e and 4B) es (B13) dor (C1) | xcept | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 |
| Sandy G estrictive I Type: Depth (ind emarks: //DROLO /etland Hyd rimary India Surface High Wa Saturatia Saturatia Sedimer Sedimer Drift Dep | Geyed Matrix (S4) Layer (if present): Ches): Ches): GY Grology Indicators Cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) | : one require | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F | y) ined Leav 1, 2, 4A , a (B11) vertebrate Sulfide O Rhizosphe | es (B9) (e and 4B) es (B13) dor (C1) eres along | xcept | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) |
| Sandy G estrictive I Type: Depth (ind emarks: //DROLO /etland Hyd rimary Indid Saturatio Saturatio Water M Sedimer Drift Dep Algal Ma | GY GY GY drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) | : one require | ed; check all that appl water-Sta MLRA Salt Crust Aquatic Im Hydrogen Oxidized F Presence | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C4 | xcept Living Roc | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) |
| Sandy G Sandy G Sandy G Sandy G Sandy G Type: Depth (ind marks: | Gleyed Matrix (S4) Layer (if present): ches): GY drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) | : one require | | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille | xcept Living Roc 4) d Soils (C6 | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Sandy & San | Geved Matrix (S4) Layer (if present): ches): ches): drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | : one require | ed; check all that appl which apply that apply a solution of the solution of | y) ined Leav 1, 2, 4A , a (B11) vertebrate Sulfide O Rhizosphe of Reducti Stressed | res (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C4 ion in Tille Plants (D | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Sandy G Sandy G estrictive I Type: Depth (ind emarks: | Geyed Matrix (S4) Layer (if present): ches): GY drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial | : one require | ed; check all that appl water-Sta MLRA Salt Crust Aquatic Im Oxidized F Presence Recent Iro Stunted or 37) Other (Exp (Pa) | y) ined Leav 1, 2, 4A , a (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reducti Stressed blain in Re | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C4 ion in Tille Plants (D emarks) | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy G estrictive I Type: Depth (ind emarks: // // // // // // // // // // // // // | Geyed Matrix (S4) Layer (if present): ches): GY drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav | : one require Imagery (E e Surface | ed; check all that appl water-Sta MLRA Salt Crust Aquatic In Aquatic In Oxidized F Presence Recent Iro Stunted or 37) Other (Exp (B8) | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce of Reduce Stressed blain in Re | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C- ion in Tille Plants (D emarks) | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
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| Sandy G Sandy G Sandy G Type: Depth (ind emarks: //DROLO //etland Hyd rimary India Surface High Wa Saturatia Saturatia Nater M Sedimer Drift Dep Algal Ma Iron Dep Surface Inundatii Sparsely ield Obser urface Wate | GY GY drology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) on Visible on Aerial y Vegetated Concav vations: er Present? | Imagery (E | ed; check all that appl | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reducti Stressed olain in Re ches): <u>no</u> | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C4 ion in Tille Plants (D emarks) one ne | xcept Living Roc 4) d Soils (C6 1) (LRR A | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Sandy G Sandy G Sandy G Type: Depth (ind remarks: /DROLO /etland Hyd rimary India | Geven Matrix (S4) Layer (if present): ches): ches): ches): drology Indicators cators (minimum of a Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) oosits (B3) at or Crust (B4) oosits (B5) Soil Cracks (B6) on Visible on Aerial / Vegetated Concav vations: er Present? Present? | Imagery (E re Surface /es | ed; check all that appl water-Sta MLRA | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce of Reduce on Reducti Stressed blain in Re ches): <u>no</u> ches): <u>no</u> | es (B9) (e and 4B) es (B13) dor (C1) eres along ed Iron (C4 ion in Tille Plants (D emarks) one ne 6" | xcept | Hydric Soi | il Present? Yes No |

| Project/Site: IDD#1 | City/County: Hoquiam/Gray | s Harbor County | Sampling Date: 06/14/2018 |
|--|-------------------------------|--------------------------|---------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP10 |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range: | Section 11 and 12, To | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, conv | ex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: 46 | 3°58'12.46"N Lo | ng: <u>123°53'2.05"W</u> | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classifica | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No | _ (If no, explain in Re | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | y disturbed? Are "Norr | nal Circumstances" pr | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | roblematic? (If needed | d, explain any answer | s in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loca | tions, transects, | important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? | Yes No |
|---|--|---------------------------------------|--------|
| Remarks: | | | |

| 4.01 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|--------------------------|-----------|--|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | · | That Are OBL, FACW, or FAC: <u>3</u> (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strate: 4 (P) |
| | | | · | Species Across Air Strata. (B) |
| 4 | | | | Percent of Dominant Species |
| Conting (Charth Charthurs (Distained 10) | | = Total Co | over | That Are OBL, FACW, or FAC: 75 (A/B) |
| Sapling/Shrub Stratum (Plot size:) | | | | Prevalence Index worksheet: |
| 1. none | | | · | Total % Cover of Multiply by |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | FACW species x 2 = |
| | | | · | FAC species x 3 = |
| o | | | · | FACU species x 4 = |
| Horb Stratum (Plot size: 10' | | = Total Co | over | UPL species x 5 = |
| Anthoxanthum odoratum | 25 | Voc | EACU | Column Totals: (A) (B) |
| | | yes | FACO | |
| 2. Holcus lanatus | 25 | yes | FAC | Prevalence Index = B/A = |
| 3. Lotus corniculatus | 25 | yes | FAC | Hydrophytic Vegetation Indicators: |
| 4. Carex obnupta | 25 | yes | OBL | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. | | | | $\sqrt{2}$ - Dominance Test is $>50\%$ |
| 6 | | | · | $\underline{\mathbf{v}}$ 2 Dominance results 2007 |
| 7 | | | · | 3 - Prevalence index is ≤3.0 |
| / | | | · | 4 - Morphological Adaptations' (Provide supporting |
| 8 | | | · | |
| 9 | | | | 5 - Wetland Non-Vascular Plants |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11. | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | | | | |
| | 100 | – Total Co | vor | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: ^{10'}) | 100 | = Total Co | ver | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10') | 100 | _= Total Co | ver | be present, unless disturbed or problematic. |
| <u>Woody Vine Stratum</u> (Plot size: <u>10'</u>) 1. <u>none</u> | 100 | = Total Co | ver | be present, unless disturbed or problematic. Hydrophytic |
| Woody Vine Stratum (Plot size: 10') 1. none 2. | 100 | = Total Co | ver | be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes No |
| Woody Vine Stratum (Plot size: 10') 1. none) 2 | | = Total Co | ver | be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes No |
| Woody Vine Stratum (Plot size: 10') 1. none | | = Total Co | ver | be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>No</u> |
| Woody Vine Stratum (Plot size: 10') 1. none | | = Total Co = Total Co | ver | be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes No |

| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
|--|---|-------------------------|--|---|---|--|---|--|
| 0-4 1 | 10YR 2/2 | 100 | none | | | | silt loam | |
| 1-16 1 | 10YR 3/2 | 80 | 10YR 3/4 | 20 | С | Μ | sand | |
| | | | | | | | | |
| | | | | | | | 21 | |
| vdric Soil Inc | dicators: (Applic | able to al | I RRs unless othe | s=Covered | a or Coate | ed Sand Gr | Indicat | tors for Problematic Hydric Soils ³ : |
| Histosol (A Histic Epip Black Histi Hydrogen 3 Depleted E Thick Dark Sandy Muc Sandy Gle testrictive Lay Type: Depth (inchore) | A1) pedon (A2) ic (A3) Sulfide (A4) Below Dark Surface Comparison Surface (A12) cky Mineral (S1) pyed Matrix (S4) yer (if present): es): | e (A11) | V Sandy Redox (Stripped Matrix Loamy Mucky Loamy Gleyed Depleted Matri Redox Dark Su Depleted Dark Redox Depress | S5) ((S6) Mineral (F ⁻ Matrix (F2 x (F3) urface (F6) Surface (F6) sions (F8) | 1) (excep) 7) | t MLRA 1) | 2 c Re Ve Ot ³ Indica wet unle | cm Muck (A10) ad Parent Material (TF2) ery Shallow Dark Surface (TF12) her (Explain in Remarks) tors of hydrophytic vegetation and land hydrology must be present, ess disturbed or problematic. |
| emarks: | | | | | | | | |
| emarks: | Y | | | | | | | |
| emarks: (DROLOG /etland Hydro | Y ology Indicators: | | d, aback all that and | | | | | opdopy Indicators (2 or more required) |
| TOROLOG Torong T | Y ology Indicators: tors (minimum of c | one require | ed; check all that app Water-Sta | ly) | es (R9) /c | xcent | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 |
| emarks: DROLOG retland Hydro <u>rimary Indicat</u> _ Surface Wate High Wate | Y ology Indicators: tors (minimum of c 'ater (A1) er Table (A2) | one require | ed; check all that app Water-Sta | ly) iined Leav 1, 2, 4A, a | es (B9) (¢ | xcept | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| emarks: DROLOG /etland Hydro <u>rimary Indicat</u> _ Surface Wa _ High Wate _ Saturation | Y ology Indicators: tors (minimum of c later (A1) r Table (A2) (A3) | one require | ed; check all that app Water-Sta MLRA Salt Crust | l <u>y)</u> ained Leav 1, 2, 4A, a ∶ (B11) | es (B9) (¢ and 4B) | xcept | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| DROLOG /DROLOG /etland Hydro <u>rimary Indicat</u> <u>surface Wa</u> <u>High Wate</u> <u>Saturation</u> <u>Water Mar</u> | Y ology Indicators: tors (minimum of c ater (A1) ir Table (A2) (A3) iks (B1) | one require | ed; check all that app Water-Sta Salt Crust Salt Crust Aquatic In | ly) iined Leav 1, 2, 4A, a : (B11) ivertebrate | es (B9) (c and 4B) s (B13) | xcept | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| DROLOG etland Hydro imary Indicat _ Surface Wa _ High Wate _ Saturation _ Water Mari _ Sediment [| Y ology Indicators: tors (minimum of c dater (A1) ir Table (A2) (A3) (A3) iks (B1) Deposits (B2) | one require | ed; check all that app Water-Sta Salt Crust Salt Crust Aquatic In Hydrogen | ly) nined Leav 1, 2, 4A, a : (B11) vvertebrate Sulfide O | es (B9) (c and 4B) s (B13) dor (C1) | xcept | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| emarks: DROLOG retland Hydro rimary Indicat Surface Wa High Water Saturation Water Mar Sediment I Drift Depose | Y ology Indicators: tors (minimum of c dater (A1) rr Table (A2) (A3) (A3) rks (B1) Deposits (B2) sits (B3) | one require | ed; check all that app Water-Sta Salt Crust Aquatic In Hydrogen Oxidized | ly) ained Leav 1, 2, 4A, a : (B11) avertebrate Sulfide O Rhizosphe | es (B9) (c and 4B) s (B13) dor (C1) res along | xcept | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) |
| DROLOG Tetland Hydro Surface Water Saturation Water Mari Sediment I Drift Depose Algal Mate of the second s | Y ology Indicators: tors (minimum of c 'ater (A1) r Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) | one require | ed; check all that app Water-Sta Salt Crust Salt Crust Aquatic In Hydrogen Oxidized I Presence | l <u>y)</u> ained Leav 1, 2, 4A, a (B11) avertebrate Sulfide Ou Rhizosphe of Reduce | es (B9) (c and 4B) s (B13) dor (C1) res along ed Iron (C | except Living Roc | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) |
| Provide a constraint of the second department of the second depart | Y ology Indicators: tors (minimum of c dater (A1) or Table (A2) (A3) (A3) (ks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) | one require | ed; check all that app Water-Sta Salt Crust Salt Crust Aquatic In Hydrogen Presence Recent In | ly) ained Leav 1, 2, 4A, a (B11) wertebrate Sulfide Ou Rhizosphe of Reduce | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille | xcept Living Roc 4) d Soils (C6 | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1 , 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Algal Mat co Lemarks: (DROLOG) Vetland Hydro rimary Indicat Migh Wate Saturation Water Mar Sediment I Drift Depos Algal Mat co Iron Depos Surface Sc | Y ology Indicators: tors (minimum of c dater (A1) or Table (A2) (A3) (ks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) bil Cracks (B6) | one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Ind Stunted o | ly) nined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O Rhizosphe of Reduce on Reducti r Stressed | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille Plants (D | Living Roc 4) d Soils (C6 1) (LRR A | <u>Sec</u> ots (C3) <u>✓</u> (5)) | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Comparison of the second | Y ology Indicators: tors (minimum of c later (A1) r Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) oil Cracks (B6) r Visible on Aerial I | one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic Irr Hydrogen Oxidized I Presence Recent Irro Stunted o 37) Other (Ex | ly) ained Leav 1, 2, 4A, a (B11) avertebrate Sulfide Ou Rhizosphe of Reduce on Reducti r Stressed plain in Re | es (B9) (e and 4B) dor (C1) res along ed Iron (C- on in Tille Plants (D emarks) | xcept Living Roc 4) d Soils (C6 1) (LRR A | <u>Sec</u> ots (C3) ✓)) | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| YDROLOG YUROLOG Yetland Hydro Primary Indicat Carimary Indicat Surface Wa High Water Saturation Water Mar Sediment I Sediment I Drift Depos Algal Mat o Iron Depos Surface So Inundation Sparsely V | Y ology Indicators: tors (minimum of c 'ater (A1) r Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) bil Cracks (B6) Visible on Aerial I /egetated Concave | one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen VOxidized I Presence Recent Ind Stunted o 37) Other (Ex (B8) | ly) ined Leav 1, 2, 4A, a : (B11) ivertebrate Sulfide Or Rhizosphe of Reduce on Reducti r Stressed plain in Re | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille Plants (D emarks) | Except Living Roc 4) d Soils (C6 1) (LRR A | <u>Sec</u> ots (C3) <u>✓</u>) | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Permarks: YDROLOG Vetland Hydro Primary Indicat Surface Wa High Water Saturation Water Mar Sediment I Drift Depos Algal Mat of Iron Depos Surface So Inundation Sparsely V Field Observation | Y ology Indicators: tors (minimum of c ater (A1) or Table (A2) (A3) rks (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) oil Cracks (B6) visible on Aerial I /egetated Concave tions: | one require | ed; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Iro Stunted o 87) Other (Ex (B8) | ly) ained Leav 1, 2, 4A, a (B11) wertebrate Sulfide Ou Rhizosphe of Reduce on Reducti r Stressed plain in Re | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D marks) | Living Roc 4) d Soils (C6 1) (LRR A | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1 , 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| YDROLOG Yetland Hydro Primary Indicat Surface Wa High Wate Saturation Water Mar Sediment I Drift Depos Algal Mat o Iron Deposs Surface So Inundation Sparsely V Field Observal Surface Water | Y ology Indicators: tors (minimum of c dater (A1) in Table (A2) (A3) its (B1) Deposits (B2) sits (B3) or Crust (B4) sits (B5) oil Cracks (B6) Visible on Aerial I degetated Concave tions: Present? Y | Imagery (E e Surface | ed; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent In Stunted o 37) Other (Ex (B8) | ly) ined Leav 1, 2, 4A, a : (B11) wertebrate Sulfide Or Rhizosphe of Reduce on Reducti r Stressed plain in Re uches): | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C- on in Tille Plants (D emarks) | xcept Living Roo 4) d Soils (C6 1) (LRR A | <u>Sec</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1 , 3 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

| outuration i robont. | 100 | | opun (monoo) | | i i o ci a i i g ai o i |
|-----------------------------|----------------|-----------------|------------------|----------------|-------------------------|
| (includes capillary fringe) | | | | | |
| Describe Recorded Data | (stream gauge, | monitoring well | , aerial photos, | previous inspe | ections), if available: |

Remarks:

| Project/Site: IDD#1 | _ City/County: <u>Hoquiam/Gray</u> | s Harbor County | Sampling Date: 06/14/2018 |
|---|------------------------------------|---------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP11 |
| Investigator(s): Dan Gunderson and Grace Roberts | _ Section, Township, Range: | Section 11 and 12, 1 | Fownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (concave, conv | ex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: | 46°58'12.07"N Lo | ng: <u>123°53'1.94</u> "W | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classific | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | year? Yes 🖌 No | (If no, explain in R | emarks.) |
| Are Vegetation, Soil, or Hydrology significant | ly disturbed? Are "Nori | mal Circumstances" p | oresent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally p | problematic? (If neede | d, explain any answe | rs in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showin | ig sampling point loca | tions, transects | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes Yes✔ Yes | No No No | Is the Sampled Area within a Wetland? | Yes | No |
|---|--------------------|----------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|--------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 0 (A) |
| 2 | | | | Total Number of Deminent |
| 3. | | | | Species Across All Strata: 1 (B) |
| 4 | | | | |
| - Ti | | - Total Ca | vor | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: ^{10'}) | | = 10tal Co | iver | That Are OBL, FACW, or FAC: (A/B) |
| 1 none | | | | Prevalence Index worksheet: |
| 1 | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | FACW species x 2 = |
| 4 | | | | |
| 5 | | | | |
| | | = Total Co | ver | FACU species x 4 = |
| Herb Stratum (Plot size: 10') | | - | | UPL species x 5 = |
| 1. Anthoxanthum odoratum | 60 | yes | FACU | Column Totals: (A) (B) |
| 2. Holcus lanatus | 15 | | FAC | Provolonce Index - B/A - |
| 3 Lotus corniculatus | 15 | | FAC | Hydrophytic Vagatation Indicators: |
| Plantago lanceolata | 5 | | FACU | A Danid Test (as the base of a Venetation |
| - Hypochaeris radicata | 5 | | FACU | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. <u></u> | | | | 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10. | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11 | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| ···· | 100 | - Total Ca | | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: ^{10'}) | | | vei | |
| 1 none | | | | the decord of the |
| · | | | | Hydrophytic Vegetation |
| 2 | | | | Present? Yes No |
| % Bare Ground in Herb Stratum | | = I otal Cov | ver | |
| Remarks: | | | | |
| Romano. | | | | |
| | | | | |

| SUIL |
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|------|

| (in also -) | Calar (sector) | 0/ | | | T | 1 - 2 | Testerre | Description |
|--|---|------------------|---|--|--|--|----------------------|--|
| | | % | Color (moist) | % | Type | LOC | | Remarks |
| J-4 | 10YR 3/2 | 100 | | | | · <u> </u> | SILTLOAM | |
| 1-16 | 10YR 3/2 | 90 | 10YR 3/4 | 10 | C | M | SAND | |
| | | | | | | | | |
| | | | | | | · · | | |
| | | | | | | · · | | |
| | | | | | | | | |
| | | | | | | | | |
| | oncentration D=Der | letion RM | =Reduced Matrix C | S=Covere | d or Coate | ed Sand Gra | ins ² l (| |
| /dric Soil | Indicators: (Applic | able to all | LRRs, unless othe | rwise not | ted.) | | Indicat | tors for Problematic Hydric Soils ³ : |
| Histosol | (A1) | | ✓ Sandy Redox (| S5) | | | 2 c | cm Muck (A10) |
| _ Histic Ep | pipedon (A2) | | Stripped Matrix | : (S6) | | | Re | ed Parent Material (TF2) |
| Black Hi | stic (A3) | | Loamy Mucky I | Mineral (F | 1) (excep | t MLRA 1) | Ve | ery Shallow Dark Surface (TF12) |
| _ Hydroge | en Sulfide (A4) | | Loamy Gleyed | Matrix (F2 | 2) | | Ot | her (Explain in Remarks) |
| _ Depleted | d Below Dark Surfac | e (A11) | Depleted Matrix | x (F3) | | | 2 | |
| _ Thick Da | ark Surface (A12) | | Redox Dark Su | Irface (F6) |) | | ³ Indicat | tors of hydrophytic vegetation and |
| _ Sandy M | lucky Mineral (S1) | | Depleted Dark | Surface (| F7) | | wet | land hydrology must be present, |
| _ Sandy G | Bleyed Matrix (S4) | | Redox Depress | sions (F8) | | | unle | ess disturbed or problematic. |
| | | | | | | | | |
| estrictive I | Layer (if present): | | | | | | | |
| Type: | Layer (if present): | | | | | | | |
| Type: Depth (ind | Layer (if present): | | | | | | Hydric So | il Present? Yes 🖌 No |
| Type: Depth (ind emarks: | Layer (If present): | | | | | | Hydric So | il Present? Yes 🖌 No |
| Type: Depth (ind emarks: | Layer (If present): | | | | | | Hydric So | il Present? Yes 🖌 No |
| estrictive I Type: Depth (ind emarks: | Layer (If present): | | | | | | Hydric So | il Present? Yes <u>√</u> No |
| estrictive I Type: Depth (ind emarks: | Layer (If present): | | | | | | Hydric So | il Present? Yes 🖌 No |
| Estrictive I Type: Depth (ind emarks: | Ches): | | | | | | Hydric So | il Present? Yes 🖌 No |
| estrictive I Type: Depth (ind emarks: | Ches): | | | | | | Hydric So | il Present? Yes 🖌 No |
| estrictive I Type: Depth (ind emarks: //DROLO /etland Hyd rimary Indic | GY GY Gators (minimum of c | | d; check all that app | | | | Hydric So | il Present? Yes <u>No</u> No |
| estrictive I Type: Depth (inc emarks: //DROLO /etland Hyc rimary Indic Surface | GY GY GY Water (A1) | : one require | d; check all that app Water-Sta | ly) lined Leav | ves (B9) (€ | except | Hydric So | il Present? Yes <u>No</u> No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1 , |
| estrictive I Type: Depth (ind emarks: /DROLO /etland Hyd rimary Indic _ Surface High Wa | GY GY Water (A1) Gate (A2) Cater Table (A2) | : one require | d; check all that app Water-Sta | ly) ined Leav | /es (B9) (¢ | except | Hydric So | il Present? Yes <u>No</u> No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| estrictive I Type: Depth (inu emarks: //DROLO /etland Hyo rimary Indic Surface High Wa Saturatic | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) | : one require | d; check all that app Water-Sta Salt Crust | ly) iined Leav 1, 2, 4A, (B11) | /es (B9) (€ and 4B) | except | Hydric So | il Present? Yes <u>No</u> No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| estrictive I Type: Depth (ind emarks: // / / / / / / / / / / / / / / / / / | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) | : one require | d; check all that app Water-Sta Salt Crust Aquatic In | ly) iined Leav 1, 2, 4A, (B11) vertebrate | /es (B9) (6 and 4B) es (B13) | except | Hydric So | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| International Content of the second s | GY drology Indicators: cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) | : one require | d: check all that app Water-Sta Salt Crust Salt Crust Aquatic In Hvdrogen | ly) iined Leav 1, 2, 4A, (B11) vertebrate Sulfide O | ves (B9) (c and 4B) es (B13) rdor (C1) | except | Hydric So | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| | GY GY drology Indicators: cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) | : one require | d; check all that app Water-Sta Salt Crust Salt Crust Aquatic In Hydrogen Oxidized J | ly) ined Leav 1, 2, 4A, (B11) vertebrate Sulfide O Rhizosphe | /es (B9) (6 and 4B) es (B13) idor (C1) eres along | except | Hydric So | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) |
| trype: Depth (ini- demarks: (Ini- dema | GY GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) | one require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence | ly) ined Leav 1, 2, 4A, (B11) vertebrate Sulfide O Rhizosphe of Reduc | ves (B9) (c and 4B) es (B13) dor (C1) eres along ed Iron (C | except | Hydric So | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) |
| YDROLO YDROLO YURALO YURALO YOROLO Yotland Hyo Yrimary Indio Saturatio High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) | : one require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irr | ly) ined Leav 1, 2, 4A, (B11) vertebrate Sulfide O Rhizosphe of Reduct | ves (B9) (e and 4B) es (B13) edor (C1) eres along ed Iron (C ion in Tille | Eiving Roots 4) | Hydric So | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) EAC-Neutral Test (D5) |
| | GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | : one require | d: check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irc Stunted o | ly) ined Leav 1, 2, 4A, (B11) vertebrate Sulfide O Rhizosphe of Reduct on Reduct | ves (B9) (e and 4B) es (B13) edor (C1) eres along ed Iron (C ion in Tille | Except Living Roots 4) d Soils (C6) | Hydric So | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LBR A) |

| Frost-Heave | Hummocks | (D7 |
|-----------------|----------|-----|
| | | |

| Inundation Visible on Ae | erial Imagery (B | 7) | Other (Explain in Remarks) | Frost-Heave F | Hummocks (D7) |
|-----------------------------|------------------|-----------|--------------------------------------|----------------------------|---------------|
| Sparsely Vegetated Cor | ncave Surface (| B8) | | | |
| Field Observations: | | | | | |
| Surface Water Present? | Yes | No 🖌 | _ Depth (inches): NONE | | |
| Water Table Present? | Yes | No 🗸 | _ Depth (inches): <u>NONE</u> | | 1 |
| Saturation Present? | Yes | No 🖌 | _ Depth (inches): <u>>16"</u> | Wetland Hydrology Present? | Yes No 🖌 |
| (includes capillary fringe) | | | | | |
| Describe Recorded Data (st | ream gauge, mo | onitoring | well, aerial photos, previous inspe- | ctions), if available: | |
| | | | | | |
| | | | | | |
| Remarks: | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Gray | ys Harbor County | Sampling Date: 06/14/2018 |
|--|-------------------------------|---------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP12 |
| Investigator(s): Dan Gunderson | Section, Township, Range | Section 11 and 12, T | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, conv | /ex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: _4 | 6°58'11.60"N Lo | ong: <u>123°53'1.82"W</u> | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classific | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No | (If no, explain in Re | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | / disturbed? Are "Nor | mal Circumstances" p | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If neede | d, explain any answer | s in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loca | ations, transects, | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes | Is the Sampled Area within a Wetland? | Yes _ 🖌 No |
|---|-----|---------------------------------------|------------|
| Remarks: | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|--------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 2 (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strate: 2 (P) |
| | | · | · | Species Across Air Strata (B) |
| 4 | | | · | Percent of Dominant Species |
| $0 = \pi (0 + \pi + 0) = 1 = \pi (0 + \pi + \pi + 10)$ | | _ = Total Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| Sapling/Shrub Stratum (Plot size: 10) | | | | Prevalence Index worksheet: |
| 1. <u>none</u> | | · | · | Total % Cover of: Multiply by: |
| 2 | | | | |
| 3. | | | | OBL species x 1 = |
| 4 | | | | FACW species x 2 = |
| | | | · | FAC species x 3 = |
| o | | | · | FACU species x 4 = |
| Lieth Stratum (Distainer 10' | | _ = Total Co | over | UPL species x 5 = |
| Herb Stratum (Plot size: 10) | 70 | | | Column Totalo: (A) (B) |
| | 70 | yes | UBL | |
| 2. Galium trifidum | 20 | yes | FACW | Prevalence Index = B/A = |
| 3. Lotus corniculatus | 10 | | FAC | Hydrophytic Vegetation Indicators: |
| 4. | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | | | | |
| o | | · | · | |
| 0 | | | · | 3 - Prevalence Index is ≤3.0' |
| 7 | | . <u> </u> | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9. | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10. | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11 | | | · | ¹ Indicators of hydric soil and wetland hydrology must |
| · · · · · · · · · · · · · · · · · · · | 100 | | · | be present, unless disturbed or problematic. |
| Woody Vino Stratum (Plot size: 10' | 100 | _= I otal Co | ver | |
| | | | | |
| 1 | | · | · | Hydrophytic |
| 2 | | | | Vegetation Present? Ves No |
| | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| SOIL | |
|------|--|
| | |

| Depth (in the cal) | Matrix | 0/ | Red | ox Feature | 7 | 1 - 2 | Taster | |
|--|--|------------------|--|--|---|--|--|---|
| | | % | Color (moist) | % | Type | LOC | | <u> </u> |
| J-2 | IUYR 3/2 | 100 | | | | | SILT LUAM | |
| 2-16 | 10YR 4/2 | 80 | 10YR 4/6 | 20 | С | M/PL | SAND | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | · · · · · · · · · · · · · · · · · · · | | | | | | | |
| ype: C=C | Concentration, D=De | pletion, RM | =Reduced Matrix, C | S=Covere | ed or Coate | ed Sand Gr | ains. ² Lo | ocation: PL=Pore Lining, M=Matrix. |
| aric Soli | | cable to all | LRRS, unless othe | erwise no | tea.) | | Indicat | ors for Problematic Hydric Solls : |
| Histic E | in (AT) Eninedon (A2) | | Stripped Matrix | (35) | | | 20 Ro | d Parent Material (TE2) |
| Black F | listic (A3) | | Loamy Mucky | Mineral (F | 1) (excen | MIRA 1) | Ve | rv Shallow Dark Surface (TF12) |
| Hvdroa | en Sulfide (A4) | | Loamy Gleved | Matrix (F | 2) | | Vt | her (Explain in Remarks) |
| Deplete | ed Below Dark Surfa | ce (A11) | Depleted Matri | x (F3) | _) | | | |
| Thick D | ark Surface (A12) | | Redox Dark Su | urface (F6 |) | | ³ Indicat | tors of hydrophytic vegetation and |
| Sandy | Mucky Mineral (S1) | | Depleted Dark | Surface (| , F7) | | wet | and hydrology must be present, |
| Sandy | Gleyed Matrix (S4) | | Redox Depres | sions (F8) | | | unle | ess disturbed or problematic. |
| estrictive | Layer (if present): | | | | | | | |
| Type: | | | | | | | | 1 |
| Depth (ir | nches): | | | | | | Hydric Soi | il Present? Yes 🖌 No |
| emarks: | | | | | | | I | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| /DROLC | DGY | | | | | | | |
| DROLC |)GY /drology Indicators | | | | | | | |
| DROLC | OGY /drology Indicators | : one require | d; check all that app | ly) | | | Seco | ondary Indicators (2 or more required) |
| DROLC /etland Hy rimary Ind _ Surface | DGY /drology Indicators icators (minimum of Water (A1) | : one require | d; check all that app | I <u>y)</u> ained Lea | ves (B9) (e | xcept | <u>Secc</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, |
| DROLC Vetland Hy rimary Ind Surface High W | DGY ydrology Indicators icators (minimum of Water (A1) ater Table (A2) | : one require | d; check all that app Water-Sta MLRA | IV) ained Lea 1, 2, 4A, | ves (B9) (¢ and 4B) | xcept | <u>Secc</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) |
| DROLC retland Hy rimary Ind Surface High W Saturat | DGY ydrology Indicators icators (minimum of a Water (A1) ater Table (A2) ion (A3) | : one require | d; check all that app Water-Sta MLRA Salt Crus | ly) ained Leav 1, 2, 4A, t (B11) | ves (B9) (e and 4B) | xcept | <u>Secc</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) |
| (DROLC /etland Hy <u>rimary Ind</u> Surface High W Saturat Water N | DGY vdrology Indicators icators (minimum of Water (A1) iater Table (A2) ion (A3) Marks (B1) | one require | <u>d; check all that app</u> Water-Sta MLRA Salt Crus Aquatic Ir | ly) ained Leav 1, 2, 4A, t (B11) nvertebrate | ves (B9) (¢ and 4B) es (B13) | xcept | <u>Secc</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| /DROLC /etland Hy <u>rimary Ind</u> Surface High W Saturat Water M Sedime | DGY /drology Indicators icators (minimum of Water (A1) 'ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) | one require | <u>d; check all that app</u> Water-Sta MLRA Salt Crus Aquatic Ir Hydroger | ained Leav a 1, 2, 4A, t (B11) nvertebrate a Sulfide C | ves (B9) (e and 4B) es (B13) 0dor (C1) | xcept | <u>Secc</u> | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| /DROLC /etland Hy Surface High W Saturat Water M Sedime Drift De | Advisor of the second state of the second stat | : one require | d; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger _∕_ Oxidized | ained Leav ained Leav a 1, 2, 4A, t (B11) nvertebrate a Sulfide C Rhizospho | ves (B9) (e and 4B) es (B13) odor (C1) eres along | xcept Living Roo | Secc ' ' ' ts (C3) <u>~</u> (| Dindary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) |
| YDROLC Vetland Hy 'rimary Ind Surface High W Saturat Water N Sedime Drift De Algal M | DGY vdrology Indicators icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) | : one require | d; check all that app Water-Sta Salt Crus Salt Crus Aquatic Ir Hydroger Oxidized Presence | ly) ained Leav a 1, 2, 4A, t (B11) nvertebrate a Sulfide C Rhizospho of Reduc | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C- | xcept Living Roo 4) | <u>Secc</u> ts (C3) <u>✓</u> (| ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (Geomorphic Position (D2) Shallow Aquitard (D3) |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat Water M Sedime Drift De Algal M Iron De | DGY vdrology Indicators icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) posits (B5) | : one require | d; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir | ained Leav ained Leav a 1, 2, 4A, t (B11) nvertebrate a Sulfide C Rhizospho of Reduc | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C- tion in Tille | xcept Living Roo 4) d Soils (C6 | <u>Secc</u> \ \ \ \ ts (C3) <u>✓</u> (\ | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1 , 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |

| Surface Soil Cracks (B6 |) | | Stunted or Stressed Plants (D1) (| LRR A) | Raised Ant M | ounds (D6) (LRR A) | |
|--|----------------|------------|--------------------------------------|--------------------|------------------|--------------------|--|
| Inundation Visible on A | rial Imagery (| (B7) | Other (Explain in Remarks) | | Frost-Heave H | Hummocks (D7) | |
| Sparsely Vegetated Cor | ncave Surface | e (B8) | | | | | |
| Field Observations: | | | | | | | |
| Surface Water Present? | Yes | _ No 🗸 | Depth (inches): | | | | |
| Water Table Present? | Yes | No 🗸 | Depth (inches): | | | 1 | |
| Saturation Present? (includes capillary fringe) | Yes | No 🖌 | _ Depth (inches): <u>>16"</u> | Wetland Hyd | Irology Present? | Yes 🖌 No | |
| Describe Recorded Data (st | ream gauge, r | monitoring | well, aerial photos, previous inspec | tions), if availat | ble: | | |
| | | | | | | | |
| Remarks: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Gra | ays Harbor County | Sampling Date: 06/15/2018 |
|---|------------------------------|-----------------------------|-----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP13 |
| Investigator(s): Dan Gunderson | _ Section, Township, Range | e: Section 11 and 12, | Township 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, cor | ivex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: _4 | 6°58'15.04"N L | .ong: <u>123°53'6.52</u> "W | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classifi | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | /ear? Yes 🖌 No _ | (If no, explain in F | Remarks.) |
| Are Vegetation, Soil, or Hydrology significant | y disturbed? Are "No | rmal Circumstances" | present? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally p | roblematic? (If need | ed, explain any answe | ers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showin | g sampling point loc | ations, transects | s, important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes ✓ No Yes ✓ No Yes No ✓ | Is the Sampled Area within a Wetland? | Yes No |
|---|--|---------------------------------------|--------|
| Remarks: | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|-------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: <u>3</u> (A) |
| 2 | | | | Tetal New Jone (Demission) |
| 3. | | | | Species Across All Strata: 4 (B) |
| 1 | | | · | |
| 4 | | Tatal O | · | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = 10tal Co | over | That Are OBL, FACW, or FAC: 75 (A/B) |
| a none | | | | Prevalence Index worksheet: |
| | | | · | Total % Cover of: Multiply by: |
| 2 | | | · | OBL species x 1 = |
| 3 | | | · | FACW species x 2 = |
| 4 | | | · | |
| 5 | | | · | FAC species x 3 = |
| | | = Total Co | over | FACU species x 4 = |
| Herb Stratum (Plot size: 10') | | | | UPL species x 5 = |
| 1. Holcus lanatus | 30 | yes | FACU | Column Totals: (A) (B) |
| 2. Anthoxanthem odoratum | 20 | yes | FAC | Dravalance Index D/A |
| Poa pratensis | 20 | yes | FAC | Prevalence index = B/A = |
| ↓ Lotus corniculatus | 20 | ves | FAC | Hydrophytic Vegetation Indicators. |
| - Carex obnupta | 10 | , | OBI | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. <u>estor oznapia</u> | | | | $\underline{\checkmark}$ 2 - Dominance Test is >50% |
| 6 | | | · | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10. | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11. | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 100 | - Total Co | Vor | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: ¹⁰ ') | | _= 10tal C0 | VEI | |
| 1 none | | | | Lu droph tio |
| 2 | | | · | Vegetation |
| Z | | | · | Present? Yes <u>No</u> |
| % Bare Ground in Herb Stratum | | = 1 otal Co | ver | |
| Remarks: | | | | 1 |
| Tromano. | | | | |
| | | | | |

| SUIL |
|------|
|------|

| Depth | Matrix | | Red | ox Featur | <u>es</u> 1 | . 2 | - | |
|--|---|------------------|---|---|--|---|---------------------|--|
| (inches) | | % | Color (moist) | % | Type | Loc | | Remarks |
| 0-4 | 10YR 3/2 | 100 | | | | | SILTLOAD | |
| 4-16 | 10YR 3/2 | 90 | 10YR 4/6 | 10 | C | M | SAND | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Type: C=C | concentration, D=Dep | pletion, RN | I=Reduced Matrix, C | S=Covere | ed or Coate | ed Sand Gra | ins. ² l | Location: PL=Pore Lining, M=Matrix. |
| June Soli | | cable to al | Sondy Dodox | | tea.) | | indica | ators for Problematic Hydric Solls : |
| HISTOSO | ninedon (A2) | | Sandy Redox | (35) v (S6) | | | 2 2 | cm Muck (A10) Red Parent Material (TE2) |
| Black H | listic (A3) | | Loamy Mucky | Mineral (F | 1) (excep | t MLRA 1) | N | erv Shallow Dark Surface (TF12) |
| Hydrog | en Sulfide (A4) | | Loamy Gleved | l Matrix (F | 2) | | | Other (Explain in Remarks) |
| Deplete | d Below Dark Surfac | ce (A11) | Depleted Matri | ix (F3) | / | | | |
| Thick D | ark Surface (A12) | · · / | Redox Dark S | urface (F6 | 5) | | ³ Indic | ators of hydrophytic vegetation and |
| Sandy M | Mucky Mineral (S1) | | Depleted Dark | Surface (| F7) | | we | tland hydrology must be present, |
| Sandy (| Gleyed Matrix (S4) | | Redox Depres | sions (F8) |) | | un | less disturbed or problematic. |
| , | | | | | | | | |
| Restrictive | Layer (if present): | | | | | | | |
| Restrictive Type: | Layer (if present): | | | | | | | |
| Restrictive Type: Depth (in | Layer (if present): | | | | | | Hydric S | oil Present? Yes 🖌 No |
| Restrictive Type: Depth (in Remarks: | Layer (if present): | | | | | | Hydric S | oil Present? Yes 🖌 No |
| Restrictive Type: Depth (in Remarks: | Layer (if present): | | | | | | Hydric S | oil Present? Yes 🖌 No |
| Restrictive Type: Depth (in Remarks: | Layer (if present): | | | | | | Hydric S | oil Present? Yes 🖌 No |
| Restrictive Type: Depth (in Remarks: | Layer (if present): | | | | | | Hydric S | oil Present? Yes 🖌 No |
| Restrictive Type: Depth (in Remarks: | Layer (if present): | | | | | | Hydric S | oil Present? Yes 🖌 No |
| Pestrictive Type: Depth (in Pemarks: | Layer (if present): | | | | | | Hydric S | oil Present? Yes 🖌 No |
| Cestrictive Type: Depth (in Cemarks: YDROLO | Layer (if present): Iches): OGY Profology Indicators | | | | | | Hydric S | oil Present? Yes <u> </u> No <u> </u> |
| Type: Depth (in Remarks: TOROLO Vetland Hy Irimary Indi | Layer (if present): uches): DGY drology Indicators cators (minimum of c | : one require | ed; check all that app | | | | Hydric S | oil Present? Yes <u>V</u> No <u></u> |
| trestrictive Type: Depth (in emarks: COROLO Vetland Hy rimary Indi Surface | Layer (if present): uches): DGY drology Indicators cators (minimum of compared) Water (A1) | : one require | ed; check all that app Water-Sta | oly) ained Lea | ves (B9) (e | except | Hydric S | oil Present? Yes <u>No</u> No <u>condary Indicators (2 or more required)</u> Water-Stained Leaves (B9) (MLRA 1, 2 |
| | Layer (if present): uches): DGY rdrology Indicators cators (minimum of of Water (A1) ater Table (A2) | : one require | ed; check all that app Water-Sta | oly) ained Lea | ves (B9) (є and 4B) | except | Hydric S | oil Present? Yes <u>No</u> No <u>condary Indicators (2 or more required)</u> Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| | Layer (if present): uches): DGY drology Indicators cators (minimum of of Water (A1) ater Table (A2) ion (A3) | : one require | ed; check all that app Water-Sta Water-Sta MLRA Salt Crus | oly) ained Lea 1, 2, 4A, t (B11) | ves (B9) (€ and 4B) | except | Hydric S | oil Present? Yes <u>No</u> No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| | Layer (if present): Inches): DGY rdrology Indicators cators (minimum of of Water (A1) ater Table (A2) ion (A3) Marks (B1) | : one require | ed; check all that app Water-Sta Water-Sta Salt Crus Salt Crus Aquatic Ir | bly) ained Lea 1, 2, 4A, t (B11) nvertebrat | ves (B9) (e and 4B) es (B13) | except | Hydric S | oil Present? Yes <u>No</u> No <u>condary Indicators (2 or more required)</u> Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| | Layer (if present): Inches): DGY drology Indicators cators (minimum of of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) | : one require | ed; check all that app Water-Sta Water-Sta Salt Crus Aquatic Ir Hydroger | oly) ained Lea A 1, 2, 4A, t (B11) nvertebrat n Sulfide C | ves (B9) (e and 4B) es (B13) Odor (C1) | except | Hydric S | oil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| | Layer (if present): Inches): DGY drology Indicators cators (minimum of of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) | : one require | ed; check all that app Water-Sta Vater-Sta Salt Crus Aquatic Ir Hydroger Oxidized | oly) ained Lea A 1, 2, 4A, t (B11) hvertebrat h Sulfide C Rhizosph | ves (B9) (e and 4B) es (B13) Odor (C1) eres along | except | Hydric S | oil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) |
| | Layer (if present): Inches): DGY drology Indicators cators (minimum of of water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) | : one require | ed; check all that app Water-Sta Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized Presence | bly) ained Lea 1, 2, 4A, t (B11) nvertebrat n Sulfide C Rhizosph e of Reduc | ves (B9) (e and 4B) es (B13) Odor (C1) eres along ed Iron (C- | except Living Roots | Hydric S | oil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) |
| Restrictive Type: Depth (in Remarks: YDROLC Yetland Hy Primary Indi Surface High Wa Saturati Saturati Sedime Drift De Algal M: Iron Dej | Layer (if present): | : one require | ed; check all that app Water-Sta Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir | bly) ained Lea A 1, 2, 4A, t (B11) nvertebrat a Sulfide C Rhizosph e of Reduc on Reduc | ves (B9) (e and 4B) es (B13) Odor (C1) eres along red Iron (C- tion in Tille | except Living Roots 4) d Soils (C6) | Hydric S | oil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Restrictive Type: Depth (in Remarks: YDROLC Yetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron De Surface | Layer (if present): Inches): DGY Pdrology Indicators cators (minimum of of Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) | : one require | ed; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Aquatic Ir Hydroger Oxidized Presence Recent Ir Stunted co | oly) ained Lea 1, 2, 4A, t (B11) hvertebrat a Sulfide C Rhizosph e of Reduc on Reduc on Reduc | ves (B9) (e and 4B) es (B13) Door (C1) eres along red Iron (C- tion in Tille d Plants (D | Eiving Roots 4) d Soils (C6) 1) (LRR A) | Hydric S | oil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |

| Frost-Heave Humn | nocks | (D7) |
|----------------------|-------|------|
| | | |

| Sparsely Vegetated Co | ncave Surfac | ce (B8) | | | |
|--|--------------|------------|-------------------------------------|-------------------------------|---------|
| Field Observations: | | | | | |
| Surface Water Present? | Yes | No | Depth (inches): NONE | _ | |
| Water Table Present? | Yes | No | Depth (inches): NONE | | 1 |
| Saturation Present? (includes capillary fringe) | Yes | No | Depth (inches): <u>>16"</u> | Wetland Hydrology Present? Ye | es No 🖌 |
| Describe Recorded Data (st | ream gauge | monitoring | g well, aerial photos, previous ins | pections), if available: | |
| | | | | | |
| Remarks: | | | | | |
| | | | | | |
| | | | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Gray | s Harbor County | Sampling Date: 06/15/2018 |
|---|-------------------------------|--------------------------|-----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: <u>SP14</u> |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range: | Section 11 and 12, To | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, conv | ex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: 46 | 3°58'14.87"N Loi | ng: <u>123°53'6.32"W</u> | Datum: WGS 84 |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classifica | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | ear? Yes 🖌 No | _ (If no, explain in Re | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | y disturbed? Are "Norr | nal Circumstances" pr | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | roblematic? (If needed | d, explain any answer | s in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loca | tions, transects, | important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? | Yes No |
|---|--|---------------------------------------|--------|
| Remarks: | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|--------------|------------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: <u>3</u> (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strata: 3 (B) |
| 4 | | | · | |
| 4 | | | · | Percent of Dominant Species |
| Sopling/Shrub Stratum (Blot aize: 10') | | _ = Total Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| | | | | Prevalence Index worksheet: |
| 1 | | | · | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | |
| 4 | | | | FACW species x 2 = |
| 5 | | | | FAC species x 3 = |
| ·· | | - Total Ca | | FACU species x 4 = |
| Herb Stratum (Plot size: ^{10'}) | | | lvei | UPL species x 5 = |
| 1 Alopecurus aegualis | 60 | ves | FAC | Column Totals: (A) (B) |
| o Carex obnunta | 20 | Ves | OBI | |
| | | <u>yes</u> | EAC | Prevalence Index = B/A = |
| 3. Lotus corniculatus | 20 | yes | FAC | Hydrophytic Vegetation Indicators: |
| 4 | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | | | . <u> </u> | ✓ 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8. | | | | data in Remarks or on a separate sheet) |
| 0 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 3 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 10 | | | · | ¹ Indicators of hydric coil and watered hydrology must |
| 11 | | | · | be present unless disturbed or problematic |
| 10' | 100 | = Total Co | ver | |
| Woody Vine Stratum (Plot size: 10) | | | | |
| 1. none | | | | Hydrophytic |
| 2 | | | | Vegetation |
| | | = Total Co | ver | Present? Yes V NO |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| SOIL | |
|------|--|
| | |

| Depth | Matrix | | Rede | ox Feature | es | | | |
|--|--|------------|---|---|--|---|-----------------------------------|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
| 0-2 | 10YR 3/2 | 100 | | | | | SILT LOAN | Λ |
| 2-16 | 10YR 3/2 | 60 | 10YR 4/6 | 40 | С | M/PL | SAND | |
| | | | | | | · | | |
| | | | | | | · | | |
| | | | | | | · | | |
| | | | | | | | | |
| | | | | | | | | |
| ype: C=C | oncentration, D=Deplet | tion, RM= | Reduced Matrix, C | S=Covere | ed or Coate | ed Sand G | rains. ² L | ocation: PL=Pore Lining, M=Matrix. |
| | | ne to all | Sondy Bodoy | | lea.) | | indica | acors for Problematic Hydric Solis : |
| Histic F | (AT) ninedon (A2) | | Stripped Matrix | (33) | | | 2 R | ed Parent Material (TF2) |
| Black H | istic (A3) | | Loamy Mucky | Mineral (F | 1) (excen | t MI RA 1) | N | erv Shallow Dark Surface (TE12) |
| Hvdroae | en Sulfide (A4) | | Loamy Gleved | Matrix (F | 2) | | 0 | ther (Explain in Remarks) |
| Deplete | d Below Dark Surface (| (A11) | Depleted Matri | x (F3) | _, | | | ····· (······························· |
| _ Thick D | ark Surface (A12) | , , | Redox Dark Su | urface (F6 |) | | ³ Indica | ators of hydrophytic vegetation and |
| Sandy M | /lucky Mineral (S1) | | Depleted Dark | Surface (| , F7) | | we | tland hydrology must be present, |
| _ Sandy C | Bleyed Matrix (S4) | | Redox Depres | sions (F8) | | | unl | ess disturbed or problematic. |
| | | | | | | | | |
| estrictive | Layer (if present): | | | | | | | |
| estrictive Type: | Layer (if present): | | | | | | | / |
| estrictive Type: Depth (in | Layer (if present): | | | | | | Hydric So | oil Present? Yes 🖌 No |
| Cestrictive Type: Depth (in Cemarks: | Layer (if present): | | | | | | Hydric So | oil Present? Yes 🖌 No |
| Type: Depth (in cemarks: | Layer (if present): | | | | | | Hydric So | oil Present? Yes 🖌 No |
| estrictive Type: Depth (in emarks: | Layer (if present): | | | | | | Hydric So | oil Present? Yes 🖌 No |
| estrictive Type: Depth (in emarks: | Layer (if present): | | | | | | Hydric So | oil Present? Yes 🖌 No |
| estrictive Type: Depth (in emarks: | Layer (if present): | | | | | | Hydric So | oil Present? Yes 🖌 No |
| estrictive Type: Depth (in emarks: /DROLO | Ches): | | | | | | Hydric So | oil Present? Yes 🖌 No |
| Type: Depth (in emarks: /DROLO /etland Hy | Ches): GY drology Indicators: | | | | | | Hydric So | oil Present? Yes <u>V</u> No |
| Type: Depth (in temarks: CDROLO Vetland Hy trimary India | Ches): GY drology Indicators: cators (minimum of one | e required | t; check all that app | ly) | | | Hydric So | bil Present? Yes <u>No</u> No <u>condary Indicators (2 or more required)</u> |
| Type: Depth (in emarks: /DROLO /etland Hy rimary India Surface | Layer (if present): ches): | equired | <u></u> <u> Water-Sta</u> | ly) ained Lea | ves (B9) (6 | except | Hydric So | bil Present? Yes No |
| estrictive Type: Depth (in emarks: | Layer (if present): ches): GY drology Indicators: cators (minimum of one Water (A1) ater Table (A2) | e required | d; check all that app Water-Sta | ly) ained Leav | ves (B9) (e and 4B) | except | Hydric So | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) |
| estrictive Type: Depth (in emarks: | Layer (if present): ches): GY drology Indicators: cators (minimum of one Water (A1) ater Table (A2) on (A3) | e required | <u>d; check all that app</u> Water-Sta Salt Crus | uly) ained Leav a 1, 2, 4A, t (B11) | ves (B9) (6 and 4B) | except | Hydric So | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) |
| estrictive Type: Depth (in emarks: //DROLO /etland Hy rimary India Surface High Wa Saturati Water M | Layer (if present): ches): GY drology Indicators: cators (minimum of one Water (A1) ater Table (A2) on (A3) larks (B1) | e required | d; check all that app Water-Sta Salt Cruss Salt Cruss Aquatic Ir | ly) ained Leav 1, 2, 4A, t (B11) overtebrat | ves (B9) (e and 4B) es (B13) | except | Hydric So | Doil Present? Yes No Condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| | Ches): Ches): GY drology Indicators: cators (minimum of one Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) | e required | d; check all that app Water-Sta Salt Crust Salt Crust Aquatic Ir Hvdroaen | ained Lean 1, 2, 4A, t (B11) nvertebrate a Sulfide C | ves (B9) (e and 4B) es (B13) odor (C1) | except | Hydric So | bil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| | Ches): Ches): GY drology Indicators: cators (minimum of one Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) | e required | d: check all that app Water-Sta Salt Crus Salt Crus Aquatic Ir Hydrogen √ Oxidized | ly) ained Leav 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe | ves (B9) (6 and 4B) es (B13) odor (C1) eres along | except | Hydric So | Doil Present? Yes No condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) |
| Xestrictive Type: Depth (in Remarks: YDROLO Yetland Hy Primary India Surface High Wa Saturati Water M Sedimei Drift De Algal Ma | Layer (if present): ches): | e required | d; check all that app Water-Sta Salt Cruss Salt Cruss Aquatic Ir Hydrogen Oxidized Presence | ained Leaver a 1, 2, 4A, t (B11) nvertebrate a Sulfide C Rhizospho of Reduc | ves (B9) (¢ and 4B) es (B13) odor (C1) eres along ed Iron (C | except | Hydric So | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) |
| | Layer (if present): ches): | e required | d; check all that app Water-Sta Salt Cruss Aquatic Ir Hydrogen _⁄_ Oxidized Presence Recent Ir | ained Leav 1, 2, 4A, t (B11) nvertebrate o Sulfide C Rhizospho of Reduc | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C ion in Tille | Eiving Roc 4) | Hydric So | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Restrictive Type: Depth (in Remarks: YDROLO Yetland Hy Primary India Primary India Primary India Primary India Surface High Water M Saturati Water M Sedimel Drift Deg Algal Ma Iron Deg Surface | Ches): | e required | d: check all that app Water-Sta Salt Cruss Aquatic Ir Hydrogen Oxidized Presence Recent Irr Stunted o | ained Lean ained Lean 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizospho of Reduct on Reduct | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C tion in Tille 1 Plants (F | except Living Roo 4) d Soils (C6 | Hydric So Hydric So Sec | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (I RR 4) |

| Sparsely Vegetated Con | cave Surface | (B8) | | |
|--|--------------|------------|------------------------------------|--|
| Field Observations: | | _ | | |
| Surface Water Present? | Yes | No 🗸 | _ Depth (inches): <u>NONE</u> | _ |
| Water Table Present? | Yes | No 🗸 | _ Depth (inches): NONE | |
| Saturation Present? (includes capillary fringe) | Yes | No 🖌 | _ Depth (inches): <u>>16"</u> | _ Wetland Hydrology Present? Yes <u>V</u> No |
| Describe Recorded Data (stre | eam gauge, n | nonitoring | well, aerial photos, previous insp | ections), if available: |
| | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| Project/Site: IDD#1 | City/County: Hor | quiam/Grays | Harbor County | Sampling Dat | e: 06/15/2018 |
|---|-------------------|---------------|---------------------------|-----------------|---------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | | State: WA | Sampling Poir | nt: SP15 |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Townsh | nip, Range: _ | Section 11 and 12, 1 | Township 17N F | ≀ange 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (con | icave, conve | x, none): <u>convex</u> | | Slope (%): <u>0</u> |
| Subregion (LRR): LRR A Lat: | 46°58'16.85"N | Lon | g: <u>123°52'45.78"</u> W | D | atum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | | NWI classific | cation: none | |
| Are climatic / hydrologic conditions on the site typical for this time of | of year? Yes 🖌 | No | (If no, explain in R | Remarks.) | 1 |
| Are Vegetation, Soil, or Hydrology significa | ntly disturbed? | Are "Norm | al Circumstances" | present? Yes | ✓ No |
| Are Vegetation, Soil, or Hydrology naturally | / problematic? | (If needed | , explain any answe | ers in Remarks. |) |
| SUMMARY OF FINDINGS – Attach site map show | ing sampling po | oint locat | ions, transects | s, important | features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes ✓ No Yes No ✓ Yes No ✓ | Is the Sampled Area within a Wetland? | Yes | No |
|---|--|---------------------------------------|-----|----|
| Remarks: | | | | |

| $\mathbf{T} = \mathbf{O}(\mathbf{r} + \mathbf{r}) + 10^{\prime}$ | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|------------|-----------|---|
| Iree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. <u>none</u> | | | | That Are OBL, FACW, or FAC: <u>5</u> (A) |
| 2 | | | | Total Number of Dominant |
| 3 | | | | Species Across All Strata: <u>5</u> (B) |
| 4. | | | | |
| | | = Total Co | ver | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | | | |
| 1. ^{none} | | | | Prevalence Index worksheet: |
| 2 | | | | Total % Cover of: Multiply by: |
| 3 | | | | OBL species x 1 = |
| 3 | | | | FACW species x 2 = |
| 4 | | | | FAC species x 3 = |
| 5 | | | | FACU species x 4 = |
| Herb Stratum (Plot size: ^{10'}) | | = Total Co | over | UPL species x 5 = |
| 1. Holcus lanatus | 30 | yes | FAC | Column Totals: (A) (B) |
| 2 Phalaris arundinacea | 15 | yes | FACW | Development to the complete |
| 2 Lotus corniculatus | 15 | yes | FAC | Prevalence Index = B/A = |
| Vicia sp. | 15 | ves | FAC | Hydrophytic Vegetation Indicators: |
| - Ranunculus repens | 15 | ves | FAC | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. Pao protonoio | | <u> </u> | EAC | \checkmark 2 - Dominance Test is >50% |
| 6. Foa praterisis | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7. Rubus armeniacus | 5 | | FAC | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11. | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 100 | = Total Co | ver | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10') | | | | |
| 1. none | | | | Hydrophytic |
| 2. | | | | Vegetation |
| | | - Total Co | ver | Present? Yes V No |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| Denth | Martin | | Desta | | | 01 00111111 | the absence | | | | |
|---|--|--|--|--|---|--|--|--|--|--|--|
| Uepth (inches) | Color (moist) | % | Color (moist) | <u>k ⊢eature</u> % | 5 Type ¹ | | Texture | Remarks | | | |
| 0-8 | 10YR 3/3 | 100 | | | | | SILT LOAM | Remarks | | | |
| 8-16 | 10YR 3/3 | 95 | 10YR 4/1 | 2 | R | M | SILT LOAM | | | | |
| | | | 10VR 3/6 | 3 | <u> </u> | M | | | | | |
| | | | 10111 3/0 | 5 | <u> </u> | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1 Type: C-C | oncentration D-Der | letion RM | -Reduced Matrix CS | | l or Coate | d Sand Gr | ains ² l oc | ation: PI – Pore Lining M–Matrix | | | |
| Hvdric Soil | Indicators: (Applic | able to all | LRRs. unless other | wise not | ad.) | | Indicato | rs for Problematic Hydric Soils ³ : | | | |
| Histoso | l (A1) | | Sandv Redox (S | 5) | , | | 2 cm | Muck (A10) | | | |
| Histic E | pipedon (A2) | | Stripped Matrix (| (S6) | | | Red | Parent Material (TF2) | | | |
| Black H | listic (A3) | | Loamy Mucky M | lineral (F |) (excep | MLRA 1) | Very | Shallow Dark Surface (TF12) | | | |
| Hydroge | en Sulfide (A4) | | Loamy Gleyed N | Aatrix (F2 |) | | Othe | er (Explain in Remarks) | | | |
| Deplete | d Below Dark Surfac | e (A11) | Depleted Matrix | (F3) | | | 2 | | | | |
| Thick D | ark Surface (A12) | | Redox Dark Sur | face (F6) | _` | | ³ Indicato | rs of hydrophytic vegetation and | | | |
| Sandy M | Mucky Mineral (S1) | | Depleted Dark S | Surface (F | 7) | | wetla | nd hydrology must be present, | | | |
| Sandy C | Jeyed Matrix (54) | | Redox Depressi | ons (F8) | | | unies | s disturbed or problematic. | | | |
| Type | Layer (il present). | | | | | | | | | | |
| Dopth (in | choc): | | | | | | Hydric Soil | Prosent? Vos No | | | |
| Deptil (III | iciles). | | | | | | Tryune Son | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| HYDROLO | OGY | | | | | | | | | | |
| HYDROLO Wetland Hy | OGY /drology Indicators: | | | | | | | | | | |
| HYDROLO Wetland Hy Primary Indi | OGY rdrology Indicators: cators (minimum of c | one require | d; check all that apply | () | | | Secor | idary Indicators (2 or more required) | | | |
| HYDROLO Wetland Hy Primary Indi Surface | DGY rdrology Indicators: cators (minimum of c Water (A1) | one require | d; check all that apply | /) ned Leave | es (B9) (e | xcept | <u>Secor</u> W | ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa | DGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) | one require | d; check all that apply Water-Stair MLRA 1 | /) ned Leave | es (B9) (e Ind 4B) | xcept | <u>Secor</u> W | ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati | OGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) | one require | <u>d; check all that apply</u> Water-Stair MLRA 1 Salt Crust (| /) ned Leav I, 2, 4A, a (B11) | es (B9) (e Ind 4B) | xcept | <u>Secor</u> W D | ndary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M | OGY rdrology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) | one require | <u>d; check all that apply</u> Water-Stair MLRA 1 Salt Crust (Aquatic Inv | /) ned Leav I, 2, 4A, a (B11) rertebrate | es (B9) (e i nd 4B) s (B13) | xcept | <u>Secor</u> W D D | Idary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime | DGY rdrology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) | one require | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S | /) ned Leave I, 2, 4A, a (B11) rertebrate Sulfide Oo | es (B9) (e I nd 4B) s (B13) dor (C1) | xcept | <u>Secor</u> W D D S | Adary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De | DGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) | one require | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R | r) ned Leave I , 2, 4A, a (B11) rertebrate Sulfide Oo hizosphe | es (B9) (e nd 4B) s (B13) dor (C1) res along | xcept Living Roo | <u>Secor</u> W D D S ts (C3) <u>√</u> G | Adary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal M | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) | one require | d; check all that apply Water-Stair MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c | /) ned Leave (J, 2, 4A, a (B11) rertebrate Sulfide Oo hizosphe of Reduce | es (B9) (e i nd 4B) s (B13) dor (C1) res along d Iron (C4 | xcept Living Roo 1) | <u>Secor</u> W D D S ts (C3) <u>√</u> G S | Adary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron De | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) | one require | d: check all that apply Water-Stair MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror | /) ned Leave (B11) rertebrate Sulfide Oo hizosphe of Reduce on Reductio | es (B9) (e i nd 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille | xcept Living Roo ⁴⁾ d Soils (C6 | <u>Secor</u> W D D S ts (C3) <u>✓</u> G S) F. | Adary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) • Soil Cracks (B6) | one require | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or | r) ned Leave (B11) rertebrate Sulfide Od hizosphe of Reduce n Reduction | es (B9) (e ind 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D | xcept Living Roo 4) d Soils (C6 1) (LRR A) | <u>Secor</u> W D S ts (C3) <u>✓</u> G S) F, 0 F, | Adary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron De Surface Inundati | DGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial | me require | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or 7) Other (Exp | r) ned Leave (B11) rertebrate Sulfide Oc hizosphe of Reduce n Reduction Stressed lain in Re | es (B9) (e ind 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) | xcept Living Roo 4) d Soils (C6 1) (LRR A) | <u>Secor</u> W D D S ts (C3) <u>✓</u> G S S F, F, F | Adary Indicators (2 or more required) (ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dej Surface Inundati Sparsel | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial I y Vegetated Concave | ne require | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or 7) Other (Exp B8) | /) ned Leave (B11) rertebrate Sulfide Oo hizosphe of Reduce n Reduction Stressed lain in Re | es (B9) (e and 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) | xcept Living Roo 4) d Soils (C6 1) (LRR A) | <u>Secor</u> W D D S ts (C3) <u>✓</u> G S S F, F, F, | Adary Indicators (2 or more required) (ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Deg Surface Inundati Sparsel Field Obser | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial I y Vegetated Concave rvations: | one require Imagery (B e Surface (| d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or 7) Other (Exp B8) | /) ned Leave (B11) rertebrate Sulfide Oc hizosphe of Reduce of Reduce Stressed lain in Re | es (B9) (e ind 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) | xcept Living Roo 4) d Soils (C6 1) (LRR A) | <u>Secor</u> W D S ts (C3) <u>✓</u> G S) F,) F, F, | Adary Indicators (2 or more required) (ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water N Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsel Field Obser Surface Wat | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial I y Vegetated Concave rvations: ter Present? Y | Imagery (B e Surface (| d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or 7) Other (Exp B8) No Depth (inc | r) ned Leave (B11) rertebrate Sulfide Od hizosphe of Reduction Stressed lain in Re ches): <u>NC</u> | es (B9) (e ind 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) | xcept Living Roo 4) d Soils (C6 1) (LRR A) | <u>Secor</u> W D D S ts (C3) <u>✓</u> G S S F, F, F, | Idary Indicators (2 or more required) Vater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dej Surface Inundati Sparsel Field Obser Surface Water Vater Table | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial I y Vegetated Concave rvations: ter Present? Y | Imagery (B e Surface (es | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or 7) Other (Exp B8) No Depth (inc No Depth (inc | r) ned Leave (B11) rertebrate Sulfide Oc hizosphe of Reduce n Reducti Stressed lain in Re ches): <u>NC</u> ches): <u>NC</u> | es (B9) (e and 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) DNE | xcept Living Roo 4) d Soils (C6 1) (LRR A) | <u>Secor</u> W D D S ts (C3) ✓ G S S F, F, F | Adary Indicators (2 or more required) (ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron De Surface Inundati Sparsel Field Obser Surface Wat Water Table Saturation P (includes ca | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial I y Vegetated Concave rvations: ter Present? Y Present? Y pillary fringe) | Imagery (B e Surface (es es | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Stunted or 7) Other (Exp B8) No Depth (inc No Depth (inc No Depth (inc | r) ned Leave (B11) rertebrate Sulfide Oc hizosphe of Reduce of Reduce of Reduce Stressed lain in Re ches): <u>NC</u> ches): <u>NC</u> ches): <u>NC</u> | es (B9) (e and 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) DNE | xcept Living Roo 4) d Soils (C6 1) (LRR A) | <u>Secor</u> W D S ts (C3) <u>✓</u> G S) F, F, F, F, F, F, | Adary Indicators (2 or more required) (ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron De Surface Inundati Sparsel Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) soil Cracks (B6) ion Visible on Aerial y Vegetated Concave rvations: ter Present? Present? Present? Y pillary fringe) corded Data (stream | Imagery (B e Surface (es es res | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or 7) Other (Exp B8) No Depth (inc No Depth (inc No Depth (inc No Depth (inc No Depth (inc No Depth (inc | () ned Leave I , 2 , 4A , a (B11) rertebrate Sulfide Oc hizosphe of Reduction Stressed lain in Re ches): <u>NC</u> ches): <u>NC</u> ches): <u>NC</u> ches): <u>NC</u> | es (B9) (e ind 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) DNE DNE S" evious ins | xcept Living Roo 4) d Soils (C6 1) (LRR A) Wetla pections), | <u>Secor</u> W D D S S S S F F F F F F f S | Adary Indicators (2 or more required) (ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) y Present? Yes No | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Drift De Algal Ma Iron Dep Surface Inundati Sparsel Field Obser Surface Water Surface Water Saturation P (includes ca Describe Ref | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial y Vegetated Concave rvations: ter Present? Present? Present? Y pillary fringe) acorded Data (stream | Imagery (B e Surface (es es gauge, mo | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or 7) Other (Exp B8) No Depth (inc No Depth (inc No Depth (inc No Depth (inc No Depth (inc No Depth (inc | r) ned Leave (B11) rertebrate Sulfide Oc hizosphe of Reduce n Reduction Stressed lain in Re ches): <u>NC</u> ches): <u>NC</u> ches): <u>>10</u> whotos, pre- | es (B9) (e and 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) DNE DNE DNE DNE DNE DNE | xcept Living Roo 4) d Soils (C6 1) (LRR A) wetla .pections), i | <u>Secor</u> W D D S ts (C3) <u>✓</u> G S S F, F, F, F, F, f, | Adary Indicators (2 or more required) /ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) / Present? Yes No | | | |
| HYDROLO Wetland Hy Primary Indi Surface High Wa Saturati Vater M Sedime Drift De Algal Ma Iron Deg Surface Inundati Sparsel Field Obser Surface Water Water Table Saturation P (includes ca Describe Re | PGY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aerial I y Vegetated Concave rvations: ter Present? Y Present? Y pillary fringe) coorded Data (stream | Imagery (B e Surface (es es gauge, mo | d; check all that apply Water-Stain MLRA 1 Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iror Stunted or 7) Other (Exp B8) No Depth (inc No Depth (inc No Depth (inc onitoring well, aerial p | /) ned Leave (B11) rertebrate Sulfide Oc hizosphe of Reduce of Reduce of Reduce Stressed lain in Re ches): <u>NC</u> ches): <u>NC</u> ches): <u>NC</u> ches): <u>NC</u> | es (B9) (e ind 4B) s (B13) dor (C1) res along d Iron (C4 on in Tille Plants (D marks) DNE DNE 5" evious ins | xcept Living Roo 4) d Soils (C6 1) (LRR A) wetla pections), | <u>Secor</u> W D D S ts (C3) <u>✓</u> G S F, F, F, F, F, f | Adary Indicators (2 or more required) (ater-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) rainage Patterns (B10) ry-Season Water Table (C2) aturation Visible on Aerial Imagery (C9) eomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) aised Ant Mounds (D6) (LRR A) rost-Heave Hummocks (D7) y Present? Yes No | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/G | rays Harbor County | Sampling Date: 06/15/20 |)18 |
|--|-----------------------------|---------------------------------|-------------------------|---------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP16 | |
| Investigator(s): Dan Gunderson | Section, Township, Ran | ge: <u>Section 11 and 12, T</u> | ownship 17N Range 10W | |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, co | onvex, none): <u>convex</u> | Slope (%): | 0 |
| Subregion (LRR): LRR A Lat: _4 | 6°58'16.66"N | Long: <u>123°52'45.78"W</u> | Datum: WG | S 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classifica | ation: <u>none</u> | |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No _ | (If no, explain in Re | emarks.) | |
| Are Vegetation, Soil, or Hydrology significantly | / disturbed? Are "N | lormal Circumstances" p | resent? Yes 🖌 No |) |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If nee | ded, explain any answer | rs in Remarks.) | |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point lo | cations, transects, | , important features | s, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? | Yes No |
|---|--|---------------------------------------|--------|
| Remarks: | | | |

| 101 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|--------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. <u>none</u> | | | | That Are OBL, FACW, or FAC: 1 (A) |
| 2 | | | | Tetal New Jone (Demission) |
| 3 | | | | Species Across All Strata: 1 (B) |
| 4 | | | | |
| 4 | | | | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = I otal Co | ver | That Are OBL, FACW, or FAC: 100 (A/B) |
| | | | | Prevalence Index worksheet: |
| 1 | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | |
| 4 | | | | |
| 5. | | | | FAC species x 3 = |
| | | – Total Co | vor | FACU species x 4 = |
| Herb Stratum (Plot size: ^{10'}) | | _ = 10tal 00 | ver | UPL species x 5 = |
| 1 Phalaris arundinacea | 100 | yes | FACW | Column Totals: (A) (B) |
| 2 | | <u> </u> | | |
| 2 | | | | Prevalence Index = B/A = |
| 3 | | | | Hydrophytic Vegetation Indicators: |
| 4 | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | | | | ✓ 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8. | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 10 | | | | ¹ Indicators of hydric soil and wotland hydrology must |
| 11 | 400 | | | be present, unless disturbed or problematic. |
| $M(z,z,h,z)/(z,z,Q)$ (Plat zinz 10^{1} | 100 | = Total Cov | /er | |
| woody vine Stratum (Plot size: <u>10</u>) | | | | |
| 1. <u>none</u> | | | | Hydrophytic |
| 2 | | | | Vegetation |
| | | = Total Cov | /er | |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| SUIL |
|------|
|------|

| Profile Desc | cription: (Describe | to the dep | oth needed to docun | nent the i | ndicator | or confirm | n the absenc | e of indicators.) |
|--|----------------------|---------------------------------|-------------------------|-------------|--------------------|---------------------|------------------------------------|--|
| Depth | Matrix | | Redox | K Features | <u>s</u> 1 | . 2 | _ | |
| (inches) | Color (moist) | | Color (moist) | % | Type' | Loc | Texture | Remarks |
| 0-4 | 10YR 3/2 | 100 | | | | | SILT/CLAY/LOAN | 1 |
| 4-16 | 10YR 4/1 | 90 | 10YR 4/6 | 10 | С | M/PL | SILT/CLAY/LOAN | · |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| ¹ Type: C=C | oncentration, D=Dep | bletion, RM | =Reduced Matrix, CS | =Covered | d or Coate | ed Sand Gr | rains. ² L | ocation: PL=Pore Lining, M=Matrix. |
| Hydric Soil | Indicators: (Applic | able to all | LRRs, unless other | wise note | əd.) | | Indica | tors for Problematic Hydric Soils ³ : |
| <u> </u> | (A1) | | Sandy Redox (S | 65) | | | 2 | cm Muck (A10) |
| Histic E | pipedon (A2) | | Stripped Matrix | (S6) | | | Re | ed Parent Material (TF2) |
| Black Histic (A3) Loamy Mucky Mineral (F1) (except MLRA 1) | | | | | | t MLRA 1) | Ve | ery Shallow Dark Surface (TF12) |
| Hydroge | en Sulfide (A4) | | Loamy Gleyed I | Aatrix (F2 |) | | Ot | her (Explain in Remarks) |
| Deplete | d Below Dark Surfac | e (A11) | Depleted Matrix | (F3) | | | | |
| Thick Dark Surface (A12) | | | | | | ³ Indica | tors of hydrophytic vegetation and | |
| Sandy M | Mucky Mineral (S1) | (S1) Depleted Dark Surface (F7) | | | | wet | land hydrology must be present, | |
| Sandy C | Gleyed Matrix (S4) | | Redox Depressi | ons (F8) | | | unle | ess disturbed or problematic. |
| Restrictive | Layer (if present): | | | | | | | |
| Type: | | | | | | | | |
| Depth (in | ches): | | | | | | Hydric So | il Present? Yes <mark>✓</mark> No |
| Remarks: | | | | | | | • | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| HIDROLO | GT | | | | | | | |
| Wetland Hy | drology Indicators | | | | | | _ | |
| Primary Indi | cators (minimum of o | one require | d; check all that apply | () | | | Sec | ondary Indicators (2 or more required) |
| Surface | Water (A1) | | Water-Stai | ned Leave | es (B9) (e | except | | Water-Stained Leaves (B9) (MLRA 1, 2, |
| High Wa | ater Table (A2) | | MLRA ? | I, 2, 4A, a | nd 4B) | | | 4A, and 4B) |
| ✓ Saturati | on (A3) | | Salt Crust | (B11) | | | _ | Drainage Patterns (B10) |
| Water M | 1arks (B1) | | Aquatic Inv | rertebrate | s (B13) | | | Dry-Season Water Table (C2) |
| Sedime | nt Deposits (B2) | | Hydrogen | Sulfide Oc | dor (C1) | | | Saturation Visible on Aerial Imagery (C9) |
| Drift De | posits (B3) | | ✓ Oxidized R | hizosphe | res along | Living Roc | ots (C3) 🖌 | Geomorphic Position (D2) |
| | | | | | | | | Shallow Aquitard (D3) |

Recent Iron Reduction in Tilled Soils (C6)

____ Stunted or Stressed Plants (D1) (LRR A)

____ Other (Explain in Remarks)

 Yes
 No
 ✓
 Depth (inches):
 NONE

 Yes
 No
 ✓
 Depth (inches):
 NONE

 Yes
 ✓
 No
 Depth (inches):
 10"

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

Remarks:

Iron Deposits (B5)

Field Observations:

Saturation Present? (includes capillary fringe)

Surface Water Present? Water Table Present?

____ Surface Soil Cracks (B6)

____ Inundation Visible on Aerial Imagery (B7)

Sparsely Vegetated Concave Surface (B8)

_ FAC-Neutral Test (D5)

Wetland Hydrology Present? Yes

____ Frost-Heave Hummocks (D7)

_ Raised Ant Mounds (D6) (LRR A)

 \checkmark

No

| Project/Site: IDD#1 | City/County: Hoquiam/G | Frays Harbor County | Sampling Date: 06/15/2018 |
|--|--------------------------|--------------------------------|-----------------------------|
| Applicant/Owner: <u>BHP Billiton Canada, Inc.</u> | | State: WA | Sampling Point: SP17 |
| Investigator(s): Dan Gunderson | Section, Township, Ran | ge: <u>Section 11 and 12</u> , | Township 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (concave, c | onvex, none): <u>convex</u> | Slope (%): _0 |
| Subregion (LRR): LRR A Lat: | 46°58'16.54"N | Long: 123°52'45.52"W | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classifi | cation: none |
| Are climatic / hydrologic conditions on the site typical for this time o | f year? Yes 🖌 No _ | (If no, explain in F | Remarks.) |
| Are Vegetation, Soil, or Hydrology significat | ntly disturbed? Are "N | Iormal Circumstances" | present? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally | problematic? (If nee | eded, explain any answe | ers in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map show | ing sampling point lo | cations, transects | s, important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes Yes Yes | No No No | Is the Sampled Area within a Wetland? | Yes | No |
|---|-------------------|----------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 4.01 | Absolute | Dominan | t Indicator | Dominance Test worksheet: |
|--|----------|------------|-------------|--|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 3 (A) |
| 2 | | | | Trial Number of Device of |
| 3. | | | | Species Across All Strata: 3 (B) |
| 4 | | | · | |
| T | | Tatalo | · | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = 10tal Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| none | | | | Prevalence Index worksheet: |
| I | | | · | Total % Cover of: Multiply by: |
| 2 | | | · | OBL species x 1 = |
| 3 | | | · | FACW species x 2 = |
| 4 | | | | |
| 5 | | | <u> </u> | FAC species x 3 = |
| | | = Total Co | over | FACU species x 4 = |
| Herb Stratum (Plot size: 10') | | - | | UPL species x 5 = |
| 1. Holcus lanatus | 40 | yes | FAC | Column Totals: (A) (B) |
| 2. Ranunculus repens | 20 | yes | FAC | Prevalence Index - B/A - |
| 3. Lotus corniculatus | 20 | yes | FAC | Hydrophytic Vegetation Indicators: |
| 4. Phalaris arundinacea | 10 | | FACW | 1 Papid Tast for Hydrophytic Vegetation |
| 5 Poa pratensis | 10 | | FAC | 1 - Kapid Test for Hydrophytic Vegetation |
| 6 | | | · | \mathbf{v} 2 - Dominance results >50% |
| | | | · | 3 - Prevalence Index IS ≤3.0 |
| / | | | · | 4 - Morphological Adaptations' (Provide supporting |
| 8 | | | · | 5 Wetland Nan Vacaular Dianta ¹ |
| 9 | | | · | |
| 10 | | | | Problematic Hydrophytic Vegetation (Explain) |
| 11 | | | | Indicators of hydric soil and wetland hydrology must |
| | 100 | = Total Co | ver | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10') | | - | | |
| 1. none | | | | Hydrophytic |
| 2. | | | | Vegetation |
| | | = Total Co | ver | Present? Yes V No |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | 1 |
| | | | | |
| | | | | |

| Denth | Matrix | | Redox | Features | | | the abs | |
|---|--|----------------|--|---|---|---|---------------------------------|---|
| (inches) | Color (moist) | % | Color (moist) | <u>%</u> | Type ¹ | Loc ² | Textu | re Remarks |
| 0-16 | 10YR 3/2 | 100 | | | | | SILT LO | DAM |
| | | | | | | | | |
| | | | | | | | | |
| Type: C=C | Concentration, D=Depl | etion, RM=Re | educed Matrix, CS | =Covered | or Coate | d Sand Gra | ains. | ² Location: PL=Pore Lining, M=Matrix. |
| Histoso | | | Sandy Redox (S | 5) | u.) | | ind | 2 cm Muck (A10) |
| Histic E | Epipedon (A2) | | Stripped Matrix | (S6) | | | — | Red Parent Material (TF2) |
| Black H | listic (A3) | _ | Loamy Mucky M | lineral (F1) |) (except | MLRA 1) | | Very Shallow Dark Surface (TF12) |
| Hydrog | en Sulfide (A4) | | Loamy Gleyed M | /latrix (F2) | | | | Other (Explain in Remarks) |
| _ Deplete | ed Below Dark Surface | e (A11) | Depleted Matrix | (F3) | | | | |
| Thick D | Dark Surface (A12) | _ | Redox Dark Sur | face (F6) | | | ³ Inc | dicators of hydrophytic vegetation and |
| _ Sandy | Mucky Mineral (S1) | _ | Depleted Dark S | urface (F7 | 7) | | , | wetland hydrology must be present, |
| Sandy | Gleyed Matrix (S4) | | Redox Depressi | ons (F8) | | | 1 | unless disturbed or problematic. |
| Restrictive | Layer (if present): | | | | | | | |
| Type: | | | _ | | | | | 1 |
| Depth (ir | nches): | | _ | | | | Hydric | : Soil Present? Yes No |
| | | | | | | | | |
| Vetland Hy | ydrology Indicators: | | | | | | | |
| rimary Ind | icators (minimum of or | ne required; c | heck all that apply | () | | | | Secondary Indicators (2 or more required) |
| Surface | e Water (A1) | | Water-Stai | ned Leave | s (B9) (e x | ccept | _ | Water-Stained Leaves (B9) (MLRA 1, 2 |
| Lich M | /ater Table (A2) | | MLRA 1 | , 2, 4A, aı | nd 4B) | | | 4A, and 4B) |
| _ nign vv | | | | | | | | Drainage Patterns (B10) |
| _ Fign w | tion (A3) | | Salt Crust | рп) | | | - | Drainage r allerns (DTO) |
| Saturat Water I | ion (A3) Marks (B1) | | Salt Crust (| ertebrates | ; (B13) | | - | Dry-Season Water Table (C2) |
| Saturat Saturat Water I Sedime | ion (A3) Marks (B1) ent Deposits (B2) | | Salt Crust (Aquatic Inv Hydrogen S | ertebrates | s (B13) or (C1) | | - | Drainage Fatterns (DT0) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C |
| Fight w Saturat Water I Sedime Drift De | ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) | | Salt Crust (Aquatic Inv Hydrogen S Oxidized R | ertebrates Sulfide Ode | ; (B13) or (C1) es along l | Living Root | - - ts (C3) | Drainage Fatterns (DT0) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) |
| Saturat Vater I Sedime Drift De Algal W | ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) | | Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c | ertebrates Sulfide Od hizosphere | s (B13) or (C1) es along l d Iron (C4 | Living Root | - - ts (C3) _ | Drainage Fatterns (DT0) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) |
| Night W Saturat Water I Sedime Drift De Algal M Iron De | ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) eposits (B5) | | Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror | iertebrates Sulfide Od hizosphere If Reduced N Reductio | s (B13) or (C1) es along l d Iron (C4 m in Tillec | Living Root) I Soils (C6) | - - ts (C3) _ -) _ | Drainage Fatterns (DT0) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| High W Saturat Sedime Drift De Algal M Iron De Surface | ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) eposits (B5) e Soil Cracks (B6) | | Salt Crust (Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iron Stunted or | vertebrates Sulfide Od hizospheru If Reduced N Reductio Stressed F | s (B13) or (C1) es along l d Iron (C4 n in Tillec Plants (D' | Living Root) I Soils (C6) 1) (LRR A) | - - ts (C3) _ -) _ | Drainage Fatterns (D10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |

| Stunted or Stressed Plants (D1) (LRR A) | Raised Ant Mounds (D6) (LRR A) |
|---|--------------------------------|

| Inundation Visible on A | erial Imagery | (B7) _ | Frost-Heave Hummocks (D7) | | | | |
|--|--|---------|--------------------------------|-----------------------------------|--|--|--|
| Sparsely Vegetated Col | ncave Surfac | ;e (B8) | | | | | |
| Field Observations: | | | | | | | |
| Surface Water Present? | Yes | No | Depth (inches): NONE | | | | |
| Water Table Present? | Yes | No | Depth (inches): NONE | | | | |
| Saturation Present? (includes capillary fringe) | Yes | No | Depth (inches): <u>>16"</u> | Wetland Hydrology Present? Yes No | | | |
| Describe Recorded Data (st | Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | | | | |
| | | | | | | | |
| Remarks: | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| Project/Site: IDD#1 | City/County: Hoc | quiam/Grays | m/Grays Harbor County S | | Sampling Date: 06/15/2018 | |
|---|-------------------|--------------|--------------------------|----------------|---------------------------|--|
| Applicant/Owner: BHP Billiton Canada, Inc. | | | State: WA | Sampling Poi | int: SP18 | |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Townsh | ip, Range: _ | Section 11 and 12, 1 | Township 17N I | Range 10W | |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (con | cave, conve | x, none): <u>none</u> | | Slope (%): 0 | |
| Subregion (LRR): LRR A Lat: _ | 46°58'18.07"N | Lon | g: <u>123°52'50.27"W</u> | C | Datum: WGS 84 | |
| Soil Map Unit Name: Udorthents, level | | | NWI classific | cation: none | | |
| Are climatic / hydrologic conditions on the site typical for this time of | i year?Yes 🖌 | No | (If no, explain in R | Remarks.) | / | |
| Are Vegetation, Soil, or Hydrology significar | ntly disturbed? | Are "Norm | al Circumstances" | present? Yes | ✓ No | |
| Are Vegetation, Soil, or Hydrology naturally | problematic? | (If needed | , explain any answe | ers in Remarks | .) | |
| SUMMARY OF FINDINGS – Attach site map showi | ng sampling po | oint locat | ions, transects | s, importan | t features, etc. | |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes ✓ No Yes No ✓ Yes No ✓ | Is the Sampled Area within a Wetland? | Yes | No |
|---|--|---------------------------------------|-----|----|
| Remarks: | | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|-------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: <u>3</u> (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strata: 3 (B) |
| <u> </u> | | | | |
| 4 | | | | Percent of Dominant Species |
| Sopling/Shrub Stratum (Plat aiza: 10') | | = Total Co | ver | That Are OBL, FACW, or FAC: 100 (A/B) |
| | | | | Prevalence Index worksheet: |
| 1. <u>none</u> | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species v1- |
| 3 | | | | |
| 4. | | | | FACW species X 2 = |
| 5 | | | | FAC species x 3 = |
| ··· | | Total Ca | | FACU species x 4 = |
| Herb Stratum (Plot size: ^{10'}) | | | iver | UPL species x 5 = |
| 1. Holcus lanatus | 30 | YES | FAC | Column Totals: (A) (B) |
| 2 Poa pratensis | 30 | YES | FAC | Developed Index D/A |
| 2 Lotus corniculatus | 20 | YES | FAC | Prevalence index = B/A = |
| Phalaris arundinacea | 10 | | FACW | Hydrophytic vegetation indicators: |
| - Circium anyense | | | FAC | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. Clisium arvense | | | FAC | 2 - Dominance Test is >50% |
| 6. Rubus armeniacus | 5 | | FAC | $_$ 3 - Prevalence Index is $\leq 3.0^1$ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9. | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11 | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| 11 | 100 | | | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10' | 100 | = I otal Co | ver | |
| | | | | |
| 1 | | | | Hydrophytic |
| 2 | | | | Present? Yes No |
| | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| 1 | | | | |

| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
|---|---|---|--|---|---|--|-----------------------|--|
|)-10 | 10YR 3/3 | 100 | | | <u> . </u> | | SILT LOAM | |
| 10-16 | 10YR 3/2 | 90 | 10YR 4/1 | 5 | R | Μ | SILT LOAM | |
| | | | 10YR 3/6 | 5 | С | М | SILT LOAM | |
| | | | | | | | | |
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| | | | | | | . <u> </u> | | |
| | | | | | <u> </u> | | | |
| ype: C=C | concentration, D=De | epletion, RN | I=Reduced Matrix, C | S=Covere | d or Coate | ed Sand Gra | ains. ² Lo | ocation: PL=Pore Lining, M=Matrix. |
| ydric Soil | Indicators: (Appl | icable to al | I LRRs, unless othe | erwise no | ted.) | | Indicat | ors for Problematic Hydric Soils ³ : |
| _ Histoso | I (A1) | | Sandy Redox | (S5) | | | 2 c | m Muck (A10) |
| _ Histic E | pipedon (A2) | | Stripped Matrix | x (S6) Mineral (F | 1) (22000 | | Re | d Parent Material (TF2) |
| – DIACK H Hydrogy | nsuc (A3) en Sulfide (A4) | | Loamy Gleved | Matrix (F | 2) (excep | INILKA 1) | ve | ny Shallow Dark Sulface (1112) |
| _ Tyulog Deplete | en Sunde (A4) ed Below Dark Surfa | ace (A11) | Depleted Matri | ix (F3) | <u>~</u>) | | 0 | |
| Thick D | ark Surface (A12) | - (/ | Redox Dark Si | urface (F6 |) | | ³ Indicat | tors of hydrophytic vegetation and |
| Sandy I | Mucky Mineral (S1) | | Depleted Dark | Surface (| , F7) | | wet | and hydrology must be present, |
| Sandy (| Gleyed Matrix (S4) | | Redox Depres | sions (F8) | | | unle | ess disturbed or problematic. |
| a strictive | Layer (if present): | | | | | | | |
| estrictive | , | | | | | | | |
| Type: | | | | | | | | 1 |
| Type: Depth (in Remarks: | nches): | | | | | | Hydric Soi | il Present? Yes <u>No</u> |
| Type: Depth (in Remarks: | oches): | | | | | | Hydric Soi | il Present? Yes <u>No</u> |
| Type: Depth (in Remarks: YDROLC | OGY | <u></u> | | | | | Hydric Soi | il Present? Yes No 🗸 |
| Type: Depth (ir Remarks: YDROLC Vetland Hy Primary Indi | OGY /drology Indicator /cators (minimum of | s: | ed; check all that app | | | | Hydric Soi | il Present? Yes <u>No</u> |
| Type: Depth (ir Remarks: YDROLC Vetland Hy Primary Indi Surface | DGY vdrology Indicator icators (minimum of water (A1) | s: | ed; check all that app Water-Sta | oly) ained Leav | /es (B9) (€ | xcept | Hydric Sol | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 |
| Type: Depth (in Remarks: YDROLC Vetland Hy Primary Indi Surface High W. | DGY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) | s: | ed; check all that app Water-Sta | oly) ained Leav | /es (B9) (€ and 4B) | xcept | Hydric Sol | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| Type: Depth (in Remarks: YDROLC Yetland Hy Primary Indi Surface High W. Saturati | OGY vdrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) | s: | ed; check all that app Water-Sta Water-Sta MLRA Salt Crus | oly) ained Leav 1, 2, 4A, t (B11) | /es (B9) (€ and 4B) | xcept | Hydric Soi | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) |
| Type: Depth (ir Remarks: YDROLC Vetland Hy Primary Indi Surface High W. Saturati Saturati Water N | DGY rdrology Indicator cators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) | s: | ed; check all that app Water-Sta MLRA Salt Crus Aquatic Ir | oly) ained Leav 1, 2, 4A, t (B11) nvertebrate | /es (B9) (c and 4B) es (B13) | xcept | Hydric Soi | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| Type: Depth (ir Remarks: YDROLC Vetland Hy Primary Indi Surface High W. Saturati Saturati Saturati Sedime | DGY Adrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) | s: ione require | ed; check all that app Water-Sta Water-Sta Salt Crus Aquatic Ir Hydroger | ained Leav 1, 2, 4A, t (B11) nvertebrate n Sulfide C | /es (B9) (€ and 4B) es (B13) 9dor (C1) | xcept | Hydric Sol | il Present? Yes <u>No</u> ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS |
| Type: Depth (in Remarks: YDROLC Yetland Hy Primary Indi Surface High W. Saturati Saturati Sedime Drift De | DGY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) | s: | ed; check all that app Water-Sta Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized | oly) ained Leav 1, 2, 4A , t (B11) nvertebrate n Sulfide C Rhizosphe | /es (B9) (e and 4B) es (B13) edor (C1) eres along | xcept | Hydric Sol | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) |
| Type: Depth (in Remarks: YDROLC YOROLC Yotland Hy Primary Indi Surface High W. Saturati Saturati Saturati Saturati Saturati Sedime Drift De Algal M | DGY rdrology Indicator cators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) Int Deposits (B2) posits (B3) at or Crust (B4) | s: | ed; check all that app Water-Sta Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized Presence | oly) ained Leav 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe e of Reduc | ves (B9) (c and 4B) es (B13) odor (C1) eres along ed Iron (C | xcept | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) |
| YDROLC Vetland Hy Primary Indi Saturati Water M Saturati Water M Sedime Drift De Algal M Iron De | DGY rdrology Indicator rdrology Indicator cators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) | s: | ed; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir | ained Leav ained Leav a 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe of Reduct | ves (B9) (c and 4B) es (B13) odor (C1) eres along ed Iron (C- ion in Tille | xcept Living Roof 4) d Soils (C6) | Hydric Soi | Il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Type: Depth (ir Remarks: YDROLC Yetland Hy Primary Indi Surface High W. Saturati Saturati Sedime Drift De Algal M Iron De Surface | DGY vdrology Indicator vdrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) a Soil Cracks (B6) | s: | ed; check all that app Water-Sta Salt Crus Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir Stunted co | ained Leav ained Leav a 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe e of Reduc on Reduct on Reduct | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C- ion in Tille d Plants (D | Living Root 4) d Soils (C6) | Hydric Soi | il Present? Yes <u>No</u> ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Event Human Line (D2) |
| Type: Depth (ir Remarks: TOROLCO Tetland Hy Primary Indi Surface High W. Saturati Saturati Sedime Drift De Algal M Iron De Surface Inundat | DGY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria | s: one require | ed; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent In Stunted co 37) Other (Ex | ained Leav ained Leav 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe of Reduc on Reduct on Reduct or Stressed splain in R | ves (B9) (e and 4B) es (B13) edor (C1) eres along ed Iron (C- ion in Tille d Plants (D emarks) | xcept Living Roof 4) d Soils (C6) 1) (LRR A) | Hydric Sol | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (ir Remarks: YDROLC YDROLC Yetland Hy Primary Indi Surface High W. Saturati Saturati Saturati Saturati Saturati Saturati Saturati Saturati Saturati Surface Inundat Sparsel | DGY rdrology Indicator cators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) a Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca | s: one require one require i Imagery (E ve Surface | ed; check all that app Water-Sta Salt Crus Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ira Stunted co 37) Other (Ex (B8) | ained Leav a 1, 2, 4A , t (B11) nvertebrate Sulfide C Rhizosphe e of Reduc on Reduct on Reduct or Stressed cplain in R | ves (B9) (c and 4B) es (B13) odor (C1) eres along ed Iron (C ion in Tille d Plants (D emarks) | xcept Living Root 4) d Soils (C6) 1) (LRR A) | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (ir Remarks: YDROLC YDROLC Vetland Hy Primary Indi Surface High W. Saturati Saturati Saturati Saturati Sedime Drift De Algal M Iron De Iron De Surface Inundat Sparsel Surface Market | DGY rdrology Indicator rdrology Indicator rdrology Indicator rdrology Indicator water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: tor Proceet? | s: i one require I Imagery (E ve Surface | ed; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Irr Stunted of 37) Other (Ex (B8) | ained Leav ained Leav a 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe of Reduct on Reduct on Reduct or Stressed splain in R | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C- ion in Tille d Plants (D emarks) ONE | Living Root 4) d Soils (C6) 1) (LRR A) | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (in Remarks: YDROLC YDROLC Vetland Hy Primary Indi Surface High W. Saturati Saturati Saturati Sedime Drift De Algal M Iron De Iron De Surface Inundat Sparsel Surface Wa | DGY rdrology Indicator reators (minimum of water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) s Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ter Present? | s: ione require I Imagery (E ve Surface Yes Yes | ed; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ir Stunted co 37) Other (Ex (B8) | ained Leav ained Leav a 1, 2, 4A , t (B11) nvertebrate of Reduct on Reduct on Reduct on Reduct or Stressed con Reduct or Stressed con Reduct | ves (B9) (e and 4B) es (B13) odor (C1) eres along ed Iron (C- ion in Tille d Plants (D emarks) ONE | Living Root 4) d Soils (C6) 1) (LRR A) | Hydric Sol | il Present? Yes No No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (in Remarks: YDROLC Yetland Hy Primary Indi Surface High W. Saturati Saturati Saturati Saturati Surface Ingh M. Surface Ingh M. Surface Inundat Sparsel Surface Wa Vater Table | DGY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ter Present? Present? | s: one require i Imagery (E ve Surface Yes Yes | ed; check all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Irr Stunted co 37) Other (Ex (B8) No Depth (irr No Depth (irr No Depth (irr | ained Leav ained Leav 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe of Reduc on Reduct or Reduct or Stressed splain in R | ves (B9) (e and 4B) es (B13) edor (C1) eres along ed Iron (C- ion in Tille d Plants (D emarks) ONE ONE | xcept Living Roof 4) d Soils (C6) 1) (LRR A) | Hydric Sol | il Present? Yes No |
| Type: Depth (in temarks: TOROLC Tetland Hy rimary Indi Surface High W. Saturati Vater M Sedime Drift De Algal M Iron De Iron De Surface Inundat Sparsel ield Obser urface Wa /ater Table aturation F ncludes ca | DGY rdrology Indicator cators (minimum of Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) a Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rvations: ter Present? Present? pillary fringe) | s: i one require i lImagery (E ve Surface Yes Yes Yes | ed; check all that app Water-Sta Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Ira Stunted co 37) Other (Ex (B8) No Depth (ir No Depth (ir No Depth (ir | ained Leav ained Leav a 1, 2, 4A , t (B11) nvertebrate a Sulfide C Rhizosphe of Reduct on Reduct on Reduct on Reduct or Stressec cplain in R | ves (B9) (c and 4B) es (B13) odor (C1) eres along ed Iron (C- ion in Tille d Plants (C emarks) ONE ONE ONE | Eliving Root 4) d Soils (C6) 1) (LRR A) | Hydric Soi | il Present? Yes No ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (CS Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) gy Present? Yes No |

| Project/Site: IDD#1 | City/County: Hoquiam/Gr | ays Harbor County | Sampling Date: 06/15/2018 | |
|---|-----------------------------|--------------------------------|---------------------------|----|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP19 | |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Rang | e: <u>Section 11 and 12, T</u> | ownship 17N Range 10W | |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, co | nvex, none): <u>none</u> | Slope (%): 0 | |
| Subregion (LRR): LRR A Lat: _46 | 3°58'17.87"N | _ong: <u>123°52'50.56"</u> W | Datum: WGS 84 | |
| Soil Map Unit Name: Udorthents, level | | NWI classific | ation: none | |
| Are climatic / hydrologic conditions on the site typical for this time of y | ear? Yes 🖌 No _ | (If no, explain in Re | emarks.) | |
| Are Vegetation, Soil, or Hydrology significantly | y disturbed? Are "No | ormal Circumstances" p | resent? Yes 🖌 No | |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If need | led, explain any answer | rs in Remarks.) | |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loc | ations, transects | , important features, etc | ;- |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? | Yes No |
|---|--|---------------------------------------|--------|
| Remarks: | | | |

| 10 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|--------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 1 (A) |
| 2. | | | | |
| 3 | _ | | | I otal Number of Dominant Species Across All Strate: 1 (P) |
| | | | | Species Across Air Strata. (B) |
| 4 | | | · | Percent of Dominant Species |
| Operations (Observed of Dischains 10) | | = Total Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| Sapling/Shrub Stratum (Plot size: 10) | | | | Prevalence Index worksheet: |
| 1. none | | | | Total % Cover of: Multiply by: |
| 2 | | | | |
| 3. | | | | OBL species |
| 4 | | | | FACW species x 2 = |
| | | | · | FAC species x 3 = |
| o | | | · | FACU species x 4 = |
| Lieth Stratum (Distaire: 10') | | _ = Total Co | over | UPL species x 5 = |
| <u>Herb Stratum</u> (Piot Size. <u>**</u>) | 75 | 1/00 | | |
| | 10 | yes | FACW | |
| 2. Lotus corniculatus | 10 | | FAC | Prevalence Index = B/A = |
| 3. Holcus lanatus | 10 | | FAC | Hydrophytic Vegetation Indicators: |
| 4. Poa pratensis | 5 | | FAC | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | | | | |
| | | | · | v 2 - Dominance Test Is >50% |
| 6 | | | · | 3 - Prevalence Index is ≤3.0' |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9. | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 14 | _ | | | ¹ Indicators of hydric soil and wetland hydrology must |
| · · · · · | 100 | | · | be present, unless disturbed or problematic. |
| Weady Vine Stratum (Distaire: 10') | 100 | = Total Co | ver | |
| | | | | |
| 1. <u>none</u> | | | | Hydrophytic |
| 2 | | | | Vegetation |
| | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| SOIL | |
|------|--|
| | |

| Depth | Matrix | | Rede | ox Feature | es | | | |
|---|---|----------------------|---|--|---|------------------------------------|--|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
| 0-6 | 10YR 3/2 | 100 | | | | | silt loam | |
| 6-16 | 10YR 3/2 | 80 | 10YR 4/1 | 10 | R | М | silt loam | |
| | | | 10YR 4/6 | 10 | С | M/PL | silt loam | |
| | · | | | | | | | |
| | · | | | | | | | |
| Type: C=C | Concentration, D=Dep | oletion, RM=F | Reduced Matrix, C | S=Covere | ed or Coat | ed Sand G | rains. ² Lo | Cocation: PL=Pore Lining, M=Matrix. |
| Histoso Histic E Black H Hydroge Deplete Thick D Sandy I Sandy (| I (A1) ipipedon (A2) listic (A3) en Sulfide (A4) ed Below Dark Surfac Park Surface (A12) Mucky Mineral (S1) Gleved Matrix (S4) | | Sandy Redox (Stripped Matrix Loamy Mucky Loamy Gleyed Depleted Matri Redox Dark St Depleted Dark Redox Depres | (S5) ((S6) Mineral (F Matrix (F3) urface (F6) Surface (F8) | 7 2)) F7) | ot MLRA 1) | 2 c Re Ve Oth ³ Indicat weth | em Muck (A10) ed Parent Material (TF2) ry Shallow Dark Surface (TF12) her (Explain in Remarks) tors of hydrophytic vegetation and and hydrology must be present, |
| Restrictive | Layer (if present): | | | 310113 (1 0) | | | | |
| Type: | | | | | | | | 1 |
| Depth (in | nches): | | | | | | Hydric So | il Present? Yes <u>▼</u> No |
| Aemarks. | | | | | | | | |
| YDROLC | DGY | | | | | | | |
| Primary Indi | drology Indicators | : one required: | check all that ann | lv) | | | Sec | andary Indicators (2 or more required) |
| Surface | Water (A1) | <u>She required,</u> | Water-Sta | ained Leav | ves (B9) (e | except | | Water-Stained Leaves (B9) (MLRA 1, 2 |
| High W | ater Table (A2) | | MLRA | 1, 2, 4A, | and 4B) | | | 4A, and 4B) |
| Saturati | ion (A3) | | Salt Crus | t (B11) | | | | Drainage Patterns (B10) |
| Water N | /larks (B1) | | Aquatic Ir | vertebrat | es (B13) | | | Dry-Season Water Table (C2) |
| Sedime | ent Deposits (B2) | | Hydrogen | Sulfide C | odor (C1) | | | Saturation Visible on Aerial Imagery (C |
| Drift De | posits (B3) | | ✓ Oxidized | Rhizosphe | eres along | Living Ro | ots (C3) 🗹 | Geomorphic Position (D2) |
| | at an Cruck (D4) | | Dresence | of Reduc | ed Iron (C | (1) | | Shallow Aquitard (D3) |
| Algal M | at of Crust (B4) | | | 0 | | (+) | ` | onanow Aquitara (DO) |
| Algal M | posits (B5) | | Recent Ire | on Reduct | tion in Tille | ed Soils (C | 6) | FAC-Neutral Test (D5) |
| Algal M Iron De Surface | posits (B5) Soil Cracks (B6) | | Recent Ire | on Reduct r Stressed | tion in Tille d Plants (E | ed Soils (C 01) (LRR A | 6) | FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Algal M Iron De Surface | posits (B5) Soil Cracks (B6) ion Visible on Aerial | Imagery (B7) | Recent Iro Stunted o Other (Ex | on Reduct r Stressed plain in R | tion in Tille d Plants (E emarks) | ed Soils (Cl D1) (LRR A | 6) (| FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

| _ , , , | | · · · | | | | |
|--|-------------|-------------|--|----------------------------|-------|-----|
| Field Observations: | | | | | | |
| Surface Water Present? | Yes | No | Depth (inches): NONE | | | |
| Water Table Present? | Yes | No | Depth (inches): NONE | | | |
| Saturation Present? (includes capillary fringe) | Yes | No | Depth (inches): <u>>16"</u> | Wetland Hydrology Present? | Yes 🖌 | No_ |
| Describe Recorded Data (s | tream gauge | , monitorir | ig well, aerial photos, previous inspe | ections), if available: | | |
| Remarks: | | | | | | |
| Project/Site: IDD#1 | City/County: Hoquiam/Gray | s Harbor County | Sampling Date: 06/15/2018 |
|--|-------------------------------|---------------------------|-----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: <u>SP20</u> |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range: | Section 11 and 12, To | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, conv | ex, none): <u>convex</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: _4 | 6°58'16.62"N Lo | ng: <u>123°53'8.97</u> "W | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classifica | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No | _ (If no, explain in Re | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | / disturbed? Are "Norr | nal Circumstances" pr | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If needed | d, explain any answer | s in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loca | tions, transects, | important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? Yes | No |
|---|--|---|----|
| Remarks: | | | |

| 401 | Absolute | Dominant | t Indicator | Dominance Test worksheet: |
|---|----------|------------|-------------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1 | | | | That Are OBL, FACW, or FAC: <u>3</u> (A) |
| 2 | | | | Total Number of Deminent |
| 3. | | | | Species Across All Strata: 3 (B) |
| A | | | · | |
| | | Tatal Ca | · | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: ¹⁰) | | | over | That Are OBL, FACW, or FAC: (A/B) |
| 1 none | | | | Prevalence Index worksheet: |
| 1 | | | · | Total % Cover of: Multiply by: |
| 2 | | | · | OBL species x 1 = |
| 3 | | | · | FACW species x 2 = |
| 4 | | | | |
| 5 | | | | |
| | | = Total Co | over | FACU species X 4 = |
| Herb Stratum (Plot size: 10') | | - | | UPL species x 5 = |
| 1. <u>Carex obnupta</u> | 30 | yes | FAC | Column Totals: (A) (B) |
| 2. Potentilla anserina | 20 | yes | OBL | Provalance Index - R/A - |
| 3. Deschampsia caespitosa | 20 | yes | FACW | Hydrophytic Vegetation Indicators: |
| A Phalaris arundinacea | 15 | | FACW | 1 Ponid Test for Hydrophytic Vegetation |
| 5 Lotus corniculatus | 10 | | FAC | |
| G Juncus effusus | 5 | | FACW | v 2 - Dominance Test is >50% |
| - | | | | 3 - Prevalence Index is ≤3.0 |
| <i>I</i> | | | · | 4 - Morphological Adaptations' (Provide supporting |
| 8 | | | · | Gata in Remarks of on a separate sheet) |
| 9 | | | · | 5 - Wetland Non-Vascular Plants |
| 10 | | | · | Problematic Hydrophytic Vegetation' (Explain) |
| 11 | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 100 | = Total Co | ver | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10') | | - | | |
| 1. none | | | | Hydrophytic |
| 2. | | | | Vegetation |
| | | - Total Co | Vor | Present? Yes V No |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | 1 |
| | | | | |
| | | | | |

| SOIL | |
|------|--|
| | |

| Depth | Matrix | | Redo | k Feature | S | | | |
|------------------------|---------------------|--------------|-------------------------|-------------|--------------------|------------------|-----------------------|--|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks |
| 0-4 | 10YR 3/2 | 100 | | | | | SILT LOAM | |
| 4-16 | 10YR 3/2 | 80 | 10YR 3/6 | 20 | С | M/PL | SILT LOAM | |
| | | | | | | · | | |
| | | | | | | · | | |
| ¹ Type: C=C | oncentration, D=De | epletion, RN | =Reduced Matrix, CS | =Covered | d or Coat | ed Sand Gr | ains. ² Lo | ocation: PL=Pore Lining, M=Matrix. |
| Hydric Soil | Indicators: (Appl | icable to al | LRRs, unless other | wise not | ed.) | | Indicat | tors for Problematic Hydric Soils ³ : |
| Histosol | (A1) | | Sandy Redox (S | \$5) | | | 2 c | cm Muck (A10) |
| Histic E | pipedon (A2) | | Stripped Matrix | (S6) | | | Re | ed Parent Material (TF2) |
| Black H | istic (A3) | | Loamy Mucky M | lineral (F | 1) (excep | t MLRA 1) | Ve | ery Shallow Dark Surface (TF12) |
| Hydroge | en Sulfide (A4) | | Loamy Gleyed I | Matrix (F2 | 2) | | Ot | her (Explain in Remarks) |
| Deplete | d Below Dark Surfa | ace (A11) | Depleted Matrix | (F3) | | | 3 | |
| Thick D | ark Surface (A12) | | ✓ Redox Dark Su | face (F6) | | | Indica | tors of hydrophytic vegetation and |
| Sandy N | Mucky Mineral (S1) | | Depleted Dark S | Surface (F | 7) | | wet | land hydrology must be present, |
| Sandy C | Gleyed Matrix (S4) | | Redox Depress | ons (F8) | | | unle | ess disturbed or problematic. |
| Restrictive | Layer (if present): | | | | | | | |
| Type: | -1 | | | | | | Uburbelo O a | |
| Deptn (In | cnes): | | | | | | Hydric So | Il Present? Yes <u>▼</u> No |
| Remains. | | | | | | | | |
| IYDROLO | GY | | | | | | | |
| Wetland Hy | drology Indicator | s: | | | | | | |
| Primary Indi | cators (minimum of | one require | d; check all that apply | /) | | | Sec | ondary Indicators (2 or more required) |
| Surface | Water (A1) | | Water-Stai | ned Leav | es (B9) (e | except | | Water-Stained Leaves (B9) (MLRA 1, 2, |
| High Wa | ater Table (A2) | | MLRA [,] | 1, 2, 4A, a | and 4B) | | | 4A, and 4B) |
| Saturati | on (A3) | | Salt Crust | (B11) | | | | Drainage Patterns (B10) |
| Water N | larks (B1) | | Aquatic Inv | vertebrate | s (B13) | | | Dry-Season Water Table (C2) |
| Sedime | nt Deposits (B2) | | Hydrogen | Sulfide O | dor (C1) | | _ | Saturation Visible on Aerial Imagery (CS |
| Drift De | posits (B3) | | ✓ Oxidized R | hizosphe | res along | Living Roc | ots (C3) ✓ | Geomorphic Position (D2) |
| Algal Ma | at or Crust (B4) | | Presence | of Reduce | ed Iron (C | 4) | . / | Shallow Aguitard (D3) |

____ Recent Iron Reduction in Tilled Soils (C6)

____ Stunted or Stressed Plants (D1) (LRR A)

____ Other (Explain in Remarks)

Yes _____ No _____ Depth (inches): NONE

 Yes
 No
 Depth (inches):
 NONE

 Yes
 No
 Depth (inches):
 >16"

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

Remarks:

Iron Deposits (B5)

Field Observations:

Surface Water Present?

Water Table Present?

Saturation Present? (includes capillary fringe)

____ Surface Soil Cracks (B6)

____ Inundation Visible on Aerial Imagery (B7)

Sparsely Vegetated Concave Surface (B8)

____ FAC-Neutral Test (D5)

Wetland Hydrology Present? Yes

____ Raised Ant Mounds (D6) (LRR A)

 \checkmark

No

____ Frost-Heave Hummocks (D7)

| Project/Site: IDD#1 | City/County: Ho | oquiam/Grays | Harbor County | _ Sampling Date: (| 6/15/2018 |
|---|------------------|--------------|--------------------------|--------------------|-----------------|
| Applicant/Owner: <u>BHP Billiton Canada, Inc.</u> | | | State: WA | _ Sampling Point: | SP21 |
| Investigator(s): Dan Gunderson | Section, Towns | hip, Range: | Section 11 and 12, | Township 17N Rang | je 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (co | ncave, conve | ex, none): <u>convex</u> | Slop | e (%): <u>0</u> |
| Subregion (LRR): LRR A Lat: | 46°58'16.53"N | Lor | ıg: <u>123°53'8.77"W</u> | Datur | n: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | | NWI classifi | cation: none | |
| Are climatic / hydrologic conditions on the site typical for this time of | of year? Yes 🖌 | No | _ (If no, explain in F | Remarks.) | , |
| Are Vegetation, Soil, or Hydrology significa | ntly disturbed? | Are "Norm | al Circumstances" | present? Yes 🗸 | No |
| Are Vegetation, Soil, or Hydrology naturally | / problematic? | (If needed | , explain any answe | ers in Remarks.) | |
| SUMMARY OF FINDINGS – Attach site map show | ing sampling p | oint locat | ions, transects | s, important fe | atures, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes Yes Yes | No No No | Is the Sampled Area within a Wetland? | Yes | No |
|---|-------------------|----------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|--|----------|------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 2 (A) |
| 2 | | | | Total Number of Deminent |
| 3. | | | | Species Across All Strata: ³ (B) |
| 4 | | | | (-) |
| | | – Total Co | wor | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: ^{10'}) | | | Wei | That Are OBL, FACW, or FAC: (A/B) |
| 1 none | | | | Prevalence Index worksheet: |
| ·· | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | FACW species x 2 = |
| 4 | | | | FAC species x 3 = |
| 5 | | | | FACIL species x 4 = |
| 10' | - | = Total Co | over | |
| Herb Stratum (Plot size: 10) | 10 | | - | $OFL species \underline{\qquad} x S = \underline{\qquad} (D)$ |
| 1. Anthoxanthum odoratum | 40 | yes | FACU | Column lotais: (A) (B) |
| 2. Holcus lanatus | 25 | yes | FAC | Prevalence Index = B/A = |
| 3. Lotus corniculatus | 25 | yes | FAC | Hydrophytic Vegetation Indicators: |
| 4. Phalaris arundinacea | 10 | | FACW | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. | | | | \checkmark 2 - Dominance Test is >50% |
| 6 | | | | $\frac{1}{\sqrt{2}} = 2 \text{Dominance restriction} = 200\%$ |
| 7 | | | | |
| 8 | | | | data in Remarks or on a separate sheet) |
| 0 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 3 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 10 | | | | ¹ Indicators of hydric coil and wetland hydrology must |
| 11 | 400 | | | be present, unless disturbed or problematic. |
| Weader) (in a Chartering (Distainer 10) | 100 | = Total Co | ver | |
| woody vine Stratum (Piot size: 10) | | | | |
| 1. <u>none</u> | | | | Hydrophytic |
| 2 | | | | Vegetation Present? Ves No |
| | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | | | |
| Distance will be | | | | |
| Remarks: | | | | |

| DEDID | Matrix | | Redo | ox Features | | | |
|---|--|-------------|---|--|--|-------------------------------------|---|
| (inches) | Color (moist) | % | Color (moist) | % Type ¹ | Loc ² | Textur | Remarks |
| 0-12 | 10YR 3/2 | 100 | none | | | silt loan | n |
| | | | | | · | | |
| | | | | | · | | |
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| | | | | | | | |
| | | | | | <u> </u> | | |
| 1 Type: C-C | Concentration D-Der | lation PM | | | | aine | ² Location: PL-Poro Lining M-Matrix |
| Hvdric Soil | Indicators: (Applic | able to all | LRRs. unless othe | rwise noted.) | | Indi | icators for Problematic Hydric Soils ³ : |
| Histoso | (A1) | | Sandy Redox (| S5) | | | 2 cm Muck (A10) |
| Histic E | pipedon (A2) | | Stripped Matrix | (S6) | | | Red Parent Material (TF2) |
| Black H | listic (A3) | | Loamy Mucky I | Mineral (F1) (excer | t MLRA 1) | | Very Shallow Dark Surface (TF12) |
| Hydroge | en Sulfide (A4) | | Loamy Gleyed | Matrix (F2) | | _ | Other (Explain in Remarks) |
| Deplete | ed Below Dark Surfac | e (A11) | Depleted Matrix | x (F3) | | | |
| Thick D | ark Surface (A12) | | Redox Dark Su | ırface (F6) | | ³ Ind | icators of hydrophytic vegetation and |
| Sandy M | Mucky Mineral (S1) | | Depleted Dark | Surface (F7) | | v | vetland hydrology must be present, |
| Sandy (| Gleyed Matrix (S4) | | Redox Depress | sions (F8) | | . U | unless disturbed or problematic. |
| Restrictive | Layer (if present): | | | | | | |
| Type: | | | | | | | |
| Depth (in | nches): | | | | | Hydric | Soil Present? Yes No V |
| Remarks: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| YDROLO | | | | | | | |
| | drology Indicators | | | | | | |
| Wetland Hy | /drology Indicators: | | d: check all that ann | | | s | Secondary Indicators (2 or more required) |
| Wetland Hy Primary Indi | vdrology Indicators: icators (minimum of c | one require | d; check all that app | ly) | vcont | <u>S</u> | Secondary Indicators (2 or more required) |
| YDROLO Wetland Hy Primary Indi Surface | vdrology Indicators: icators (minimum of o water (A1) | one require | d; check all that app Water-Sta | ly) lined Leaves (B9) (1 | except | <u>S</u> | Secondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, |
| YDROLC Wetland Hy Primary Indi Surface High Wa Saturati | rdrology Indicators: icators (minimum of c water (A1) ater Table (A2) | one require | d; check all that app Water-Sta MLRA Salt Crust | ly) iined Leaves (B9) (1, 2, 4A, and 4B) (B11) | except | <u>S</u> | Secondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) |
| YDROLC Wetland Hy Primary Indi Surface High Wa Saturati | Arology Indicators: icators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) | one require | d; check all that app Water-Sta MLRA Salt Crust | y) ined Leaves (B9) (1, 2, 4A, and 4B) (B11) vertebrates (B13) | except | <u>S</u> | Gecondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) |
| YDROLC Wetland Hy Primary Indi Surface High Wa Saturati Sedime | drology Indicators: icators (minimum of c water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) | ne require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen | ly) ined Leaves (B9) (1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) | except | <u>S</u> | Gecondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C0) |
| YDROLC Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedime | Adrology Indicators: icators (minimum of o water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) | one require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Qvidized | ly) ined Leaves (B9) (1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) | except | <u>S</u> | Gecondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) |
| YDROLC Wetland Hy Primary Indi Surface High Wa Saturati Water N Sedime Drift De Algal M | Adrology Indicators: icators (minimum of of water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) | one require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence | ly) ined Leaves (B9) (1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along of Reduced Iron (C | except Living Roc | <u>S</u> | Gecondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aguitard (D3) |
| YDROLC Wetland Hy Primary Indi Surface High W: Saturati Vater N Sedime Drift De Algal M. | Adrology Indicators: icators (minimum of c water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) | ne require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irr | y) ined Leaves (B9) (1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along of Reduced Iron (C | except Living Roc 4) | <u>S</u> | <u> <u> <u> <u> </u> </u></u></u> |
| YDROLC Wetland Hy Primary Indi Surface High W: Saturati Water N Sedime Drift De Algal M Iron De Surface | Adrology Indicators: icators (minimum of c Water (A1) ater Table (A2) ion (A3) Marks (B1) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) A Soil Cracks (B6) | one require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irc Stunted o | y) ined Leaves (B9) (1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along of Reduced Iron (C on Reduction in Tille | Except | <u>S</u> ots (C3) S) | Gecondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRE A) |
| YDROLC Wetland Hy Primary Indi Surface High Wa Saturati Water N Sedime Drift De Algal M Iron De Surface Inundat | drology Indicators: icators (minimum of c water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) at or Crust (B4) posits (B5) e Soil Cracks (B6) ion Visible on Aerial | one require | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irc Stunted o | ly) ined Leaves (B9) (1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along of Reduced Iron (C on Reduction in Tille r Stressed Plants (I | Except Living Roo 4) ed Soils (C6 D1) (LRR A | <u>S</u> ots (C3) ;)) | <u> <u> <u> <u> </u> </u></u></u> |

| Sparsely vegetated Col | icave Sulla | | | | | | | |
|--|-------------|----|---------------------|------------------|------------|-----|------|---|
| Field Observations: | | | | | | | | |
| Surface Water Present? | Yes | No | Depth (inches): NO | <u>1E</u> | | | | |
| Water Table Present? | Yes | No | Depth (inches): NO | E | | | | |
| Saturation Present? (includes capillary fringe) | Yes | No | Depth (inches): >12 | Wetland Hydrolog | y Present? | Yes | No 🖌 | - |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | | | | | | |
| Remarks: | | | | | | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Grays | Harbor County | Sampling Date: 06/15/2018 |
|--|------------------------------|---------------------------|---------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP22 |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range: | Section 11 and 12, To | wnship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (concave, conve | ex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: 46 |)°58'19.90"N Lor | ng: <u>123°53'7.52</u> "W | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classifica | tion: none |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No | _ (If no, explain in Re | marks.) |
| Are Vegetation, Soil, or Hydrology significantly | disturbed? Are "Norm | nal Circumstances" pr | esent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If needed | l, explain any answers | s in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | y sampling point locat | ions, transects, | important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? | Yes 🖌 No |
|---|--|---------------------------------------|----------|
| Remarks: | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|-------------|-----------|---|
| Tree Stratum (Plot size: 10') | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 2 (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strata: 2 (B) |
| 4 | | | | |
| 4 | | | | Percent of Dominant Species |
| Sopling/Shrub Stratum (Blot aize: 10') | | = Total Co | ver | That Are OBL, FACW, or FAC: 100 (A/B) |
| Saliy bookerii | 30 | Vec | EACW/ | Prevalence Index worksheet: |
| 1 | | yes | 1700 | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | |
| 4 | | | | x z = |
| 5. | | | | FAC species x 3 = |
| | 30 | – Total Co | vor | FACU species x 4 = |
| Herb Stratum (Plot size: ^{10'}) | | 10tai 00 | | UPL species x 5 = |
| 1. Juncus effusus | 90 | yes | FACW | Column Totals: (A) (B) |
| 2 Phalaris arundinacea | 10 | | FACW | |
| 2 | | | | Prevalence Index = B/A = |
| 3 | | | | Hydrophytic Vegetation Indicators: |
| 4 | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | | | | ✓ 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8. | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 10 | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| 11 | 100 | | | be present, unless disturbed or problematic. |
| Woody Vino Stratum (Plot size: 10') | 100 | = Total Co | ver | |
| | | | | |
| 1. 1010 | | | | Hydrophytic |
| 2 | | | | Present? Yes No |
| | | | | |
| N/ Dame One and the Line to Other trans | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | = Total Co | ver | |
| % Bare Ground in Herb Stratum Remarks: | | _= Total Co | ver | |

SOIL

| Profile Des | cription: (Describe | e to the dep | oth needed to docu | ment the | indicator | or confirr | n the absence | e of indicators.) |
|---|---|--------------|--|--|-------------------------------|------------|------------------------------------|---|
| (inches) | Color (moist) | % | Color (moist) | <u>ox Feature</u> % | tvne ¹ | loc^2 | Texture | Remarks |
| 0-14 | 10YR 3/2 | 90 | 10YR 4/6 | 10 | <u>C</u> | M/PL | SILT LOAM | MIXED WITH WOOD WASTE |
| | | | | | | | | |
| Type: C=C Iydric Soil | Concentration, D=De | pletion, RM | =Reduced Matrix, C LRRs, unless other | S=Covere | ed or Coate | ed Sand G | rains. ² Lo Indicate | cation: PL=Pore Lining, M=Matrix. |
| Histoso Histic E Black H Hydrog Deplete | I (A1) pipedon (A2) listic (A3) en Sulfide (A4) ed Below Dark Surfa | ce (A11) | Sandy Redox (Stripped Matrix Loamy Mucky Loamy Gleyed Depleted Matrix | (S5) k (S6) Mineral (F Matrix (F (x (F3) | - -1) (excep 2) | t MLRA 1) | 2 ci Rec Ver Oth | m Muck (A10) d Parent Material (TF2) ry Shallow Dark Surface (TF12) ner (Explain in Remarks) |
| Thick D Sandy I | ark Surface (A12) Mucky Mineral (S1) | | Redox Dark St Depleted Dark Redox Depres | urface (F6 Surface (| 5) (F7) | | ³ Indicate wetla | ors of hydrophytic vegetation and and hydrology must be present, |
| Candy C | Laver (if present): | | | 310113 (1 0) | / | | unic | |
| Type: | , , , , , , , , , , , , , , , , , , , | | | | | | | |
| Depth (ir | nches): | | | | | | Hydric Soi | I Present? Yes 📈 No |
| Remarks: | | | | | | | 1 | |
| YDROLC | OGY | | | | | | | |
| Vetland Hy | drology Indicators | : | | | | | | |
| rimary Indi | icators (minimum of | one require | d; check all that app | ly) | | | Seco | ndary Indicators (2 or more required) |
| Surface | e Water (A1) | | Water-Sta | ained Lea | ves (B9) (e | xcept | V | Water-Stained Leaves (B9) (MLRA 1, 2 |
| High W | ater Table (A2) | | MLRA | 1, 2, 4A, | and 4B) | | | 4A, and 4B) |
| Saturat | ion (A3) | | Salt Crus | t (B11) | | | [| Drainage Patterns (B10) |

| Wetland Hydrology Indicators: | | |
|--|---|---|
| Primary Indicators (minimum of one required; che | Secondary Indicators (2 or more required) | |
| Surface Water (A1) | Water-Stained Leaves (B9) (except | Water-Stained Leaves (B9) (MLRA 1, 2, |
| High Water Table (A2) | MLRA 1, 2, 4A, and 4B) | 4A, and 4B) |
| Saturation (A3) | Salt Crust (B11) | Drainage Patterns (B10) |
| Water Marks (B1) | Aquatic Invertebrates (B13) | Dry-Season Water Table (C2) |
| Sediment Deposits (B2) | Hydrogen Sulfide Odor (C1) | Saturation Visible on Aerial Imagery (C9) |
| Drift Deposits (B3) | ✓ Oxidized Rhizospheres along Living F | Roots (C3) 🗹 Geomorphic Position (D2) |
| Algal Mat or Crust (B4) | Presence of Reduced Iron (C4) | Shallow Aquitard (D3) |
| Iron Deposits (B5) | Recent Iron Reduction in Tilled Soils | (C6) FAC-Neutral Test (D5) |
| Surface Soil Cracks (B6) | Stunted or Stressed Plants (D1) (LRF | R A) Raised Ant Mounds (D6) (LRR A) |
| Inundation Visible on Aerial Imagery (B7) | Other (Explain in Remarks) | Frost-Heave Hummocks (D7) |
| Sparsely Vegetated Concave Surface (B8) | | |
| Field Observations: | | |
| Surface Water Present? Yes No | Depth (inches): NONE | |
| Water Table Present? Yes No | Depth (inches): NONE | 1 |
| Saturation Present? Yes <u>✓</u> No (includes capillary fringe) | Depth (inches): <u>10"</u> W | etland Hydrology Present? Yes 🖌 No |
| Describe Recorded Data (stream gauge, monitori | ng well, aerial photos, previous inspection | s), if available: |
| | | |
| Remarks: | | |
| | | |
| | | |
| | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Gr | rays Harbor County | Sampling Date: 06/15/2018 | | |
|--|---|----------------------------|----------------------------|--|--|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP23 | | |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range: Section 11 and 12, Township 17N Range 10W | | | | |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, co | nvex, none): <u>none</u> | Slope (%): 0 | | |
| Subregion (LRR): LRR A Lat: 46 | 3°58'19.87"N | Long: <u>123°53'7.19"W</u> | Datum: WGS 84 | | |
| Soil Map Unit Name: Fluvaquents, tidal | | NWI classific | ation: none | | |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No _ | (If no, explain in R | emarks.) | | |
| Are Vegetation, Soil, or Hydrology significantly | / disturbed? Are "N | ormal Circumstances" p | resent? Yes 🖌 No | | |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If need | ded, explain any answei | s in Remarks.) | | |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point lo | cations, transects | , important features, etc. | | |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes <u>/</u> Yes <u></u> Yes <u></u> | No No No | Is the Sampled Area within a Wetland? | Yes | No |
|---|--|----------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 101 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|-------------|-----------|--|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. <u>none</u> | | | | That Are OBL, FACW, or FAC: 1 (A) |
| 2 | | | | Total Number of Device of |
| 3 | | | | Species Across All Strata: 1 (B) |
| 4 | _ | | | |
| 4 | | | | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = 1 otal Co | ver | That Are OBL, FACW, or FAC: 100 (A/B) |
| | | | | Prevalence Index worksheet: |
| 1 | | | | Total % Cover of: Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | |
| 4 | | | | FACW species x 2 = |
| 5. | | | | FAC species x 3 = |
| ·· | | - Total Ca | wor | FACU species x 4 = |
| Herb Stratum (Plot size: ^{10'}) | | | ivei | UPL species x 5 = |
| 1 Phalaris arundinacea | 100 | yes | FACW | Column Totals: (A) (B) |
| 2 Cirsium arvense | trace | - | FAC | |
| 2 | | | | Prevalence Index = B/A = |
| 3 | | | | Hydrophytic Vegetation Indicators: |
| 4 | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | | | | ✓ 2 - Dominance Test is >50% |
| 6 | | | | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8. | | | | data in Remarks or on a separate sheet) |
| 9 | _ | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| | | | | ¹ Indicators of hydric coil and watend hydrology must |
| 11 | 400 | | | be present, unless disturbed or problematic. |
| $M(a, a, b, a)/(a, a, 0)$ (plate $a^{1} = a = 10^{1}$ | 100 | = Total Co | ver | |
| <u>woody vine Stratum</u> (Plot size: <u>10</u>) | | | | |
| 1. <u>none</u> | | | | Hydrophytic |
| 2 | | | | Vegetation |
| | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| | Matrix | | Redo | x Features | | | | |
|---|---|-----------------|---|--|------------------|----------------------------------|--|--|
| (inches) | Color (moist) | % | Color (moist) | <u>%</u> Type ¹ | Loc ² | Texture | e Remarks | |
|)-16 | 10YR 3/2 | 100 | none | | · | silt loam | mixed with rocks | |
| | | | | | · | | | |
| | | | | | | | | |
| | | | | | | | · · | |
| | | | | | · | | | |
| (De: C-C) | oncentration D-Der | | - Reduced Matrix CS | S-Covered or Coat | | aine | ² Location: PL-Pore Lining M-Matrix | |
| vdric Soil | Indicators: (Applic | cable to a | II LRRs. unless other | rwise noted.) | eu Sanu Gr | ans. Indi | cators for Problematic Hydric Soils ³ : | |
| Histosol | (A1) | | Sandy Redox (| S5) | | | 2 cm Muck (A10) | |
| Histic Epipedon (A2) | | | Stripped Matrix | (S6) | | | Red Parent Material (TF2) | |
| Black Hi | stic (A3) | | Loamy Mucky M | Vineral (F1) (excep | t MLRA 1) | | Very Shallow Dark Surface (TF12) | |
| Hydroge | en Sulfide (A4) | | Loamy Gleyed | Matrix (F2) | , | | Other (Explain in Remarks) | |
| Depleted | d Below Dark Surfac | ce (A11) | Depleted Matrix | x (F3) | | | | |
| Thick Da | ark Surface (A12) | | Redox Dark Su | Irface (F6) | | ³ Indi | cators of hydrophytic vegetation and | |
| _ Sandy M | lucky Mineral (S1) | | Depleted Dark | Surface (F7) | | W | vetland hydrology must be present, | |
| Sandy Gleyed Matrix (S4) Redox Depressions (F8) | | | | sions (F8) | | unless disturbed or problematic. | | |
| | | | | | | | | |
| estrictive I | Layer (if present): | | | | | | | |
| estrictive I Type: | Layer (if present): | | | | | | | |
| estrictive I Type: Depth (ind | Layer (if present): | | | | | Hydric | Soil Present? Yes No 🗹 | |
| estrictive I Type: Depth (ind emarks: | Layer (if present): | | | | | Hydric | Soil Present? Yes No 🖌 | |
| estrictive I Type: Depth (ind emarks: | Layer (if present): | | | | | Hydric | Soil Present? Yes No 🖌 | |
| estrictive I Type: Depth (ind emarks: | Layer (if present): | | | | | Hydric S | Soil Present? Yes No _ | |
| estrictive I Type: Depth (ind emarks: /DROLO | Layer (if present): | | | | | Hydric S | Soil Present? Yes No _✔ | |
| estrictive I Type: Depth (ind emarks: /DROLO /etland Hyd | Layer (if present): ches): GY drology Indicators: | | | | | Hydric 3 | Soil Present? Yes No | |
| estrictive I Type: Depth (ind emarks: /DROLO /etland Hyd rimary Indic | Layer (if present): ches): GY drology Indicators: cators (minimum of c | : one requir | ed; check all that appl | | | Hydric : | Soil Present? Yes No | |
| estrictive I Type: Depth (inu emarks: /DROLO /etland Hyu rimary India _ Surface | Layer (if present): ches): GY drology Indicators: cators (minimum of of Water (A1) | : one requir | ed; check all that appl | y) ined Leaves (B9) ((| except | Hydric : | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, | |
| estrictive I Type: Depth (inu emarks: /DROLO /etland Hyu rimary India _ Surface High Wa | Layer (if present): ches): GY drology Indicators: cators (minimum of of Water (A1) ater Table (A2) | : one requir | ed; check all that appl Water-Sta | y) ined Leaves (B9) (6 1, 2, 4A, and 4B) | except | Hydric S | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) | |
| estrictive I Type: Depth (inu emarks: //DROLO /etland Hyu rimary Indic _ Surface _ High Wa Saturatic | Layer (if present): ches): | : one requir | ed; check all that appl Water-Sta MLRA Salt Crust | <u>y)</u> ined Leaves (B9) (6 1, 2, 4A, and 4B) (B11) | except | Hydric S | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) | |
| estrictive I Type: Depth (in/ emarks: //DROLO //etland Hyd rimary India | Ches): | : one requir | ed; check all that appl Water-Sta Water-Sta MLRA Salt Crust Aquatic In | y) ined Leaves (B9) (6 1, 2, 4A, and 4B) (B11) vertebrates (B13) | except | Hydric : | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) | |
| estrictive I Type: Depth (in/ emarks: //DROLO //etland Hyd rimary India Surface High Wa Saturatia Water M Sedimer | Ches): | : one requir | ed; check all that appl Water-Sta Water-Sta Salt Crust Aquatic Im Hydrogen | y) ined Leaves (B9) (1 1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) | except | Hydric : | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (| |
| trype: Depth (inv emarks: (DROLO /etland Hyv rimary India Surface High Wa Saturatio Water M Sedimer Drift Der | GY drology Indicators: cators (minimum of of Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) | : one requir | ed; check all that appl Water-Sta Salt Crust Salt Crust Aquatic In Hydrogen Oxidized F | y) ined Leaves (B9) (1 , 2 , 4A , and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along | except | Hydric : | Soil Present? Yes No econdary Indicators (2 or more required) _ Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) _ Drainage Patterns (B10) _ Dry-Season Water Table (C2) _ Saturation Visible on Aerial Imagery (Geomorphic Position (D2) | |
| | Layer (if present): ches): | : one requir | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence | y) ined Leaves (B9) (6 1, 2, 4A, and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along of Reduced Iron (C | except | Hydric : | Soil Present? Yes No econdary Indicators (2 or more required) _ Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) _ Drainage Patterns (B10) _ Dry-Season Water Table (C2) _ Saturation Visible on Aerial Imagery (_ Geomorphic Position (D2) Shallow Aguitard (D3) | |
| | Ches): | : one requir | ed; check all that appl Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Ino | y) ined Leaves (B9) (1 , 2 , 4A , and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along of Reduced Iron (C | Except | Hydric : | Soil Present? Yes No econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) | |
| Restrictive I Type: Depth (inc Remarks: Primary Indic Primary Indic Saturatic Water M Saturatic Water M Saturatic Unift Dep Algal Ma Iron Dep Surface | Layer (if present): ches): | : one requir | ed; check all that appl Water-Sta Water-Sta Salt Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro Stunted or | y) ined Leaves (B9) (1 , 2 , 4A , and 4B) (B11) vertebrates (B13) Sulfide Odor (C1) Rhizospheres along of Reduced Iron (C on Reduction in Tille r Stressed Plants (F | Except | Hydric : | Soil Present? Yes No✓ econdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1; 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR △) | |

| Sparsely Vegetated Col | ncave Surfa | ce (B8) | | |
|--|-------------|-------------|--------------------------------------|-----------------------------------|
| Field Observations: | | | | |
| Surface Water Present? | Yes | No | Depth (inches): NONE | _ |
| Water Table Present? | Yes | No | Depth (inches): NONE | / |
| Saturation Present? (includes capillary fringe) | Yes | No | Depth (inches): <u>>16"</u> | Wetland Hydrology Present? Yes No |
| Describe Recorded Data (st | ream gauge | , monitorir | ng well, aerial photos, previous ins | pections), if available: |
| | | | | |
| Remarks: | | | | |
| | | | | |
| | | | | |

| Project/Site: IDD#1 | City/County: Hoquiam/Gra | ys Harbor County | Sampling Date: 06/15/2018 |
|--|------------------------------|---------------------------|---------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP24 |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, Range | Section 11 and 12, To | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concave, con | vex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: _4 | 6°58'19.61"N Lo | ong: <u>123°53'5.48"W</u> | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classifica | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of ye | ear? Yes 🖌 No | (If no, explain in Re | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | / disturbed? Are "Nor | mal Circumstances" pr | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | oblematic? (If neede | d, explain any answer | s in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling point loca | ations, transects, | important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? | Yes _ 🖌 No |
|---|--|---------------------------------------|------------|
| Remarks: | | | |

| 101 | Absolute | Dominan | Indicator | Dominance Test worksheet: |
|--|------------|-------------|-----------|---|
| Tree Stratum (Plot size: 10') | % Cover | Species? | Status | Number of Dominant Species |
| 1. <u>none</u> | | | | That Are OBL, FACW, or FAC: <u>3</u> (A) |
| 2 | | | | Total New Jon of Device of |
| 3. | | | | Species Across All Strata: 3 (B) |
| 1 | | | · | |
| 4 | | Tatalo | · | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | = 10tal Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| none | | | | Prevalence Index worksheet: |
| | | | · | Total % Cover of: Multiply by: |
| 2 | | | · | OBL species x 1 = |
| 3 | | | | FACW species x 2 = |
| 4 | | | | |
| 5 | | | | FAC species x 3 = |
| | | = Total Co | over | FACU species x 4 = |
| Herb Stratum (Plot size: 10') | | | | UPL species x 5 = |
| 1. Holcus lanatus | 20 | yes | FAC | Column Totals: (A) (B) |
| 2 Phalaris arundinacea | 20 | yes | FACW | |
| Poa pratensis | 20 | ves | FAC | Prevalence index = B/A = |
| A Anthoxanthum odoratum | 10 | <u> </u> | FACU | Hydrophytic vegetation indicators: |
| | 10 | | EAC | 1 - Rapid Test for Hydrophytic Vegetation |
| 5 | 10 | | TAC | ✓ 2 - Dominance Test is >50% |
| 6 | | | · | 3 - Prevalence Index is ≤3.0 ¹ |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9. | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 10 | | | · | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11 | | | · | ¹ Indicators of hydric soil and wetland hydrology must |
| 11 | 80 | | · | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: 10') | 00 | = Total Co | ver | |
| | | | | |
| 4 0008 | | | | |
| | | | | Hydrophytic |
| 1. <u>none</u> 2 | | | | Hydrophytic Vegetation Present? Yes No |
| I. mone Z. | - <u> </u> | _= Total Co | ver | Hydrophytic Vegetation Present? Yes <u>V</u> No |
| 1. hone 2. % Bare Ground in Herb Stratum | | _= Total Co | ver | Hydrophytic Vegetation Present? Yes <u>V</u> No |
| I. Indie 2. . % Bare Ground in Herb Stratum Remarks: | | _= Total Co | ver | Hydrophytic Vegetation Present? Yes <u>No</u> |

| Depth | Matrix | | Redo | x Feature | 51 | . 2 | | |
|---|--|---|--|--|---|---|-----------------------------------|--|
| (inches) | Color (moist) | <u>%</u> | Color (moist) | % | Type' | Loc ² | Texture | Remarks |
|)-2 | 10YR 3/2 | 100 | none | | | | SILT LOAM | l |
| 2-16 | 10YR 3/2 | 90 | 10YR 3/6 | 10 | С | M/PL | SAND | |
| | | | | | | · | | |
| уре: С=Со | ncentration, D=Dep | letion, RM= | -Reduced Matrix, C | S=Covered | d or Coate | ed Sand Gr | rains. ² L | - - ocation: PL=Pore Lining, M=Matrix. |
| ydric Soil Ir | ndicators: (Applic | able to all | LRRs, unless othe | rwise not | ed.) | | Indica | tors for Problematic Hydric Soils ³ : |
| Histosol (| (A1) | | ✓ Sandy Redox (| S5) | | | 2 | cm Muck (A10) |
| _ Histic Epi | ipedon (A2) | | Stripped Matrix | (S6) | | | Re | ed Parent Material (TF2) |
| _ Black His | tic (A3) | | Loamy Mucky I | Mineral (F | I) (excep | t MLRA 1) | Ve | ery Shallow Dark Surface (TF12) |
| _ Hydroger | n Sulfide (A4) | (() () | Loamy Gleyed | Matrix (F2 |) | | Ot | her (Explain in Remarks) |
| _ Depleted Thick Dai | Below Dark Surface | e (A11) | Depleted Matri | (F3) urface (E6) | | | ³ Indica | tors of hydrophytic vegetation and |
| Sandy Mi | ucky Mineral (S1) | | Redux Dark St | Surface (F0) | 7) | | wet | land hydrology must be present. |
| Sandy Gl | eved Matrix (S4) | | Redox Depress | sions (F8) | •) | | unle | ess disturbed or problematic. |
| estrictive L | aver (if present): | | | () | | | | • |
| | | | | | | | | |
| Type: | . | | | | | | | |
| Type: Depth (incl | hes): | | | | | | Hydric So | il Present? Yes 🖌 No |
| Type: Depth (incl Remarks: | hes): | | | | | | Hydric So | oil Present? Yes _ ✔_ No |
| Type: Depth (incl Remarks: | hes): | | | | | | Hydric So | uil Present? Yes 🖌 No |
| Type: Depth (incl Remarks: YDROLOO | hes): | | | | | | Hydric So | oil Present? Yes <u>/</u> No |
| Type: Depth (incl emarks: //DROLOC | hes): GY rology Indicators: | | | | | | Hydric So | oil Present? Yes <u>V</u> No <u></u> |
| Type: Depth (incl remarks: /DROLOC /etland Hyd rimary Indica | hes): GY rology Indicators: ators (minimum of o | ne required | d; check all that app | y) | | | Hydric So | ondary Indicators (2 or more required) |
| Type: Depth (incl emarks: //DROLOC /etland Hyd rimary Indica Surface V | hes): GY rology Indicators: ators (minimum of o Vater (A1) or Table (A2) | ne required | <u></u> <u>d: check all that app</u> Water-Sta | y) ined Leav | es (B9) (¢ | except | Hydric So | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 |
| Type: Depth (incl temarks: YDROLOC Vetland Hyd Primary Indica Surface V High Wat Saturatio | hes): Frology Indicators: ators (minimum of o Vater (A1) er Table (A2) p (A2) | ne required | d; check all that app Water-Sta MLRA Salt Cruct | y) ined Leav 1, 2, 4A, a | es (B9) (¢ and 4B) | except | Hydric So | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) |
| Type: Depth (incl emarks: //DROLOC /etland Hyd rimary Indica Surface V High Wat Saturatio Water Ma | GY rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) | ne required | d: check all that app Water-Sta Salt Crust Salt Crust | y) ined Leav 1, 2, 4A, a (B11) | es (B9) (6 and 4B) | except | Hydric So | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Druc Season Water Table (C2) |
| Type: Depth (incl temarks: (DROLOC Vetland Hyd rimary Indica Surface V High Wat Saturation Water Ma Sediment | GY rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) | ne required | d; check all that app Water-Sta Salt Crust Salt Crust Aquatic In Hvdrogen | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide O | es (B9) (c and 4B) s (B13) dor (C1) | except | Hydric So | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C2) |
| Type: Depth (incl Remarks: Primarks: VDROLOC Vetland Hyd Primary Indica Control Control Vetland Hyd Primary Indica Surface V High Wat Saturation Water Ma Sediment Drift Depo | hes): rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) posits (B3) | ne required | d: check all that app Water-Sta Salt Crust Salt Crust Aquatic In Hydrogen | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oc Rhizosphe | es (B9) (6 and 4B) s (B13) dor (C1) res along | except | Hydric So | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) |
| Type: Depth (incl temarks: TOROLOC Vetland Hyd Vetland Hyd Vetland Hyd Saturation Saturation Water Ma Sediment Drift Depo Algal Mat | hes): rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) c or Crust (B4) | ne required | d; check all that app Water-Sta Salt Crust Aquatic In Hydrogen Oxidized I Presence | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce | es (B9) (6 and 4B) s (B13) dor (C1) res along ed Iron (C | except | Hydric So | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) |
| Type: Depth (incl temarks: PROLOC Vetland Hyd 'rimary Indica Surface V High Wat Saturatiou Water Ma Sediment Drift Depo Algal Mat Iron Depo | GY rology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) posits (B3) t or Crust (B4) posits (B5) | ne required | d; check all that app Water-Sta Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Inc | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille | Except Living Roc 4) d Soils (C6 | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C9 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) |
| Type: Depth (incl temarks: TOROLOC Vetland Hyd rimary Indica Surface V High Wate Saturation Water Ma Sediment Sediment Drift Depo Algal Mat Iron Depo Surface S | GY rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) c or Crust (B4) osits (B5) Soil Cracks (B6) | ne required | d: check all that app Water-Sta Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Inc Stunted o | y) ined Leav (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti r Stressed | es (B9) (e and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille Plants (E | Except Living Roc 4) d Soils (C6 01) (LRR A | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) |
| Type: Depth (incl temarks: TOROLOC Vetland Hyd Vetland Hyd Vetland Hyd Trimary Indica Surface V High Wat Saturation Water Ma Saturation Drift Depo Algal Mat Iron Depo Surface S Inundatio | hes): rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial I | ne required | d: check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irc Stunted o 7) Other (Ex | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti r Stressed balain in Re | es (B9) (6 and 4B) dor (C1) res along ed Iron (C on in Tille Plants (E marks) | Except Living Roc 4) d Soils (C6 1) (LRR A | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (incl Remarks: YDROLOC Vetland Hyd Primary Indica Surface V High Wat Saturation Saturation Saturation Drift Depo Algal Mat Iron Depo Surface S Inundatio Sparsely | A rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) c or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial I Vegetated Concave | ne required magery (B' | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irc Stunted o 7) Other (Ex B8) | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti r Stressed plain in Re | es (B9) (6 and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille Plants (D marks) | Except Living Roc 4) d Soils (C6 01) (LRR A | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (incl Remarks: YDROLOC Yetland Hyd Primary Indica Surface V High Wat Saturatio Water Ma Sediment Sediment Drift Depo Algal Mat Iron Depo Surface S Inundatio Sparsely | GY rology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) posits (B3) t or Crust (B4) posits (B5) Soil Cracks (B6) n Visible on Aerial I Vegetated Concave ations: | ne required magery (B' | d; check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irc Stunted o 7) Other (Ex B8) | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduction r Stressed oblain in Re | es (B9) (c and 4B) s (B13) dor (C1) res along d Iron (C on in Tille Plants (E marks) | Except Living Roc 4) d Soils (C6 1) (LRR A | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (incl Remarks: YDROLOC Vetland Hyd Primary Indica Surface V High Wate Saturation Water Ma Sediment Sediment Drift Depo Algal Mat Iron Depo Surface S Inundatio Sparsely Field Observ Surface Wate | GY rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial I Vegetated Concave ations: r Present? Y | magery (B Surface (I es | d: check all that app Water-Sta MLRA Salt Crust Aquatic In Aquatic In Aquatic In Presence Recent Irc Stunted o 7) Other (Ex B8) | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti r Stressed plain in Re ches): <u>NO</u> | es (B9) (c and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille Plants (C marks) DNE | except Living Roc 4) d Soils (C6 01) (LRR A | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (incl Remarks: YDROLOC Vetland Hyd Primary Indica Control Control Vetland Hyd Primary Indica Ourface V Saturation Sediment Sediment Drift Depo Algal Mat Iron Depo Surface S Inundatio Sparsely Vield Observ Surface Wate Vater Table F | GY rology Indicators: ators (minimum of o Vater (A1) er Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) n Visible on Aerial I Vegetated Concave ations: r Present? Y | me required magery (B' Surface (l es | d: check all that app Water-Sta MLRA Salt Crust Aquatic In Hydrogen Oxidized I Presence Recent Irc Stunted o 7) Other (Ex B8) No Depth (in No Depth (in | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce of Reduce on Reducti r Stressed blain in Re ches): <u>NC</u> ches): <u>NC</u> | es (B9) (6 and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille Plants (E marks) DNE | Eiving Roc 4) d Soils (C6 11) (LRR A | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |
| Type: Depth (incl Remarks: YDROLOC Vetland Hyd Primary Indica Surface V High Wat Saturation Water Ma Sediment Sedi | bes): | magery (B' s Surface (l es es es | d: check all that app | y) ined Leav 1, 2, 4A, a (B11) vertebrate Sulfide Oo Rhizosphe of Reduce on Reducti r Stressed blain in Re ches): <u>NC</u> ches): <u>NC</u> ches): 21 | es (B9) (6 and 4B) s (B13) dor (C1) res along ed Iron (C on in Tille Plants (E marks) DNE 0NE 6" | Except Living Roc A) d Soils (C6 D1) (LRR A | Hydric So Hydric So Sec | ondary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) |

Remarks:

| Project/Site: IDD#1 | City/County: Ho | oquiam/Grays Harbor County | Sampling Date: 06/15/2018 |
|--|-------------------|---|----------------------------|
| Applicant/Owner: <u>BHP Billiton Canada, Inc.</u> | | State: WA | Sampling Point: SP25 |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Towns | hip, Range: <u>Section 11 and 12, T</u> | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | Local relief (coi | ncave, convex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: | 46°58'19.71"N | Long: <u>123°52'59.65</u> "W | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classific | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time o | of year? Yes 🖌 | _ No (If no, explain in R | emarks.) |
| Are Vegetation, Soil, or Hydrology significant | ntly disturbed? | Are "Normal Circumstances" p | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally | v problematic? | (If needed, explain any answe | 's in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map show | ing sampling p | oint locations, transects | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes _ ✓ No Yes _ ✓ No Yes _ ✓ No | Is the Sampled Area within a Wetland? Yes | No |
|---|--|---|----|
| Remarks: | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|------------|-----------|---|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 1 (A) |
| 2. | | | | |
| 3 | | | | I otal Number of Dominant Species Across All Strate: 1 (P) |
| | | | | Species Across Air Strata. (B) |
| 4 | | | | Percent of Dominant Species |
| Carling/Chruck Ctrature (Distained 10' | | = Total Co | over | That Are OBL, FACW, or FAC: 100 (A/B) |
| Sapling/Shrub Stratum (Plot size:) | | | | Prevalence Index worksheet: |
| 1. <u>none</u> | | | | Total % Cover of: Multiply by: |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | FACW species x 2 = |
| | | | | FAC species x 3 = |
| 0 | | | | FACU species x 4 = |
| Harb Stratum (Plat aiza: 10' | | = Total Co | over | UPL species x 5 = |
| Pholaris arundinacea | 95 | VOC | | Column Totals: (A) (B) |
| | - 00 | yes | FACIN | |
| 2. Lotus corniculatus | 10 | | FAC | Prevalence Index = B/A = |
| 3. Equisetum arvense | 5 | | FAC | Hydrophytic Vegetation Indicators: |
| 4 | | | | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. | | | | \sim 2 Dominance Test is >50% |
| 6 | | - | | |
| - | | | | 3 - Prevalence Index is ≤3.0 |
| 7 | | | | 4 - Morphological Adaptations ¹ (Provide supporting |
| 8 | | | | data in Remarks or on a separate sheet) |
| 9 | | | | 5 - Wetland Non-Vascular Plants |
| 10. | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 11 | | | | ¹ Indicators of hydric soil and wetland hydrology must |
| | 100 | - Total Ca | | be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: ¹⁰ ') | | | vei | |
| 1 none | | | | |
| 1. <u></u> | | | | Hydrophytic |
| 2 | | | | Present? Yes No |
| | | = Total Co | ver | |
| % Bare Ground in Herb Stratum | | | | |
| | | | | |
| Remarks: | | | | |

| SOIL | |
|------|--|
| | |

| | Matrix | | Red | ox Feature | es | | | | | |
|--|--|----------------------|--|---|--|--|----------------------|---|--|--|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Texture | Remarks | | |
| 0-4 | 10YR 3/2 | 100 | | | | | SILT LOAN | N | | |
| 4-16 | 10YR 3/2 | 80 10 |)YR 3/6 | 20 | С | M/PL | SAND | | | |
| | | | | | | · | | | | |
| | · | | | | | | | | | |
| | · | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | _ | | |
| Type: C=C | Concentration, D=Deple | tion, RM=Re | educed Matrix, C | S=Covere | ed or Coate | ed Sand Gra | ains. ² L | Location: PL=Pore Lining, M=Matrix. | | |
| ydric Soil | Indicators: (Applica | ble to all LR | Rs, unless othe | erwise no | ted.) | | Indica | ators for Problematic Hydric Soils": | | |
| Histoso | l (A1) | <u>v</u> | Sandy Redox | (S5) | | | 2 | cm Muck (A10) | | |
| _ HISTIC E | pipedon (AZ) | | _ Stripped Musley | X (50) Minoral (E | 1) (oxoon | | K | ed Parent Material (TF2) | | |
| _ DIACK F | an Sulfide (AA) | | | Matrix (F | 2) | | v | ery Shallow Dark Surface (TFTZ) | | |
| _ Hydrog Deplete | A Below Dark Surface | (A11) | Depleted Matri | ix (F3) | <u>~)</u> | | | | | |
| Thick D | ark Surface (A12) | (/(11)) | Redox Dark Si | urface (F6 |) | | ³ Indica | ators of hydrophytic vegetation and | | |
| Sandy Mucky Mineral (S1) | | | Depleted Dark Surface (F7) | | | | | wetland hydrology must be present, | | |
| Sandy | Gleyed Matrix (S4) | | Redox Depres | sions (F8) | | | unl | less disturbed or problematic. | | |
| Restrictive | Layer (if present): | | | | | | | | | |
| Туре: | | | _ | | | | | 1 | | |
| Depth (ir | nches): | | | | | | Hydric Se | oil Present? Yes 💙 No | | |
| Remarks: | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| DROLO | DGY | | | | | | | | | |
| YDROLC | OGY /drology Indicators: | | | | | | | | | |
| YDROLC Vetland Hy Primary Ind | DGY /drology Indicators: icators (minimum of on | e required; c | heck all that app | ly) | | | Sec | condary Indicators (2 or more required) | | |
| YDROLO Vetland Hy Primary Ind | DGY /drology Indicators: icators (minimum of on 2 Water (A1) | e required; c | heck all that app Water-Sta | oly) ained Leav | ves (B9) (e | except | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 | | |
| YDROLC Vetland Hy Primary Ind Surface High W | DGY vdrology Indicators: icators (minimum of on Water (A1) ater Table (A2) | e required; c | heck all that app Water-Sta MLRA | oly) ained Leav | ves (B9) (6 and 4B) | except | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) | | |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat | OGY /drology Indicators: icators (minimum of on Water (A1) ater Table (A2) ion (A3) | e required; c | heck all that app Water-Sta MLRA Salt Crus | oly) ained Leav A 1, 2, 4A, t (B11) | ves (B9) (6 and 4B) | except | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) | | |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat Water N | DGY /drology Indicators: icators (minimum of on e Water (A1) ater Table (A2) ion (A3) Marks (B1) | e required; c | heck all that app Water-Sta Salt Crus Aquatic Ir | oly) ained Leav 1, 2, 4A, t (B11) nvertebrate | ves (B9) (e and 4B) es (B13) | except | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) | | |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat Water N Sedime | Advances (Market Market | e required; c | heck all that app Water-Sta Salt Crus Salt Crus Aquatic Ir Hydroger | oly) ained Leav 1, 2, 4A, t (B11) nvertebrate n Sulfide C | ves (B9) (6 and 4B) es (B13) 0dor (C1) | except | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C3 | | |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat Water M Sedime Drift De | Advantage of the second state of the second st | e required; c | heck all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized | oly) ained Leav A 1, 2, 4A, t (B11) nvertebrate n Sulfide C Rhizospho | ves (B9) (e and 4B) es (B13) odor (C1) eres along | except | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C4 Geomorphic Position (D2) | | |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat Water I Sedime Drift De Algal M | Arronogy Indicators: icators (minimum of on Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) | e required; c | heck all that app Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized Presence | ained Lean 1, 2, 4A , t (B11) nvertebrate n Sulfide C Rhizospho e of Reduc | ves (B9) (¢ and 4B) es (B13) Odor (C1) eres along ed Iron (C | except Living Root | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) | | |
| YDROLC Primary Ind Surface High W Saturat Water M Sedime Drift De Algal M Iron De | Arrology Indicators: icators (minimum of on water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) posits (B5) | e required; c | heck all that app Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent In | ained Lean ained Lean 1, 2, 4A, t (B11) nvertebrate Sulfide C Rhizosphe of Reduct on Reduct | ves (B9) (e and 4B) es (B13) Odor (C1) eres along ed Iron (C tion in Tille | Except Living Root 4) d Soils (C6) | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) | | |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De Algal M Iron De Surface | DGY vdrology Indicators: icators (minimum of on Water (A1) ater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) posits (B5) a Soil Cracks (B6) | <u>e required; c</u> | heck all that app Water-Sta Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Iro Stunted o | ained Leav 1, 2, 4A, t (B11) nvertebrate a Sulfide C Rhizosphe of Reduct on Reduct on Reduct | ves (B9) (¢ and 4B) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E | Except Living Root 4) d Soils (C6) 01) (LRR A) | <u>Sec</u> | condary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) | | |
| YDROLC Vetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De Algal M Iron De Surface Inundat | DGY /drology Indicators: icators (minimum of on a Water (A1) fater Table (A2) ion (A3) Marks (B1) ent Deposits (B2) eposits (B3) lat or Crust (B4) posits (B5) a Soil Cracks (B6) tion Visible on Aerial Im | e required; c | heck all that app Water-Sta MLRA Salt Crus Aquatic Ir Hydroger Oxidized Presence Recent Irr Stunted co Other (Ex | ained Lean 1, 2, 4A, 1, 2, 4A, t (B11) nvertebrate a Sulfide C Rhizosphe of Reduct on Reduct on Reduct or Stressed splain in R | ves (B9) (¢ and 4B) es (B13) Odor (C1) eres along ed Iron (C tion in Tille d Plants (E emarks) | Except Living Root 4) d Soils (C6) 1) (LRR A) | <u>Sec</u> | <u>condary Indicators (2 or more required)</u> Water-Stained Leaves (B9) (MLRA 1, 2 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2) Saturation Visible on Aerial Imagery (C Geomorphic Position (D2) Shallow Aquitard (D3) FAC-Neutral Test (D5) Raised Ant Mounds (D6) (LRR A) Frost-Heave Hummocks (D7) | | |

| Field Observations: | | | | | | | | |
|--|-----|----|----------------------------------|--|--|--|--|--|
| Surface Water Present? | Yes | No | _ Depth (inches): NONE | _ | | | | |
| Water Table Present? | Yes | No | _ Depth (inches): NONE | / | | | | |
| Saturation Present? (includes capillary fringe) | Yes | No | _ Depth (inches): <u>>16"</u> | _ Wetland Hydrology Present? Yes <u>V</u> No | | | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | | | | | | |
| Remarks: | | | | | | | | |

| Project/Site: IDD#1 | City/County: Hoquia | m/Grays Harbor County | Sampling Date: 06/15/2018 |
|---|------------------------|-------------------------------|----------------------------|
| Applicant/Owner: BHP Billiton Canada, Inc. | | State: WA | Sampling Point: SP26 |
| Investigator(s): Dan Gunderson and Grace Roberts | Section, Township, I | Range: Section 11 and 12, T | ownship 17N Range 10W |
| Landform (hillslope, terrace, etc.): filled tide flats | _ Local relief (concav | e, convex, none): <u>none</u> | Slope (%): 0 |
| Subregion (LRR): LRR A Lat: _4 | 6°58'19.87"N | Long: <u>123°52'59.55"</u> W | Datum: WGS 84 |
| Soil Map Unit Name: Udorthents, level | | NWI classific | ation: none |
| Are climatic / hydrologic conditions on the site typical for this time of y | rear? Yes 🖌 No | (If no, explain in R | emarks.) |
| Are Vegetation, Soil, or Hydrology significantly | y disturbed? Ar | e "Normal Circumstances" p | resent? Yes 🖌 No |
| Are Vegetation, Soil, or Hydrology naturally pr | roblematic? (If | needed, explain any answe | rs in Remarks.) |
| SUMMARY OF FINDINGS – Attach site map showing | g sampling poin | t locations, transects | , important features, etc. |

| Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? | Yes <mark>✓</mark> Yes <mark>✓</mark> Yes | No No No∕ | Is the Sampled Area within a Wetland? | Yes | No |
|---|---|-----------------|---------------------------------------|-----|----|
| Remarks: | | | | | |

| 401 | Absolute | Dominant | Indicator | Dominance Test worksheet: |
|---|----------|------------|-----------------|--|
| Tree Stratum (Plot size: 10) | % Cover | Species? | Status | Number of Dominant Species |
| 1. none | | | | That Are OBL, FACW, or FAC: 1 (A) |
| 2 | | | | Total Number of Dominant |
| 3. | | | | Species Across All Strata: 1 (B) |
| 4 | | | | () |
| | | - Total Co | vor | Percent of Dominant Species |
| Sapling/Shrub Stratum (Plot size: 10') | | _ 10tai 00 | 1001 | That Are OBL, FACW, or FAC: (A/B) |
| 1 none | | | | Prevalence Index worksheet: |
| ·· | | | | Total % Cover of:Multiply by: |
| 2 | | | | OBL species x 1 = |
| 3 | | | | FACW species x 2 = |
| 4 | | | | FAC species x 3 = |
| 5 | | | | FACIL species x 4 = |
| 10' | | = Total Co | ver | |
| Herb Stratum (Plot size: 10) | | | F 1 01 1 | OFL species |
| 1. Phalaris arundinacea | /5 | yes | FACW | Column lotais: (A) (B) |
| 2. Convulvulus arvense | 10 | | FAC | Prevalence Index = B/A = |
| 3. Holcus lanatus | 10 | | FAC | Hydrophytic Vegetation Indicators: |
| 4. Cirsium arvense | 5 | | FAC | 1 - Rapid Test for Hydrophytic Vegetation |
| 5. | | | | $\sqrt{2}$ - Dominance Test is >50% |
| 6 | | | | $\underline{\mathbf{v}}$ 2 Dominance results 2007 |
| 7 | | | | \sim 3 - Flevalence index is \leq 3.0 |
| / | | | | 4 - Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet) |
| 0 | | | | 5 - Wetland Non-Vascular Plants ¹ |
| 9 | | | | Problematic Hydrophytic Vegetation ¹ (Explain) |
| 10 | | | | ¹ Indicators of hydric coil and wetland hydrology must |
| 11 | | | <u> </u> | be present, unless disturbed or problematic. |
| $W_{\rm rest}$ (Distance (Distance 10) | 100 | = Total Co | /er | |
| woody vine Stratum (Plot size: 10) | | | | |
| 1. <u>none</u> | | | | Hydrophytic |
| 2 | | | | Vegetation Present? Ves No |
| | | = Total Co | /er | |
| % Bare Ground in Herb Stratum | | | | |
| Remarks: | | | | |
| | | | | |

SOIL

| Depth | Matrix | | Rec | dox Feature | es | | | |
|---|-----------------------|---------------|-----------------------|-----------------|------------------------|--------------------|---|--|
| (inches) | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | Textur | e Remarks |
| 0-8 | 10YR 3/2 | 99 | 10YR 3/6 | 1 | С | Μ | SILT LO | AM |
| 8-16 | 10YR 3/2 | 90 | 10YR 3/6 | 10 | С | Μ | SANDY LC | DAM |
| | | | | | | | | |
| | | | | | | | | |
| 17 | | | Deduced Matrix (| | | | | |
| Type: C=C | oncentration, D=De | pietion, Rivi | =Reduced Matrix, (| S=Covere | ted) | ed Sand G | rains. | ⁻ Location: PL=Pore Lining, M=Matrix. |
| Histoso | | | Sandy Redox | (\$5) | | | indi | 2 cm Muck (A10) |
| Histic F | nipedon (A2) | | Stripped Matr | (SS) ix (S6) | | | | Red Parent Material (TF2) |
| Black H | istic (A3) | | Loamy Mucky | Mineral (F | - 1) (excep | t MLRA 1) |) | Verv Shallow Dark Surface (TF12) |
| Hydroge | en Sulfide (A4) | | Loamy Gleye | d Matrix (F | 2) | - , | | Other (Explain in Remarks) |
| Deplete | d Below Dark Surfa | ce (A11) | Depleted Mat | rix (F3) | , | | | |
| Thick D | ark Surface (A12) | | ✓ Redox Dark S | Surface (F6 |) | | ³ Ind | icators of hydrophytic vegetation and |
| Sandy M | Mucky Mineral (S1) | | Depleted Dar | k Surface (| F7) | | v | vetland hydrology must be present, |
| Sandy (| Gleyed Matrix (S4) | | Redox Depre | ssions (F8) | | | ι | unless disturbed or problematic. |
| Restrictive | Layer (if present): | | | | | | | |
| Type: | | | | | | | | / |
| Depth (in | iches): | | | | | | Hydric | Soil Present? Yes <u>V</u> No |
| | | | | | | | | |
| | | | | | | | | |
| YDROLC | OGY | | | | | | | |
| Wetland Hy | drology Indicators | : | | | | | | |
| Primary Indi | cators (minimum of | one require | d; check all that ap | ply) | | | <u></u> <u>S</u> | Secondary Indicators (2 or more required) |
| Surface | Water (A1) | | Water-S | tained Leav | ves (B9) (e | except | _ | Water-Stained Leaves (B9) (MLRA 1, |
| High Wa | ater Table (A2) | | MLR | A 1, 2, 4A, | and 4B) | | | 4A, and 4B) |
| Saturati | ion (A3) | | Salt Cru | st (B11) | | | _ | Drainage Patterns (B10) |
| Water N | /larks (B1) | | Aquatic | Invertebrat | es (B13) | | _ | Dry-Season Water Table (C2) |
| Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) | | | | | | _ | Saturation Visible on Aerial Imagery (C | |
| Drift De | posits (B3) | | Oxidized | l Rhizosph | eres along | Living Ro | ots (C3) | Geomorphic Position (D2) |
| Algal M | at or Crust (B4) | | Presenc | e of Reduc | ed Iron (C | 4) | _ | Shallow Aquitard (D3) |
| Iron De | posits (B5) | | Recent I | ron Reduct | tion in Tille | d Soils (C | 6) _ | FAC-Neutral Test (D5) |
| Surface | Soil Cracks (B6) | | Stunted | or Stressed | d Plants (D | 01) (LRR A | N) _ | Raised Ant Mounds (D6) (LRR A) |
| Inundat | ion Visible on Aerial | Imagery (B | 87) Other (E | xplain in R | emarks) | | _ | Frost-Heave Hummocks (D7) |
| Sparsel | y Vegetated Concav | /e Surface (| (B8) | | | | | |
| Field Obser | rvations: | | | | | | | |
| C | ter Present? | Yes | No Depth (| inches): N | ONE | | | |
| Surface wa | | | = • • • • • • • • • • | | | | | |

| Water rable riesent: | 100 | | | |
|-----------------------------|------------|--------------|--|--------------------------------|
| Saturation Present? | Yes | No | Depth (inches): <u>>16"</u> | Wetland Hydrology Present? Yes |
| (includes capillary fringe) | | | | |
| Describe Recorded Data (st | ream gauge | e, monitorii | ng well, aerial photos, previous inspe | ctions), if available: |

Remarks:

No 🗸

Wetland and Waterbody Delineation and Assessment Proposed Grays Harbor Potash Export Facility Proposed Wetland Mitigation Site: IDD #1 Hoquiam, Washington

> Appendix C Wetland Rating Forms

Wetland name or number $\underline{\mathcal{H}}$

DRAFT 06/22/2018 - For review and verification

RATING SUMMARY – Western Washington

Name of wetland (or ID #): |DD #| - Wet | and A Date of site visit: $\frac{6/14}{2018}$ Rated by DAN GUNDERSON _____ Trained by Ecology? KYes ____ No Date of training 2008/2014 _____ Wetland has multiple HGM classes?____Y 🔀 N HGM Class used for rating Depression a NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map _____ 600gle Earth 2018 $\underline{\checkmark}$ (based on functions \underline{X} or special characteristics ____) OVERALL WETLAND CATEGORY 1. Category of wetland based on FUNCTIONS Category I - Total score = 23 - 27 Score for each Category II - Total score = 20 - 22 function based on three Category III - Total score = 16 - 19 ratings (order of ratings Category IV – Total score = 9 - 15 ìs not FUNCTION Improving Hydrologic Habitat

| | Wa | ter Q | uality | | yaron | /6·~ | | 14011 | | |
|---------------------------|----|-------|------------|---|--------|------------|--------|---------|-------|-------|
| | | | | | Circle | the ap | propri | iote ro | tings | |
| Site Potential | Н | M | \bigcirc | Н | M |) [| Н | М | (L) | |
| Landscape Potential | Н | M | L | н | M) | L | Н | Μ | (1) | |
| Value | Ð | M | L | н | M | \bigcirc | Ð | М | Ľ | TOTAL |
| Score Based on Ratings | | 6 | | | 5 | | | 5 | | 16 |

Score for each function based on three ratings (order of ratings is not important) 9 = H,H,H 8 = H,H,M 7 = H,H,L 7 = H,M,M 6 = H,M,L 6 = M,M,M 5 = H,L,L 5 = M,M,L 4 = M,L,L

3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

| CHARACTERISTIC | CATEGORY |
|------------------------------------|-------------|
| Estuarine | I II |
| Wetland of High Conservation Value | Ι |
| Bog | I |
| Mature Forest | I |
| Old Growth Forest | Ι |
| Coastal Lagoon | I II |
| Interdunal | I II III IV |
| None of the above | \times |

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | D 1.3, H 1.1, H 1.4 | |
| Hydroperiods | D 1.4, H 1.2 | 2 |
| Location of outlet (can be added to map of hydroperiods) | D 1.1, D 4.1 | 2 |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | D 2.2, D 5.2 | |
| Map of the contributing basin | D 4.3, D 5.3 | 4 |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | 2 |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | D 3.1, D 3.2 | 5 |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | D 3.3 | . 1.0 |

Riverine Wetlands

| Map of: | To answer questions: | Figure # |
|--|----------------------|----------|
| Cowardin plant classes | H 1.1, H 1.4 | |
| Hydroperiods | H 1.2 | |
| Ponded depressions | R 1.1 | |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | R 2.4 | |
| Plant cover of trees, shrubs, and herbaceous plants | R 1.2, R 4.2 | |
| Width of unit vs. width of stream (can be added to another figure) | R 4.1 | |
| Map of the contributing basin | R 2.2, R 2.3, R 5.2 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including | H 2.1, H 2.2, H 2.3 | |
| polygons for accessible habitat and undisturbed habitat | | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | R 3.1 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | R 3.2, R 3.3 | |

Lake Fringe Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------------|----------|
| Cowardin plant classes | L 1.1, L 4.1, H 1.1, H 1.4 | |
| Plant cover of trees, shrubs, and herbaceous plants | L 1.2 | |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | L 2.2 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | L 3.1, L 3.2 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | L 3.3 | |

Slope Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | H 1.1, H 1.4 | |
| Hydroperiods | H 1.2 | |
| Plant cover of dense trees, shrubs, and herbaceous plants | S 1.3 | |
| Plant cover of dense, rigid trees, shrubs, and herbaceous plants | S 4.1 | |
| (can be added to figure above) | | |
| Boundary of 150 ft buffer (can be added to another figure) | S 2.1, S 5.1 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including | H 2.1, H 2.2, H 2.3 | |
| polygons for accessible habitat and undisturbed habitat | | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | S 3.1, S 3.2 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | \$ 3.3 | |

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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 except during floods?

(NO) go to 2

YES – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO - Saltwater Tidal Fringe (Estuarine)

YES – Freshwater Tidal Fringe 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 an **Estuarine** wetland and is not scored. This method cannot be used to score functions for estuarine wetlands.

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 \neq 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 all** of the following criteria? ____The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (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**.

 $NO \neq go to 5$

YES – The wetland class is **Slope**

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 <3 ft diameter and less than 1 ft deep).

- 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 2 years.

Wetland name or number $\underline{\mathcal{H}}$

 \overline{NO} + go to 6

YES – The wetland class is Riverine

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

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

NO - go to 7

YES - The wetland class is Depressional

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

NO - go to 8

YES The wetland class is **Depressional**

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

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 HGM 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 | HGM class to |
|---------------------------------------|---------------|
| being rated | use in rating |
| Slope + Riverine | Riverine |
| Slope + Depressional | Depressional |
| Slope + Lake Fringe | Lake Fringe |
| Depressional + Riverine along stream | Depressional |
| within boundary of depression | |
| Depressional + Lake Fringe | Depressional |
| Riverine + Lake Fringe | Riverine |
| Salt Water Tidal Fringe and any other | Treat as |
| class of freshwater wetland | ESTUARINE |

If you are still unable 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 $\underline{\mathcal{M}}$

1 · · · ·

| DEPRESSIONAL AND FLATS WETLANDS | | |
|---|-------------------------------|------------------------|
| Water Quality Functions - Indicators that the site functions to improve w | ater quality | |
| D 1.0. Does the site have the potential to improve water quality? | lite (1979-1797) e population | |
| D 1.1. Characteristics of surface water outflows from the wetland: | | |
| Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it i | (no outlet). points = 3 | |
| Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowir | points = 2 | 2 |
| Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. | points = 1 points = 1 | |
| D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). Ye | es = 4 No = 0 | $\overline{0}$ |
| D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cov | vardin classes): | |
| Wetland has persistent, ungrazed, plants > 95% of area | points = S | |
| Wetland has persistent, ungrazed, plants > ½ of area | points = 3 | $\left \right\rangle$ |
| Wetland has persistent, ungrazed plants $> 1/10$ of area | points = 1 | $ \cup $ |
| Wetland has persistent, ungrazed plants $<^{1}/_{10}$ of area | points $\underbrace{0}$ | |
| D 1.4. Characteristics of seasonal ponding or inundation: | •** | |
| This is the orea that is ponded for at least 2 manths. See description in manual. | | |
| Area seasonally ponded is > ½ total area of wetland | points = 4 | $ \langle \rangle$ |
| Area seasonally ponded is > ¼ total area of wetland | points = 2 | \square |
| Area seasonally ponded is < ¼ total area of wetland | points €0) | |
| Total for D 1 Add the points in the | boxes above | 2 |
| Rating of Site Potential If score is: 12-16 = H6-11 = M0-5 = L Record the rational second | ing on the first pa | ige |
| D 2.0. Does the landscape have the potential to support the water quality function of the site? | • | |
| D 2.1. Does the wetland unit receive stormwater discharges? Yes | s = 1 No =0 | 0 |
| D_2 2 is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes | s = 1 No = 0 | 1 7 |

| D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutant | s? Yes ₹1) No = 0 | 1 |
|---|---------------------------|------------|
| D 2.3. Are there septic systems within 250 ft of the wetland? | $Yes = 1 No \neq 0$ | 0 |
| D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in q | uestions D 2.1-D 2.3? | \bigcirc |
| Source | Yes = 1 No €0 | \sim |
| Total for D 2 Add the p | oints in the boxes above | ţ |

Rating of Landscape Potential If score is: ___3 or 4 = H \times 1 or 2 = M ___0 = L Record the rating an the first page

| D 3.0. Is the water quality improvement provided by the site valuable to societ | ` Y? | |
|---|---|------------|
| D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or 303(d) list? | marine water that is on the Yes = 1 No $\neq 0$ | \bigcirc |
| D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) |) list? Yes = 1 No = 0 | l |
| D 3.3. Has the site been identified in a watershed or local plan as important for mainta if there is a TMDL for the basin in which the unit is found)? | ining water quality (<i>answer YES</i> Yes ₹2) No = 0 | 2 |
| Total for D 3 Add t | the points in the boxes above | 3 |
| Rating of Value If score is: 2-4 = H1 = M0 = L Reco | rd the rating an the first page | |

Wetland name or number <u>A</u>

| DEPRESSIONAL AND FLATS WETLANDS | | |
|---|---|------------|
| Hydrologic Functions - Indicators that the site functions to reduce flooding | and stream degradat | ion |
| D 4.0. Does the site have the potential to reduce flooding and erosion? | | |
| D 4.1. <u>Characteristics of surface water outflows from the wetland</u> : Wetland is a depression or flat depression with no surface water leaving it (no outlet) Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing o Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flow | points = 4 flowing outletpoints = (2 litch points = 1 owing points = 0 | 2 |
| D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of twith no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet The wetland is a "headwater" wetland Wetland is flat but has small depressions on the surface that trap water Marks of ponding less than 0.5 ft (6 in) | he outlet. For wetlands points = 7 points = 5 points = 3 points = 3 points € 1 points = 0 | |
| D 4.3. <u>Contribution of the wetland to storage in the watershed</u> : <i>Estimate the ratio of the area of a contributing surface water to the wetland to the area af the wetland unit itself.</i> The area of the basin is less than 10 times the area of the unit The area of the basin is 10 to 100 times the area of the unit The area of the basin is more than 100 times the area of the unit Entire wetland is in the Flats class | points =(5) points = 3 points = 0 points = 5 | 5 |
| Total for D 4 Add the points | in the boxes above | B |
| Rating of Site Potential If score is:12-16 = H6-11 = M0-5 = L | Record the rating on the | first page |
| D 5.0. Does the landscape have the potential to support hydrologic functions of the site | | |
| D 5.1. Does the wetland receive stormwater discharges? | Yes = 1 No(0) | 0 |
| D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? | Yes = 1 No = (0) | 0 |
| D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human la >1 residence/ac, urban, commercial, agriculture, etc.}? | nd uses (residential at Yes = 1 No = 0 | l |
| Total for D 5 Add the points | in the boxes above | ľ |
| Rating of Landscape Potential If score is: 3 = H X1 or 2 = M 0 = L | Recard the rating on the | first page |
| D 6 0 Are the hydrologic functions provided by the site valuable to society? | | |
| D 6.1. <u>The unit is in a landscape that has flooding problems</u> . Choose the description that best mat the wetland unit being rated. Do nat add points. <u>Chaose the highest scare if mare than one</u> The wetland captures surface water that would otherwise flow down-gradient into areas v damaged human or natural resources (e.g., houses or salmon redds): | ches conditions around condition is met. vhere flooding has | |
| Flooding occurs in a sub-basin that is immediately down-gradient of unit. Surface flooding problems are in a sub-basin farther down-gradient. Flooding from groundwater is an issue in the sub-basin. | points = 2 points = 1 points = 1 | \bigcirc |
| The existing or potential outflow from the wetland is so constrained by human or natural or water stored by the wetland cannot reach areas that flood. <i>Explain why</i> | points = 0 points = 0 | \bigcirc |
| D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regiona | al flood control plan? | \bigcirc |
| | Yes = 2 No = 0 | ~ |
| Total for D 6 Add the points | in the boxes above | <u> </u> |

Rating of Value If score is: ____2-4 = H ____1 = M X_0 = L

Record the rating on the first page

Wetland name or number <u>A</u>

3

| These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that site functions to provide important habitat | |
|--|--|
| H 1.0. Does the site have the potential to provide habitat? | |
| H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked. | |
| H 1.2. Hydroperiods | |
| 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 ac to count (see text for descriptions of hydroperiods). 4 or more types present: points = 3 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: points = 2 Occasionally flooded or inundated 1 type present: points = 1 Saturated only 1 type present: points = 0 Permanently flowing stream or river in, or adjacent to, the wetland 2 points = 0 Lake Fringe wetland 2 points Freshwater tidal wetland 2 points | |
| H 1.3. Richness of plant species 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 and you do not have to name the species. Da not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle If you counted: > 19 species 5 - 19 species < 5 species | |
| H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or | |
| the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you hove four or more plant classes or three classes and open water, the rating is always high. None = 0 points All three diagrams in this row are HIGH = 3 points | |

| Wetland name or number $\frac{I}{I}$ | | |
|--|---|----------------|
| H 1.5. Special habitat features: | | |
| Check the habitat features that are present in the wetland. The number of che | cks is the number of points. | |
| Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft | long). | |
| Standing snags (dbh > 4 in) within the wetland | | |
| Undercut banks are present for at least 6.6 ft (2 m) and/o r overhanging p | lants extends at least 3.3 ft (1 m) | |
| over a stream (or ditch) in, or contiguous with the wetland, for at least 3 | 3 ft (10 m) | 1 1 |
| Stable steep banks of fine material that might be used by beaver or musk | at for denning (> 30 degree | |
| slope) OR signs of recent beaver activity are present (cut shrubs or trees t | hat have not yet weathered | |
| where wood is exposed) | t in an an about and | |
| At least ¼ ac of thin-stemmed persistent plants or woody branches are pro- | esent in areas that are | |
| permanently or seasonally inunuated (structures for egg-loying by onput | ipions; of plants leas H 1 1 for list of | |
| INvasive plants cover less than 25% of the wetland area in every stratum c | plants (see n 1.1 jor list of | |
| Total for H 1 Ad | d the points in the boxes above | 5 |
| Rating of Site Potential If score is:15-18 = H7-14 = M 📈 0-6 = L | Record the rating on | the first poge |
| H 2.0. Does the landscape have the potential to support the habitat functions | of the site? | |
| 11 2.0. DOES the jungscupe have the potential to support the negative days | | |
| H 2.1. Accessible habitat (include anly habitat that directly abuts wetland unit). | 25 - 4 | |
| Calculate: % undisturbed habitat $\sqrt{2}$ + [(% moderate and low intensit | y land uses)/2] =% | |
| If total accessible habitat is: | 2/2 = 2.5 | \frown |
| > 7/3 (33.3%) of 1 km Polygon | points ≈ 5 points ≈ 2 | |
| 20-33% of 1 km Polygon | points = 1 | |
| 10-19% of 1 km Polygon | points = 1 | |
| | points to 3 | |
| H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. | ······································ | |
| Calculate: % undisturbed habitat $(-5) + \{(\% \text{ moderate and low intensited}) + ((\% \text{ moderate and low intensited}) + ((\% \text{ moderate and low intensited})) + ((\% \text{ moderate and low intensited}))$ | y land uses)/2] <u>/</u> =7 | 1 |
| Undisturbed habitat > 50% of Polygon | $\frac{6}{7} = \frac{5}{7}$ points = 5 | i l |
| Undisturbed habitat 10-50% and in 1-3 patches | points = 2 | |
| Undisturbed habitat 10-50% and > 3 patches | | |
| Undisturbed habitat < 10% of 1 km Polygon | points = 0 | |
| H 2.3. Land use intensity in 1 km Polygon: If | | 2 |
| > 50% of 1 km Polygon is high intensity land use | points \neq (- 2) | - 4 |
| ≤ 50% of 1 km Polygon is high intensity | points = U | |
| Total for H 2 Ad | d the points in the boxes above | |
| Rating of Landscape Potential If score is:4-6 = H1-3 = MX_< 1 = L | Recard the rating on th | ie first page |
| H 3.0. Is the habitat provided by the site valuable to society? | | |
| H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies | ? Choose anly the highest score | |
| that applies to the wetland being rated. | | |
| Site meets ANY of the following criteria: | points = 2 | ſ |
| \bigtriangleup It has 3 or more priority habitats within 100 m (see next page) | | ſ |

| te has 5 of more phoney habitats within 100 m (see next page) |
|---|
| It provides babitat for Threatened or Endangered species (any pla |

- It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) It is mapped as a location for an individual WDFW priority species
- --- It is a Wetland of High Conservation Value as determined by the Department of Natural Resources
- ---- It has been categorized as an important habitat site in a local or regional comprehensive plan, in a
- Shoreline Master Plan, or in a watershed plan
- Site has 1 or 2 priority habitats (listed on next page) within 100 m

Site does not meet any of the criteria above

| | Rating of value if score is. 2 = H1 = M0 = L |
|--|--|
|--|--|

Record the rating on the first page

points = 1 points = 0 Wetland name or number <u>A</u>

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** This question is independent of the land use between the wetland unit and the priority habitat.

- --- Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- 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).
- Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature forests: <u>Old-growth west of Cascade crest</u> Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. <u>Mature forests</u> Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- Oregon White Oak: Woodland 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 see web link above*).
- 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 see web link above*).
- △ 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 – see web link on previous page).
- 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 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- 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 > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number _

Α

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

| Wetland Type | Category |
|---|----------|
| Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met. | |
| SC 1.0. Estuarine wetlands | |
| Does the wetland 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 Not an estuarine wetland | |
| SC 1.1. Is the wetland 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? | Cat. I |
| Yes = Category 1 No - Go to SC 1.2 | |
| SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? | |
| — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less | Cat. I |
| than 10% cover of non-halive plant species. (If non-halive species are spurumu, see page 23) | |
| - At least % of the landward edge of the wetland has a 100 ft burler of sindb, forest, of the grazed of the mowed grassland | |
| The wetland has at least two of the following features: tidal channels, depressions with open water, or | Cat. II |
| contiguous freshwater wetlands. Yes = Category I No = Category II | |
| 50.2.0 Michaele of High Concernation Value (MHCM) | |
| SC 2.1. We thanks of high conservation value (whice) | |
| So 2.1. Has the WA bepartment of Natural Resources updated their website to include the list of Weblies of high $Ves = Go to SC 2.2$ (No \Rightarrow Go to SC 2.3 | Cat. I |
| SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? | |
| Yes = Category I No = Not a WHCV | |
| 5C 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? | |
| http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf | |
| Yes – Contact WNHP/WDNR and go to SC 2.4 (No = Not a WHCV | |
| SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation value and listed it on | |
| | |
| Sc 3.U. Bogs | |
| below. If you answer YES you will still need to rate the wetland based on its functions. | |
| SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or | |
| more of the first 32 in of the soil profile? Yes – Go to SC 3.3 (No)- Go to SC 3.2 | |
| SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep | |
| over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or | |
| pond? Yes Go to SC 3.3 (No # Is not a bog | |
| SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% | |
| 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 in deep. If the pH is less than 5.0 and the | |
| plant species in Table 4 are present, the wetland is a bog. | Cat. I |
| SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, | |
| western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the | |
| species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? | |
| Yes = Is a Category I bog No = Is not a bog | |

| SC 4.0. Forested Wetlands | |
|---|----------|
| Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA | |
| 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. | |
| - Uid-growth forests (west of Cascade crest): stands of at least two trees (b) that are at least 200 years of | |
| age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. | |
| — Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the | |
| species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). | |
| Yes = Category I (No = Not a forested wetland for this section | Cat. I |
| SC 5.0. Wetlands in Coastal Lagoons | |
| 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 ponded water that is saline or brackish (> 0.5 ppt) | Cat. I |
| Ves = Go to SC 5.1 | |
| SC 5.1. Does the wetland meet all of the following three conditions? | |
| | |
| than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). | Cat. II |
| 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 $1/_{10}$ ac (4350 ft ²) | |
| Yes = Category I No = Category II | |
| SC 6.0. Interdunal Wetlands | |
| Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? If | |
| you answer yes you will still need to rate the wetland based on its habitat functions. | |
| In practical terms that means the following geographic areas: | |
| Long Beach Peninsula: Lands West of SR 105 Graviand Westport: Lands west of SR 105 | Cat I |
| - Orean Shores-Conalis: Lands west of SR 115 and SR 109 | |
| 2 Yes – Go to SC 6.1 $\sqrt{N_0} =$ not an interdunal wetland for rating | |
| | |
| SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M | Cat. II |
| for the three aspects of function)? Yes = Category I No – Go to SC 6.2 | |
| SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? | Cat. III |
| Yes = Lategory II No – Go to SL 6.3 SC 6.2. Is the unit between 0.1 and 1 as, or is it in a mosaic of wotlands that is between 0.1 and $1 \approx 2$ | |
| SC 0.5. IS the unit perween 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Ves = Category III No = Category IV | |
| | Cat. IV |
| Category of wetland based on Special Characteristics | NI A |
| If you answered No for all types, enter "Not Applicable" on 5ummary Form | 1/1/2/ |







Path: Q:\Vancouver\2017\A17.0202\00\GIS\02_MXD\Wetland Delineation\IDD_Delineation\Fig3_WetlandA_1kmLU.mxd

Stats



Washington State Water Quality Atlas





and pH TMDL

TMDL

Palouse

Puyallup

Mid Yakima Basin Bacteria

North Ocean Beaches

Padilla Bay FC TMDL

Sammamish River

Oxygen TMDL

Soos Creek multiparameter TMDL

Spokane River

reduction project

Temperature & Dissolved

Soos Creek bacteria TMDL

Yakima watershed toxics

| See Section Str | | | | |
|-----------------------------------|-------------------|------------------------------|----------------|------------------|
| A Home | Air & Climate | Water & Shorelines | Waste & Toxics | Spills & Cleanup |
| Henderson inlet parameter TMDL | | eview Whatcom County project | | |
| Lake Whatcom W multi-parameter | Vatershed TMDL | | | |
| Little Spokane Ri | ver DO Water | quality improvement | nt projects | |

| County | Waterbody Name | Pollutant(s) | Status | TMDL Lead(s) |
|-----------------------------|------------------------------------|---|--|---|
| Adams Lincoln Whitman | Palouse | Dissolved oxygen Fecal Coliform PCBs Temperature Toxics | Under development EPA approved Has an implementation plan | Elaine Snouwaert 509-329- 3503 |
| Clark | East Fork Lewis River | Fecal Coliform Temperature | Under development | Andrew Kolosseus 360-407- 7543 |
| Grays Harbor | North Ocean Beaches | Shellfish Closure Response Fecal Coliform Bacteria source investigation study | Under development | Donovan Gray 360-407- 6407 |
| King | Sammamish River and Tributaries | Dissolved Oxygen Temperature | Under Development | J <u>oan Nolan</u> 425-649- 4425 |

Wetland name or number <u>B</u>

RATING SUMMARY – Western Washington

Name of wetland (or ID #): $\frac{|DD \#| - Wetland B}{|DAN G-UNDERSON}$ Date of site visit: $\frac{6}{|14|} \frac{1}{2018}$ Rated by DAN G-UNDERSON Trained by Ecology? XYes ____No Date of training $\frac{2008}{2014}$ HGM Class used for rating SLOPE Wetland has multiple HGM classes? Y XN

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map <u>Google Earth</u> 2018

OVERALL WETLAND CATEGORY \underline{II} (based on functions $\underline{\times}$ or special characteristics___)

1. Category of wetland based on FUNCTIONS

| | Categ | gory | l – Tot | al sc | ore = | : 23 - | 27 | | | |
|---------------------------|-----------|---------------|-----------------|---------|--------|------------------|--------|-------|--------|-------|
| | Categ | gory | II – To | tal so | ore | = 20 | - 22 | | | |
| | Categ | ory | III – To | otal s | core | = 16 | - 19 | | | |
| <u> </u> | Categ | gory | IV – To | otal s | core | = 9 - | 15 | | | |
| FUNCTION | In Wat | npro ter Q | ving Juality | H | /drol | ogic | ł | labi | tat | |
| | | | | | Circle | the ap | propri | ate r | atings | - |
| Site Potential | Н | Μ | \mathcal{O} | н | Μ | (L) | н | М | (L) | |
| Landscape Potential | H | Μ | O | н | М | Q | н | Μ | Ð | |
| Value | E | Μ | L | н | М | (\mathbf{L}) | (H) | М | Ļ | TOTAL |
| Score Based on Ratings | | 5 | | | 3 | | | 5 | | 13 |

Score for each function based on three ratings (order of ratings is not important) 9 = H,H,H 8 = H,H,M 7 = H,H,L 7 = H,M,M 6 = H,M,L 6 = M,M,M 5 = H,L,L 5 = M,M,L

4 = M,L,L 3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

| CHARACTERISTIC | CAT | EGORY |
|------------------------------------|-----|--------|
| Estuarine | Ι | II |
| Wetland of High Conservation Value | | I |
| Bog | | Ι |
| Mature Forest | | I |
| Old Growth Forest | | Ι |
| Coastal Lagoon | I | IJ |
| Interdunal | III | III IV |
| None of the above | Ν | A A |

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | D 1.3, H 1.1, H 1.4 | |
| Hydroperiods | D 1.4, H 1.2 | |
| Location of outlet (can be added to map of hydroperiods) | D 1.1, D 4.1 | |
| Boundary of area within 150 ft of the wetland (can be added to onother figure) | D 2.2, D 5.2 | |
| Map of the contributing basin | D 4.3, D 5.3 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | D 3.1, D 3.2 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | D 3.3 | |

Riverine Wetlands

| Map of: | To answer questions: Figure # |
|---|-------------------------------|
| Cowardin plant classes | H 1.1, H 1.4 |
| Hydroperiods | H 1.2 |
| Ponded depressions | R 1.1 |
| Boundary of area within 150 ft of the wetland (can be odded to onother figure) | R 2.4 |
| Plant cover of trees, shrubs, and herbaceous plants | R 1.2, R 4.2 |
| Width of unit vs. width of stream (can be added to another figure) | R 4.1 |
| Map of the contributing basin | R 2.2, R 2.3, R 5.2 |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | R 3.1 |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | R 3.2, R 3.3 |

Lake Fringe Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------------|----------|
| Cowardin plant classes | L 1.1, L 4.1, H 1.1, H 1.4 | |
| Plant cover of trees, shrubs, and herbaceous plants | L 1.2 | |
| Boundary of area within 150 ft of the wetland (can be added to onother figure) | L 2.2 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | L 3.1, L 3.2 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | L 3.3 | |

Slope Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | Н 1.1, Н 1.4 | |
| Hydroperiods | H 1.2 | 2 |
| Plant cover of dense trees, shrubs, and herbaceous plants | 5 1.3 | 2 |
| Plant cover of dense, rigid trees, shrubs, and herbaceous plants (can be added to figure above) | S 4.1 | 2 |
| Boundary of 150 ft buffer (can be added to another figure) | \$ 2.1, \$ 5.1 | 1 |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | 3 |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | 5 3.1, 5 3.2 | Щ |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | 5 3.3 | 5 |

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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 except during floods?
 - NO) go to 2

- **YES** the wetland class is **Tidal Fringe** go to 1.1
- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

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 an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.

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 *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 all of the following criteria?
 ____The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
 At least 30% of the open water area is deeper than 6.6 ft (2 m).

___At least 30% of the open water area is deeper than 0.0 it (2

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**.

NO - go to 5

YES – The wetland class is **Slope**

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 <3 ft diameter and less than 1 ft deep).

- 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 2 years.

Wetland name or number $\underline{\mathcal{S}}$

NO – go to 6 **YES** – The wetland class is **Riverine NOTE:** The Riverine unit can contain depressions that are filled with water when the river is not flooding

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

NO - go to 7

YES - The wetland class is Depressional

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

NO - go to 8

YES – The wetland class is **Depressional**

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

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 HGM 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 of depression | Depressional |
| Depressional + Lake Fringe | Depressional |
| Riverine + Lake Fringe | Riverine |
| Salt Water Tidal Fringe and any other class of freshwater wetland | Treat as ESTUARINE |

If you are still unable 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.
| SLOPE WETLANDS Water Quality Functions - Indicators that the site functions to improve water qual | ity |
|--|---------------------|
| S 1.0. Does the site have the potential to improve water quality? | |
| S 1.1. Characteristics of the average slope of the wetland: (a 1% slope has a 1 ft vertical drop in elevation for every | |
| 100 ft of horizontal distance) | a |
| Slope is 1% or less points a | シーク |
| Slope is > 1%-2% points = | 2 |
| Slope is > 2%-5% points = | 1 |
| Slope is greater than 5% points = | 0 |
| S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions): Yes = 3 No # | 0 0 |
| S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: | |
| Choose the points appropriate for the description that best fits the plants in the wetland. Dense means you | |
| have trouble seeing the soil surfoce (>75% cover), and uncut means not grazed or mowed and plants are high | ier |
| than 6 in. | |
| Dense, uncut, herbaceous plants > 90% of the wetland area points = | 6 |
| Dense, uncut, herbaceous plants > ½ of area points = | 3 |
| Dense, woody, plants > ½ of area points = | 2 |
| Dense, uncut, herbaceous plants > ¼ of area points = | 1 |
| Does not meet any of the criteria above for plants points | 0) |
| Total for S 1 Add the points in the boxes above | ē 3 |
| Rating of Site Potential If score is: $12 = H$ 6-11 = M \times 0-5 = L Record the ratin | g on the first page |
| 5.2.0 Does the landscape have the notential to support the water quality function of the site? | |

| S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No $\neq 0$ | 0 |
|---|------------|
| S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources Yes = 1 No = 0 | 0 |
| Total for S 2 Add the points in the boxes above | \bigcirc |

Rating of Landscape Potential If score is: 1-2 = M X 0 = L

Record the rating on the first page

| S 3.0. Is the water quality improvement provided by the site val | uable to society? | |
|--|---|------------|
| S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream 303(d) list? | n, river, lake, or marine water that is on the Yes = 1 No $\underbrace{0}$ | 0 |
| S 3.2. Is the wetland in a basin or sub-basin where water quality is an i on the 303(d) list. | ssue? At least ane aquatic resource in the basin is $Yes \in 1$ No = 0 | |
| S 3.3. Has the site been identified in a watershed or local plan as impo if there is a TMDL for the basin in which unit is found. | rtant for maintaining water quality? Answer YES Yes $\neq 2$ No = 0 | 2 |
| Total for S 3 | Add the points in the boxes above | 3 |
| | | . Gent a m |

Rating of Value If score is: X 2-4 = H ___1 = M ___0 = L

Record the rating on the first page

| | 12 | 10 | 0.00 | 200 | 200 | 1.80 | 3. | 6 | -266 | | 200 | 1010 | |
|----|-----|-------------|-------|----------|--------|------|---------|-----|--------|--------|----------|---------|----|
| 6 | 0.5 | 11 6 | - ¥ i | B | 1000 | 88 | á wa | 梁 政 | 287 | 12 | i i i in | 1 9 | |
| 39 | 2 | 33, 13 | 981 | 125 | 1200 C | 141 | £ 📖 | 図絵 | 22 | 1 N A. | `≦ 89 | 200 | 13 |
| ÷. | - | current and | allet | 324- | | - | Carried | 294 | Candid | | adam | illow a | 68 |

| Hydrologic Functions - Indicators that the site functions to reduce flooding and stream er | osion |
|--|------------------|
| S 4.0. Does the site have the potential to reduce flooding and stream erosion? | |
| S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. Stems of plants should be thick enough (usually > ¹/₈ in), or dense enough, to remain erect during surface flows. Dense, uncut, rigid plants cover > 90% of the area of the wetland points = 1 All other conditions | |
| Rating of Site Potential If score is: $1 = M \times 0 = L$ Record the rating of | n the first page |
| S 5.0. Does the landscape have the potential to support the hydrologic functions of the site? | |
| S E 1. Is more than 25% of the area within 150 ft unsigne of wetland in land uses or cover that generate excess | - |

| S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess | () |
|---|------------------|
| surface runoff? Yes = $1 Nq(= 0)$ | |
| | AL & Crede and a |

Rating of Landscape Potential If score is: $1 = M \times 0 = L$

Record the rating on the first page

| S 6.0. Are the hydrologic functions provided by the site valuable to society? | |
|--|---------------|
| S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or | |
| natural resources (e.g., houses or salmon redds)points = 2Surface flooding problems are in a sub-basin farther down-gradientpoints = 1No flooding problems anywhere downstreampoints € 0 | \mathcal{O} |
| 5 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No $\neq 0$ | 0 |
| Total for S 6 Add the points in the boxes above | 0 |

Rating of Value If score is: 2-4 = H 1 = M X0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

| These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that site functions to provide important habitat | |
|--|------------|
| H 1.0. Does the site have the potential to provide habitat? | |
| H 1.1. Structure of plant community: Indicatars are Cawardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold af % ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked. | |
| H 1.2. Hydroperiods | |
| Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or % ac to count (see text for descriptions of hydroperiods). | 0 |
| H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft ² . Different patches of the same species can be cambined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle If you counted: > 19 species 5 - 19 species < 5 species | \bigcirc |
| H 1.4. Interspersion of habitats | |
| Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes ar three classes and open water, the rating is always high. None = 0 points All three diagrams in this row are HIGH = 3points | \bigcirc |

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

| H 1.5. Special habitat features: | | | | | |
|--|----------------|--|--|--|--|
| Check the habitat features that are present in the wetland. The number of checks is the number of points. | | | | | |
| Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). | | | | | |
| Standing snags (dbh > 4 in) within the wetland | | | | | |
| Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) | | | | | |
| over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) | | | | | |
| Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree | | | | | |
| slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered | \cap | | | | |
| where wood is exposed) | \mathcal{O} | | | | |
| At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are | | | | | |
| permanently or seasonally inundated <i>(structures for egg-laying by amphibians)</i> | | | | | |
| Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of | | | | | |
| Strata) | 1 | | | | |
| Total for H 1 Add the points in the boxes above | | | | | |
| Rating of Site Potential If score is: $15-18 = H$ $7-14 = M$ $\triangle 0-6 = L$ Record the rating on the second term second the second term | the first page | | | | |
| H 2.0. Does the landscape have the potential to support the habitat functions of the site? | | | | | |
| H 2.1. Accessible habitat (include only habitat that directly abuts wetland unit). | | | | | |
| <i>Calculate:</i> % undisturbed habitat <u>0</u> + [(% moderate and low intensity land uses)/2] <u></u> = <u></u> % | | | | | |
| If total accessible habitat is: $6/z = 3$ | | | | | |
| > ¹ / ₃ (33.3%) of 1 km Polygon points = 3 | \sim | | | | |
| 20-33% of 1 km Polygon points = 2 | () | | | | |
| 10-19% of 1 km Polygon points = 1 | _ | | | | |
| < 10% of 1 km Polygon points \neq 0) | | | | | |
| H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. | : | | | | |
| <i>Calculate:</i> % undisturbed habitat $\frac{15}{15}$ + [(% moderate and low intensity land uses)/2] $\frac{15.5}{15}$ % | Ĺ | | | | |
| Undisturbed habitat > 50% of Polygon $11/2 = 5.5$ points = 3 | | | | | |
| Undisturbed habitat 10-50% and in 1-3 patches points = 2 | I I I I | | | | |
| Undisturbed habitat 10-50% and > 3 patches points (1) | | | | | |
| Undisturbed habitat < 10% of 1 km Polygon points = 0 | | | | | |
| H 2.3. Land use intensity in 1 km Polygon: If | ~ | | | | |
| > 50% of 1 km Polygon is high intensity land use points =((-2)) | -2 | | | | |
| ≤ 50% of 1 km Polygon is high intensity points = 0 | | | | | |
| Total for H 2 Add the points in the boxes above | -/ | | | | |
| Rating of Landscape Potential If score is:4-6 = H1-3 = M \times < 1 = L Record the rating on the second | ne first page | | | | |
| H 3.0. Is the habitat provided by the site valuable to society? | | | | | |
| H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score | | | | | |
| that opplies to the wetland being rated. | | | | | |
| Site meets ANY of the following criteria: points 2 | | | | | |
| $\overset{\checkmark}{}$ It has 3 or more priority habitats within 100 m (see next page) | | | | | |
| - It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) | | | | | |
| — It is mapped as a location for an individual WDFW priority species | · / | | | | |
| It is a Wetland of High Conservation Value as determined by the Department of Natural Resources | - | | | | |
| — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a | | | | | |
| Shoreline Master Plan, or in a watershed plan | | | | | |
| Site light of S buotify lighted on next haffe) within 100 m hours – 1 | i | | | | |

Site does not meet any of the criteria above Rating of Value If score is: <u>X</u>2 = H ___1 = M ___0 = L

Record the rating on the first poge

points = 0

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** This question is independent of the land use between the wetland unit and the priority habitat.

- Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- --- 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*).
- Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature forests: <u>Old-growth west of Cascade crest</u> Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. <u>Mature forests</u> – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- Oregon White Oak: Woodland 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 see web link above*).

X **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 see web link above).
- X 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 see web link an previous page).
- --- 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 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus: Homogenous areas of rock rubble ranging in average size 0.5 6.5 ft (0.15 2.0 m), 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 > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number $_$ B_

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

| Wetland Type | Category |
|---|----------|
| Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met. | |
| SC 1.0. Estuarine wetlands | |
| Does the wetland meet the following criteria for Estuarine wetlands? | |
| — The dominant water regime is tidal, | |
| — Vegetated, and | |
| | |
| SC 1.1. Is the wetland 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? | Cat. I |
| Yes = Category 1 (No - Go to SC 1.2 | |
| SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? | |
| The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less | Cat. I |
| than 10% cover of non-native plant species. (If non-native species are <i>Sparting</i> , see page 25) | |
| - At least % of the landward edge of the wetland has a 100 ft buffer of shrub, forest, of un-grazed of un- | |
| The wetland has at least two of the following features: tidal channels, depressions with open water. Of | Cat. II |
| contiguous freshwater wetlands. Yes = Category I No = Category II | |
| | |
| SC 2.0. Wetlands of High Conservation value (WHCV) | |
| Sc 2.1. Has the WA Department of Natural Resources updated their website to include the list of weballos of Figh | Cat. I |
| SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? | |
| Yes = Category I No = Not a WHCV | |
| SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? | |
| http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf | |
| Yes – Contact WNHP/WDNR and go to SC 2.4 (CNo)= Not a WHCV | |
| SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on | |
| their website? Yes = Category I No = Not a WHCV | |
| SC 3.0. Bogs | |
| Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key | |
| below. If you answer YES you will still need to rate the wetland based on its functions. | |
| SC 3.1. Does an area within the wetiand unit have organic soli horizons, either peaks of macks, that compose 10 in or more of the first 22 in of the soil profile? | |
| SC 3.2. Does an area within the wetland unit have organic soils either peats or mucks, that are less than 16 in deep | |
| over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or | |
| pond? Yes – Go to SC 3.3 (No)= is not a bog | |
| SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% | |
| cover of plant species listed in Table 4? Yes = is a Category I bog No – Go to SC 3.4 | |
| 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 in deep. If the pH is less than 5.0 and the | Cat I |
| plant species in Table 4 are present, the wetland is a bog. | van i |
| 5C 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, | |
| western nemious, longepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? | |
| Yes = is a Category I bog No = is not a bog | |

Wetland name or number \underline{B}

| SC 4.0. Forested Wetlands | |
|---|----------|
| Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA | |
| 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 torests (west of Cascade crest): stands of at least two tree species, forming a multi-havered canopy with accasional small openings; with at least 8 trees/ac (20 trees/ba) that are at least 200 years of | |
| age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. | |
| Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the | |
| species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). | |
| Yes = Category I No = Not a forested wetland for this section | Cat. I |
| SC 5.0. Wetlands in Coastal Lagoons | |
| 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 ponded water that is saline or brackish (> 0.5 ppt) | Cat. I |
| during most of the year in at least a portion of the lagoon (needs to be medsured need the bottom) | |
| SC 5.1. Does the wetland meet all of the following three conditions? | |
| | |
| than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). | Cat. II |
| 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 $\frac{1}{10}$ ac (4350 ft ²) | |
| Yes = Category I No = Category I | |
| SC 6.0. Interdunai Wetlands | |
| Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? If | |
| you answer yes you will still need to rate the wetland based on its habitat functions. | |
| In practical terms that means the following geographic areas: | |
| - Long Beach Peninsula: Lands West of SR 103 | Cat I |
| Grayiand-Westport: Lands west of SR 105 Grayiand-Westport: Lands west of SR 115 and SR 109 | |
| Yes – Go to SC 6.1 (No = not an interdunal wetland for rating | |
| | |
| SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M | Cat. II |
| for the three aspects of function)? Yes = Category I No – Go to SC 6.2 | |
| SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? | Cat. III |
| yes = Category II = NO - GO LO SC 0.5 | |
| SC 5.3. Is the unit between 0.1 and 1 ac, of is it in a mosaic of wetlands that is between 0.1 and 1 ac. Yes = Category III No = Category IV | |
| | Cat. IV |
| Category of wetland based on Special Characteristics | NIA |
| If you answered No for all types, enter "Not Applicable" on Summary Form | * / 1 \ |

.







Path: Q:\Vancouver\2017\A17.0202\00\GIS\02_MXD\Wetland Delineation\IDD_Delineation\Fig3_WetlandB_1kmLU.mxd

Stats



Washington State Water Quality Atlas





and pH TMDL

TMDL

Palouse

Puyallup

Mid Yakima Basin Bacteria

North Ocean Beaches

Padilla Bay FC TMDL

Sammamish River

Oxygen TMDL

Soos Creek multiparameter TMDL

Spokane River

reduction project

Temperature & Dissolved

Soos Creek bacteria TMDL

Yakima watershed toxics

| See Section Str | | | | |
|-----------------------------------|-------------------|------------------------------|----------------|------------------|
| A Home | Air & Climate | Water & Shorelines | Waste & Toxics | Spills & Cleanup |
| Henderson inlet parameter TMDL | | eview Whatcom County project | | |
| Lake Whatcom W multi-parameter | Vatershed TMDL | | | |
| Little Spokane River DO Wate | | quality improvement | nt projects | |

| County | Waterbody Name | Pollutant(s) | Status | TMDL Lead(s) |
|-----------------------------|------------------------------------|---|--|---|
| Adams Lincoln Whitman | Palouse | Dissolved oxygen Fecal Coliform PCBs Temperature Toxics | Under development EPA approved Has an implementation plan | Elaine Snouwaert 509-329- 3503 |
| Clark | East Fork Lewis River | Fecal Coliform Temperature | Under development | Andrew Kolosseus 360-407- 7543 |
| Grays Harbor | North Ocean Beaches | Shellfish Closure Response Fecal Coliform Bacteria source investigation study | Under development | Donovan Gray 360-407- 6407 |
| King | Sammamish River and Tributaries | Dissolved Oxygen Temperature | Under Development | J <u>oan Nolan</u> 425-649- 4425 |

Wetland name or number _____

RATING SUMMARY – Western Washington

Name of wetland (or ID #): 100#1 - Wetland C Date of site visit: 6/14/2018Rated by DAN GUNDERSON Trained by Ecology? Yes ____ No Date of training 2006/2014 HGM Class used for rating DEPRESSIONAL Wetland has multiple HGM classes? Y ____N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map <u>Coorde Earth 2018</u>

OVERALL WETLAND CATEGORY \underline{IV} (based on functions \underline{X} or special characteristics___)

1. Category of wetland based on FUNCTIONS

| | Categ | gory | I – Tot | al so | ore = | 23 - | 27 | | | |
|---------------------------|-----------|---------------|-------------------------|-------|--------|--------|--------|-------|------------|-------|
| | Categ | gory | II – To | tal s | core | = 20 | - 22 | | | |
| | Categ | gory | III – To | tal s | score | = 16 | - 19 | | | |
| <u> </u> | Categ | gory | IV – To | otal | score | = 9 - | 15 | | | |
| FUNCTION | In Wat | npro ter C | ving Quality | H | ydrolo | ogic | H | łabit | at | |
| | | | | | Circle | the ap | propri | ate r | atings | |
| Site Potential | Н | М | $\overline{\mathbb{Q}}$ | н | (M) | L | Н | М | () | |
| Landscape Potential | H | М | \bigcirc | Н | M | L | Н | Μ | \bigcirc | |
| Value | H | М | L | Н | М | G | (H) | М | L | TOTAL |
| Score Based on Ratings | | Ţ | 5 | | 5 | | | 5 | | 15 |

Score for each function based on three ratings (order of ratings ìs not important) 9 = H, H, H8 = H, H, M7 = H, H, L7 = H, M, M6 = H, M, L6 = M,M,M 5 = H, L, L5 = M,M,L 4 ≠ M,L,L 3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

| CHARACTERISTIC | CATEGORY |
|------------------------------------|-------------|
| Estuarine | I II |
| Wetland of High Conservation Value | Ι |
| Вод | Ι |
| Mature Forest | Ι |
| Old Growth Forest | I |
| Coastal Lagoon | I II |
| Interdunal | I II III IV |
| None of the above | NA |

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | D 1.3, H 1.1, H 1.4 | 1 |
| Hydroperiods | D 1.4, H 1.2 | 2 |
| Location of outlet (can be added to map of hydroperiods) | D 1.1, D 4.1 | 2 |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | D 2.2, D 5.2 | 1 |
| Map of the contributing basin | D 4.3, D 5.3 | 4 |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | 3 |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | D 3.1, D 3.2 | ζl |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | D 3.3 | 6 |

<u>Riverine Wetlands</u>

| Map.of: | To answer questions: | Figure # |
|--|----------------------|----------|
| Cowardin plant classes | Н 1.1, Н 1.4 | |
| Hydroperiods | H 1.2 | |
| Ponded depressions | R 1.1 | |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | R 2.4 | |
| Plant cover of trees, shrubs, and herbaceous plants | R 1.2, R 4.2 | |
| Width of unit vs. width of stream (can be added to another figure) | R 4.1 | |
| Map of the contributing basin | R 2.2, R 2.3, R 5.2 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including | H 2.1, H 2.2, H 2.3 | |
| polygons for accessible habitat and undisturbed habitat | | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | R 3.1 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | R 3.2, R 3.3 | |

Lake Fringe Wetlands

| Map of: | To answer questions: | Figure # |
|--|----------------------------|----------|
| Cowardin plant classes | L 1.1, L 4.1, H 1.1, H 1.4 | |
| Plant cover of trees, shrubs, and herbaceous plants | L 1.2 | |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | L 2.2 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including | H 2.1, H 2.2, H 2.3 | |
| polygons for accessible habitat and undisturbed habitat | · · · · | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | L 3.1, L 3.2 | |
| 5creen capture of list of TMDLs for WRIA in which unit is found (from web) | L 3.3 | |

Slope Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | H 1.1, H 1.4 | |
| Hydroperiods | H 1.2 | |
| Plant cover of dense trees, shrubs, and herbaceous plants | S 1.3 | |
| Plant cover of dense, rigid trees, shrubs, and herbaceous plants | S 4.1 | |
| (can be added to figure above) | | |
| Boundary of 150 ft buffer (can be added to another figure) | S 2.1, S 5.1 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including | H 2.1, H 2.2, H 2.3 | |
| polygons for accessible habitat and undisturbed habitat | | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | S 3.1, S 3.2 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | \$ 3.3 | |

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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 except during floods?
 - NO go to 2

YES – the wetland class is Tidal Fringe – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

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 an Estuarine wetland and is not scored. This method cannot be used to score functions for estuarine wetlands.*

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 all of the following criteria?

 The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
 At least 30% of the open water area is deeper than 6.6 ft (2 m).

 WO 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**.

(NO) go to 5

YES - The wetland class is Slope

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 <3 ft diameter and less than 1 ft deep).

- 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 2 years.

Wetland name or number _____

NO / go to 6 **YES** – The wetland class is **Riverine NOTE**: The Riverine unit can contain depressions that are filled with water when the river is not flooding

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

NO – go to 7

YES -) The wetland class is Depressional

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

NO – go to 8

YES - The wetland class is Depressional

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

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 HGM 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 of depression | Depressional |
| Depressional + Lake Fringe | Depressional |
| Riverine + Lake Fringe | Riverine |
| Salt Water Tidal Fringe and any other class of freshwater wetland | Treat as ESTUARINE |

If you are still unable 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 (

| DEPRESSIONAL AND FLATS WETLANDS | | |
|--|--------------------------|----------|
| Water Quality Functions - Indicators that the site functions to improve wa | iter quality | |
| D 1.0. Does the site have the potential to improve water quality? | | |
| D 1.1. Characteristics of surface water outflows from the wetland: | | |
| Wetland is a depression or flat depression (QUE5TION 7 on key) with no surface water leaving it (| no outlet) points 3 | |
| Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowin | g outlet. The points = 2 | 3 |
| Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing | points = 1 | |
| Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. | points = 1 | |
| D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). Ye | s=4 No∉0) | 0 |
| D 1.3. Characteristics and distribution of persistent plants (Emergent, 5crub-shrub, and/or Forested Cow | ardin classes): | |
| Wetland has persistent, ungrazed, plants > 95% of area | points = 5 | |
| Wetland has persistent, ungrazed, plants > ½ of area | points = 3 | |
| Wetland has persistent, ungrazed plants $> 1/10$ of area | points = 1 | $ \cap$ |
| Wetland has persistent, ungrazed plants <1/10 of area | points $ eq 0 eq eq$ | |
| D 1.4. Characteristics of seasonal ponding or inundation: | | |
| This is the area that is panded for at least 2 months. See description in manual. | | |
| 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 | |
| Total for D 1 Add the points in the b | oxes above | 3 |

Rating of Site Potential If score is: 12-16 = H 6-11 = M X = 0-5 = L Record the rating on the first page

| D 2.0. Does the landscape have the potential to support the water quality function of the | e site? | |
|--|------------------------------------|---|
| D 2.1. Does the wetland unit receive stormwater discharges? | Yes = 1 No = 0 | 0 |
| D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? | Yes=1 No€0 | 0 |
| D 2.3. Are there septic systems within 250 ft of the wetland? | Yes = 1 No = 0 | 0 |
| D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in question Source | ons D 2.1-D 2.3? Yes = 1 No(=0) | 0 |
| Total for D 2 Add the points | in the boxes above | 0 |

Rating of Landscape Potential If score is: 3 or 4 = H 1 or 2 = M $\chi_0 = L$ Recard the rating on the first page

| D 3.0. Is the water quality improvement provided by the site valuable to socie | γ? | <u>, </u> |
|---|---|--|
| D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, o 303(d) list? | marine water that is on the Yes = 1 No 0 |) |
| D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(|) list? Yes € 1) No = 0 | |
| D 3.3. Has the site been identified in a watershed or local plan as important for maintain <i>if there is a TMDL for the basin in which the unit is found</i> ? | ining water quality (answer YES Yes \neq 2) No = 0 2 | |
| Total for D 3 Add | the points in the boxes above 3 | |

Rating of Value If score is: $\lambda 2-4 = H$ 1 = M 0 = L Record the rating on the first page

Wetland name or number _____

| Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation D 4.0. Does the site have the potential to reduce flooding and erosion? D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression of flat depression with no surface water leaving it (no outlet) points 4 Wetland has an intermittently flowing stream or dich. OR highly constricted permanently flowing outletpoints -2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0 4 D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface or bottom of outlet points = 5 Marks of ponding are 3 to rome above the surface or bottom of outlet points = 3 The wetland is a "headwater" wetland to so the area of the unit points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) 0 D 4.3. Contribution of the wetland to the area of the unit contributing surface water to the wetland to the area of the unit points = 5 0 Add the points is less than 100 times the area of the unit points = 5 Total for D 4 Add the points in the boxes above Yes = 1 No ① D 5.1. Does the landscape have the potential to support hydrologic functions of the site? D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 |
|---|
| D 4.0. Does the site have the potential to reduce flooding and erosion? D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression of flat depression with no surface water leaving it (no outlet) points 4 Wetland has an intermittently flowing stream or dich, OR highly constricted permanently flowing outletpoints = 0 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0 D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest port. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 3 The wetland is a "headwater" wetland wetland is flat but has small depressions on the surface that trap water points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratia of the area of upstream basin contributing surface water to the wetland to the area of the unit points = 5 The area of the basin is loss than 100 times the area of the unit points = 5 Total for D 4 Rating of Site Potential if score is: 12-16 = H × 6-11 = M _ 0-5 = L Record the rating on the first page D 5.0. Does the landscape have the potential to support hydrologic functions of the site? D 5.1. Joes the wetland is not ft he wetland in land uses that generate excess runoff? Yes = 1 No €0 D 5.2. Is > 10% of the area within 150 ft of the wetland covered with intensive human land uses keisdential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No €0 D 5.2. Is > 10% of the contributing basin of the wetland covered with intensive human land uses keisdential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No €0 D |
| D 4.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression of lat depression with no surface water leaving it (no outlet) points ≤1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing outletpoints ≤ 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0 D 4.2. <u>Depth of storage during wet periods</u>; Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent weter or if dry, the deepest port. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 3 The wetland is a "headwater" wetland wetland is a flat but has small depressions on the surface or bottom of outlet points = 3 The wetland is a "headwater" wetland wetland is a flat but has small depressions on the surface that trap water Marks of ponding less than 0.5 ft (6 in) D 4.3. <u>Contributing surface water to the wetland to the area of the unit points = 0 D 4.4.1 Characteristics The area of the basin is loss than 100 times the area of the unit points = 5 Total for D 4 Acting of Site Potential If score is:</u> |
| D 4.2. Depth of storage during wet periods; Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest port. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 3 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 0 totom of outlet points = 3 The wetland is a "headwater" wetland points = 1 Marks of ponding less than 0.5 ft (6 in) D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratia of the area of upstream basin contributing surface water to the wetland to the area of the will unit itself. The area of the basin is less than 10 times the area of the unit points = 5 Total for D 4 Rating of Site Potential If score is:12-16 = H ×6-11 = M0-5 = L Record the rating on the first page D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No |
| D 4.3. <u>Contribution of the wetland to storage in the watershed</u> : 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 the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 0 Entire wetland is in the Flats class Total for D 4 Rating of Site Potential If score is:12-16 = H <u></u> |
| Total for D 4 Add the points in the boxes above 7 Rating of Site Potential If score is:12-16 = H 6-11 = M 0-5 = L Record the rating on the first page D 5.0. Does the landscape have the potential to support hydrologic functions of the site? |
| Rating of Site Potential If score is:12-16 = H \land 6-11 = M0-5 = LRecord the rating on the first pageD 5.0. Does the landscape have the potential to support hydrologic functions of the site?D 5.1. Does the wetland receive stormwater discharges?Yes = 1 No $\textcircled{0}$ OD 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?Yes = 1 No $\textcircled{0}$ OD 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?Yes = 1 No = 0Total for D 5Add the points in the boxes aboveIRating of Landscape Potential If score is:3 = H \land 1 or 2 = M0 = LRecord the rating an the first pageD 6.0. Are the hydrologic functions provided by the site valuable to society?Society? |
| D 5.0. Does the landscape have the potential to support hydrologic functions of the site? D 5.1. Does the wetland receive stormwater discharges? D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No =0 D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Total for D 5 Rating of Landscape Potential If score is:3 = H1 or 2 = M0 = L D 6.0. Are the hydrologic functions provided by the site valuable to society? |
| D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No €0 O D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No =0 O D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No =0 O Total for D 5 Add the points in the boxes above I Rating of Landscape Potential If score is:3 = H 1 to 2 = M 0 = L Record the rating an the first page D 6.0. Are the hydrologic functions provided by the site valuable to society? |
| D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No =0 O D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0 O Total for D 5 Add the points in the boxes above I Rating of Landscape Potential If score is:3 = H 1 or 2 = M O = L Record the rating an the first page D 6.0. Are the hydrologic functions provided by the site valuable to society? |
| D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes (1) No = 0 Total for D 5 Add the points in the boxes above 1 Rating of Landscape Potential If score is: 3 = H 1 or 2 = M 0 = L Record the rating an the first page 20 for the site valuable to society? |
| Total for D 5 Add the points in the boxes above Image: Comparison of Landscape Potential If score is:3 = H Image: Comparison of Landscape Potential If score is:3 = H Image: Comparison of Landscape Potential Image: Compar |
| Rating of Landscape Potential If score is:3 = H1 or 2 = M0 = L Record the rating an the first page D 6.0. Are the hydrologic functions provided by the site valuable to society? Page 2 = M0 = L Record the rating an the first page |
| D 6.0. Are the hydrologic functions provided by the site valuable to society? |
| |
| D 6.1. <u>The unit is in a landscape that has flooding problems</u> . Choose the description that best matches conditions around the wetland unit being rated. Do not add paints. <u>Chaase the highest scare if more than one condition is met</u> . The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): |
| Flooding occurs in a sub-basin that is immediately down-gradient of unit. Surface flooding problems are in a sub-basin farther down-gradient. Flooding from groundwater is an issue in the sub-basin. |
| The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why points = 0 There are no problems with flooding downstream of the wetland. |
| D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No $\neq 0$ |
| |

Rating of Value If score is: 2-4 = H 1 = M $X_0 = L$

Wetland name or number <u></u>

.

| These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that site functions to provide important habitat | |
|---|--|
| H 1.0. Does the site have the potential to provide habitat? | |
| H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked. | 0 |
| H 1.2. Hydroperiods | |
| 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 ac to count (see text for descriptions of hydroperiods). | Turning |
| H 1.3. Richness of plant species | |
| 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 and you da not have to nome the species. Do not include Eurasion milfoil, reed canarygrass, purple loosestrife, Canadian thistle If you counted: > 19 species points = 2 5 - 19 species points = 1 < 5 species | and the second |
| H 1.4, Interspersion of habitats | |
| Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. <i>If you</i> <i>have four or more plant classes or three classes and open water, the roting is always high.</i> None = 0 points All three diagrams in this row are HIGH = 3points | |

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| H 1.5. Special habitat features: | | |
|--|---------------|--|
| Check the habitat features that are present in the wetland. The number of checks is the number of points. | | |
| Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). | | |
| Standing snags (dbh > 4 in) within the wetland | | |
| Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) | | |
| Stable steen banks of fine material that might be used by beaver or muskrat for denning (> 30 degree | | |
| slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered | | |
| where wood is exposed) | 1 | |
| X At least ¼ ac of thin-stemmed persistent plants 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 every stratum of plants (see H 1.1 for list of | | |
| strata) | | |
| Total for H 1Add the points in the boxes above | 4 | |
| Rating of Site Potential If score is: 15-18 = H 7-14 = M 7-14 = M 7-14 = M Record the rating on t | he first page | |
| H 2.0. Does the landscape have the potential to support the habitat functions of the site? | | |
| H 2.1. Accessible habitat (include only habitat that directly abuts wetland unit). | | |
| <i>Calculate:</i> % undisturbed habitat $0 + [(\% moderate and low intensity land uses)/2] 5 = 5 %$ | | |
| If total accessible habitat is: $67 = 3$ | | |
| > ¹ / ₃ (33.3%) of 1 km Polygon points = 3 | _ | |
| 20-33% of 1 km Polygon points = 2 | | |
| 10-19% of 1 km Polygon points = 1 | | |
| < 10% of 1 km Polygon points $\neq 0$ | | |
| H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. | | |
| Calculote: % undisturbed habitat $\frac{16}{16}$ + [(% moderate and low intensity land uses)/2] $\frac{5.5}{5.5}$ = $\frac{71.5}{1.5}$ % | | |
| Undisturbed habitat > 50% of Polygon U/2 points = 3 | | |
| Undisturbed habitat 10-50% and in 1-3 patches points = 2 | | |
| Undisturbed habitat 10-50% and > 3 patches points $\neq 1$ | | |
| Undisturbed habitat < 10% of 1 km Polygon points = 0 | | |
| H 2.3. Land use intensity in 1 km Polygon: If | | |
| > 50% of 1 km Polygon is high intensity land use points = (- 2) | -2 | |
| ≤ 50% of 1 km Polygon is high intensity points = 0 | | |
| Total for H 2 Add the points in the boxes above | - | |
| Rating of Landscape Potential If score is: 4-6 = H1-3 = M \angle / / / / / / / / / / | e first page | |
| H 3.0. Is the habitat provided by the site valuable to society? | | |
| H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score | | |
| the state and state here and the state and t | | |

| Rating of Value If score is: $\chi 2 = H$ 1 = M 0 = L Record the rating on | the first page |
|--|----------------|
| Site does not meet any of the criteria above points = 0 | |
| Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 | |
| Shoreline Master Plan, or in a watershed plan | |
| — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a | |
| It is a Wetland of High Conservation Value as determined by the Department of Natural Resources | |
| — It is mapped as a location for an individual WDFW priority species | 4 |
| It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) | 7 |
| It has 3 or more priority habitats within 100 m (see next page) | |
| Site meets ANY of the following criteria: points = 2 | |
| that applies to the wetland being rated. | |
| IT 3.1. Does the site provide habitat for species valued in laws, regulations, or policies, choose only the highest score | |

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WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** This question is independent of the land use between the wetland unit and the priority habitat.

- Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- 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).
- Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature forests: <u>Old-growth west of Cascade crest</u> Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. <u>Mature forests</u> – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- Oregon White Oak: Woodland 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 see web link above*).
- X **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 see web link above).
- A 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 – see web link on previous page).
- 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 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus: Homogenous areas of rock rubble ranging in average size 0.5 6.5 ft (0.15 2.0 m), 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 > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

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CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

| Wetland Type | Category |
|---|-----------------|
| Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met. | |
| SC 1.0. Estuarine wetlands | |
| Does the wetland meet the following criteria for Estuarine wetlands? | |
| The dominant water regime is tidal, | |
| Vegetated, and | |
| | |
| SC 1.1. Is the wetland 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? | C-4 1 |
| Yes = Category I No - Go to SC 1.2 | Çat. I |
| SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? | |
| The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less | |
| than 10% cover of non-native plant species. (If non-native species are Spartina, see page 25) | Cat. I |
| — 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. | Cat ii |
| — The wetland has at least two of the following features: tidal channels, depressions with open water, or | Ç u ti n |
| contiguous freshwater wetlands. Yes = Category I No = Category I | |
| SC 2.0. Wetlands of High Conservation Value (WHCV) | |
| SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High | |
| Conservation Value? Yes – Go to SC 2.2 (No –) Go to SC 2.3 | Cat. I |
| 5C 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? | |
| Yes = Category I No = Not a WHCV | |
| SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? | |
| http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf | |
| Yes - Contact WNHP/WDNR and go to SC 2.4 W0/= Not a WHCV | |
| SC 2.4. Has WDNR identified the wetland within the S/ I/R as a wetland of High Conservation value and listed it of | |
| | |
| St. 3.0. Bogs | |
| below. If you answer YES you will still need to rate the wetland based on its functions. | |
| SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or | |
| more of the first 32 in of the soil profile? Yes – Go to SC 3.3 (No) Go to SC 3.2 | |
| SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep | |
| over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or | |
| pond? Yes – Go to SC 3.3 (No)= is not a bog | |
| SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% | |
| cover of plant species listed in Table 4? Yes = Is a Category I bog No – Go to SC 3.4 | |
| 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 in deep. If the pH is less than 5.0 and the | Cat. i |
| plant species in Table 4 are present, the wettahu is a DOB. SC 2.4. Is an area with neats or mucks forested (> 30% cover) with Sitka spruse, subalating fir, western red sedar | |
| western hemlock lodgepole pine, quaking aspen. Engelmann spruce, or western white pine. AND any of the | |
| species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? | |
| Yes = is a Category I bog No = is not a bog | |

Wetland name or number _____

| SC 4.0. Forested Wetlands | |
|--|-------------|
| Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA | |
| 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/ac (20 trees/ha) that are at least 200 years of | |
| age OR have a diameter at breast neight (dbfr) of 52 in (at chi) of more. | |
| | |
| species that make up the carlopy have an average diameter (up) exceeding 21 in (55 cm). | |
| Yes = Category I (No = Not a forested wetland for this section | Cat. I |
| SC 5.0. Wetlands in Coastal Lagoons | |
| 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 ponded water that is saline or brackish (> 0.5 ppt) | 6 |
| during most of the year in at least a portion of the lagoon (needs to be measured near the bottom) | Cat. I |
| Yes – Go to SC 5.1 No = Not a wetland in a coastal lagoon | |
| 5C 5.1. Does the wetland meet all of the following three conditions? | |
| The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less | Cat II |
| than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). | 000.11 |
| 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 710 ac (4350 ft) | |
| 165 - Calegory 1 100 - Calegory 1 | |
| SC 6.0. Interdunal Wetlands | |
| Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? If | I |
| you answer yes you will still need to rate the wetland based on its habitat functions. | |
| In practical terms that means the following geographic areas: | |
| Long Beach Peninsula: Lands west of SR 103 | Catl |
| - Grayland-Westport: Lands west of SR 105 | 0011 |
| Ocean Shores-Copalis: Lands west of SR 115 and SR 109 | |
| tes – Go to SC 6.1 (No – not an interdunal wetland to rating | |
| SC 6.1. is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H.H.H or H.H.M | Cat. II |
| for the three aspects of function)? Yes = Category I No – Go to SC 6.2 | |
| SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? | |
| Yes = Category II No – Go to SC 6.3 | Cat. III |
| SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? | |
| Yes = Category III No = Category IV | Cat NI |
| | Lat. IV |
| Category of wetland based on Special Characteristics | NIA |
| If you answered No for all types, enter "Not Applicable" on Summary Form | <u>M</u> IN |







Path: Q:\Vancouver\2017\A17.0202\00\GIS\02_MXD\Wetland Delineation\IDD_Delineation\Fig3_WetlandC_1kmLU.mxd

Stats



Washington State Water Quality Atlas





and pH TMDL

TMDL

Palouse

Puyallup

Mid Yakima Basin Bacteria

North Ocean Beaches

Padilla Bay FC TMDL

Sammamish River

Oxygen TMDL

Soos Creek multiparameter TMDL

Spokane River

reduction project

Temperature & Dissolved

Soos Creek bacteria TMDL

Yakima watershed toxics

| See Section Str | | | | |
|-----------------------------------|-------------------|------------------------------|----------------|------------------|
| A Home | Air & Climate | Water & Shorelines | Waste & Toxics | Spills & Cleanup |
| Henderson inlet parameter TMDL | | eview Whatcom County project | | |
| Lake Whatcom W multi-parameter | Vatershed TMDL | | | |
| Little Spokane Ri | ver DO Water | quality improvement | nt projects | |

| County | Waterbody Name | Pollutant(s) | Status | TMDL Lead(s) |
|-----------------------------|------------------------------------|---|--|---|
| Adams Lincoln Whitman | Palouse | Dissolved oxygen Fecal Coliform PCBs Temperature Toxics | Under development EPA approved Has an implementation plan | Elaine Snouwaert 509-329- 3503 |
| Clark | East Fork Lewis River | Fecal Coliform Temperature | Under development | Andrew Kolosseus 360-407- 7543 |
| Grays Harbor | North Ocean Beaches | Shellfish Closure Response Fecal Coliform Bacteria source investigation study | Under development | Donovan Gray 360-407- 6407 |
| King | Sammamish River and Tributaries | Dissolved Oxygen Temperature | Under Development | J <u>oan Nolan</u> 425-649- 4425 |

Wetland name or number \underline{D}

RATING SUMMARY – Western Washington

Name of wetland (or ID #): 1DD #1 - Wetland D Date of site visit: 6/14/2018Rated by DAN GUNDERSON Trained by Ecology? X Yes No Date of training 2008/2014 HGM Class used for rating DEPRESSIONAL Wetland has multiple HGM classes? Y XN

NOTE: Form is not complete without the figures requested (figures can be cambined). Source of base aerial photo/map <u>feogle Earsh</u> 2018

OVERALL WETLAND CATEGORY IV (based on functions or special characteristics)

1. Category of wetland based on FUNCTIONS

Category I – Total score = 23 - 27 Category II – Total score = 20 - 22

Category III -- Total score = 16 - 19

Category IV – Total score = 9 - 15

| FUNCTION | In Wat | npro ter C | ving Quality | H | ydrol | ogic | | labit | at | |
|---------------------------|-----------|---------------|-----------------|---|-----------|------------|--------|-------|--------|-------|
| | -£ | | | | Circle | the ap | propri | ate r | atings | |
| Site Potential | Н | М | | Н | М | \bigcirc | н | Μ | | |
| Landscape Potential | Н | М | <u>.</u> | н | M | L | н | Μ | Ō | |
| Value | H | М | L | Н | Μ | (L) | H | Μ | L | TOTAL |
| Score Based on Ratings | | 5 | مناتش | | 1. Martin | | | 5 | ~ | T. |

Score for each function based on three ratings (order of ratings ìs not important) 9 = H, H, H8 = H,H,M $7 = H_{.}H_{.}L_{.}$ 7 = H, M, M6 = H, M, L6 = M, M, M5 = H, L, L5 = M,M,L 4 = M,L,L 3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

| CHARACTERISTIC | CATEGORY |
|------------------------------------|-------------|
| Estuarine | I II |
| Wetland of High Conservation Value | I |
| Bog | l |
| Mature Forest | I |
| Old Growth Forest | I |
| Coastal Lagoon | I II |
| Interdunal | I II III IV |
| None of the above | NA |

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | D 1.3, H 1.1, H 1.4 | 1 |
| Hydroperiods | D 1.4, H 1.2 | 2 |
| Location of outlet (can be added to map of hydroperiods) | D 1.1, D 4.1 | 2 |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | D 2.2, D 5.2 | 1 |
| Map of the contributing basin | D 4.3, D 5.3 | Ч |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | 3 |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | D 3.1, D 3.2 | 5 |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | D 3.3 | lo |

Riverine Wetlands

| Map of: | To answer questions: | Figure # |
|---|----------------------|----------|
| Cowardin plant classes | H 1.1, H 1.4 | |
| Hydroperiods | H 1.2 | |
| Ponded depressions | R 1.1 | |
| Boundary of area within 150 ft of the wetland (can be added to another figure) | R 2.4 | |
| Plant cover of trees, shrubs, and herbaceous plants | R 1.2, R 4.2 | |
| Width of unit vs. width of stream (can be added to another figure) | R 4.1 | |
| Map of the contributing basin | R 2.2, R 2.3, R 5.2 | |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | R 3.1 | |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | R 3.2, R 3.3 | |

Lake Fringe Wetlands

| Map of: | To answer questions: Figure # |
|---|-------------------------------|
| Cowardin plant classes | L 1.1, L 4.1, H 1.1, H 1.4 |
| Plant cover of trees, shrubs, and herbaceous plants | L 1.2 |
| Boundary of area within 1S0 ft of the wetland (can be added to another figure) | L 2.2 |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3 |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | L 3.1, L 3.2 |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | L 3.3 |

Slope Wetlands

| Map of: | To answer questions: Figure # |
|---|-------------------------------|
| Cowardin plant classes | H 1.1, H 1.4 |
| Hydroperiods | H 1.2 |
| Plant cover of dense trees, shrubs, and herbaceous plants | 5 1.3 |
| Plant cover of dense, rigid trees, shrubs, and herbaceous plants | S 4.1 |
| (can be added to figure above) | |
| Boundary of 150 ft buffer (can be added to another figure) | 5 2.1, S S.1 |
| 1 km Polygon: Area that extends 1 km from entire wetland edge - including | H 2.1, H 2.2, H 2.3 |
| polygons for accessible habitat and undisturbed habitat | |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website) | S 3.1, S 3.2 |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web) | 5 3.3 |

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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 except during floods?

(NO)- go to 2

YES – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine)

YES – Freshwater Tidal Fringe 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 an **Estuarine** wetland and is not scored. This method cannot be used to score functions for estuarine wetlands.

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 all of the following criteria? ____The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (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.

 $NO \neq go to 5$

YES – The wetland class is **Slope**

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 <3 ft diameter and less than 1 ft deep).

- 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 2 years.

Wetland name or number

NO^L go to 6 **YES** – The wetland class is **Riverine NOTE**: The Riverine unit can contain depressions that are filled with water when the river is not flooding

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

NO – go to 7

YES - The wetland class is **Depressional**

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

NO - go to 8

YES – The wetland class is **Depressional**

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

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 HGM 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 | HGM class to |
|---------------------------------------|---------------|
| being rated | use in rating |
| Slope + Riverine | Riverine |
| Slope + Depressional | Depressional |
| Slope + Lake Fringe | Lake Fringe |
| Depressional + Riverine along stream | Depressional |
| within boundary of depression | · |
| Depressional + Lake Fringe | Depressional |
| Riverine + Lake Fringe | Riverine |
| Salt Water Tidal Fringe and any other | Treat as |
| class of freshwater wetland | ESTUARINE |

If you are still unable 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.

| DEPRESSIONAL AND FLATS WETLANDS | |
|--|---------------|
| D 1 0. Does the site have the potential to improve water quality? | |
| D 1.1. Characteristics of surface water outflows from the wetland: | |
| Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). | |
| Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 | 3 |
| Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1 | |
| D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). Yes = 4 No $=(0)$ | 0 |
| D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 | 0 |
| Wetland has persistent, ungrazed plants < ¹ /10 of area points (0) | |
| D 1.4. Characteristics of seasonal ponding or inundation: This is the area that is ponded for at least 2 manths. See description in manual. Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is < ¼ total area of wetland | 0 |
| Total for D 1 Add the points in the boxes above | 3 |
| Rating of Site Potential If score is: $12-16 = H$ $6-11 = M$ $X = 0-5 = L$ Recard the rating on the first p | oge |
| D 2.0. Does the landscape have the potential to support the water quality function of the site? | |
| D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No (0) | 0 |
| D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No $= 0$ | \mathcal{O} |
| D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No $\neq 0$ | 0 |
| D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? SourceYes = 1 No (0) | 0 |
| Total for D 2 Add the points in the boxes above | 0 |
| Rating of Landscape Potential If score is:3 or $4 = H$ 1 or $2 = M$ $\land 0 = L$ Record the rating on the figure 1 or $2 = M$ $\land 0 = L$ Record the ratio 1 or $2 = M$ $\land 0 = L$ Record the ratio 1 or $2 = M$ $\land 0 = L$ Record the ratio 1 or $2 = M$ $\land 0 = L$ $\land 0 = L$ $\land 0 = M$ $\land 0 = L$ $\land 0 = M$ | irst poge |
| D 3.0. Is the water quality improvement provided by the site valuable to society? | |
| D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No €0 | 0 |
| D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes (1) No = 0 | |
| D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)? Yes $\neq 2$ No = 0 | N |

Total for D 3

Rating of Value If score is: $X_{2-4} = H$ ____1 = M ___0 = L

Add the points in the boxes above Record the rating an the first page 3

Wetland name or number ____

| umber 🔔 | à | | | | | | | | | | | |
|-------------|----------|-------|-------|------|------|-------|-------|-----|-----|-----|------|--|
| | DEPR | ESSI | ON | AL A | ND |) FL | ATS | W | TL | AN | DS | 11111111111111111111111111111111111111 |
| tions - Ind | icators | that | the | site | fund | tior | is to | red | uce | flo | odiı | |
| e the poter | ntial to | reduc | e flo | odin | g an | d ero | osion | ? | | | | |

| Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation | ion |
|--|------------|
| D 4.0. Does the site have the potential to reduce flooding and erosion? | |
| D 4.1. <u>Characteristics of surface water outflows from the wetland</u> : Wetland is a depression or flat depression with no surface water leaving it (no outlet) points 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outletpoints = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0 | 4 |
| D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.Marks of ponding are 3 ft or more above the surface or bottom of outletpoints = 7Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet | 0 |
| D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstreom 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 the 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 = 3 The area of the basin is more than 100 times the area of the unit points = 5 Entire wetland is in the Flats class points = 5 | \bigcirc |
| Total for D 4 Add the points in the boxes above | le f |
| Rating of Site Potential If score is: 12-16 = H6-11 = M0-5 = L Record the rating on the | first page |
| D 5.0. Does the landscape have the potential to support hydrologic functions of the site? | |
| D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No =0 | \bigcirc |
| D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No =0 | \bigcirc |
| D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0 | Sama A |
| Total for D 5Add the points in the boxes above | errita. |
| Rating of Landscape Potential If score is: 3 = H <u>1</u> or 2 = M 0 = L Record the rating on the | first page |
| D 6.0. Are the hydrologic functions provided by the site valuable to society? | |
| D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cappot reach areas that flood. Explain why | \diamond |
| There are no problems with flooding downstream of the wetland. $points \neq 0$ | |
| | |

| D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No $= (0)$ | | |
|--|-----------------------------------|---|
| Total for D 6 | Add the points in the boxes above | 0 |

Rating of Value If score is: ____2-4 = H ____1 = M X_0 = L
Wetland name or number $_$

.

4 .

| These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that site functions to provide important habitat | |
|---|---|
| H 1.0. Does the site have the potential to provide habitat? | |
| H 1.1. Structure of plant community: Indicatars are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class ta meet the threshold of % ac or more than 10% af the unit if it is smaller than 2.5 ac. Add the number af structures checked. | 0 |
| 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 | |
| H 1.2. Hydroperiods 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 ac 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: points = 1 Saturated only 1 type present: points = 1 Seasonally flowing stream or river in, or adjacent to, the wetland 2 points Seasonally flowing stream in, or adjacent to, the wetland 2 points Seasonally flowing stream in, or adjacent to, the wetland 2 points | 0 |
| H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft². Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle If you counted: > 19 species S - 19 species S species S species | 0 |
| H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. <i>If you</i> <i>have four or more plant classes or three classes and open water, the rating is alwoys high.</i> None $\neq 0$ points Low = 1 point All three diagrams in this row are HIGH = 3points Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. <i>If you</i> have four or more plant classes or three classes and open water, the rating is alwoys high. Low = 1 point All three diagrams in this row are HIGH = 3points | Ö |

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

Wetland name or number

| H 1.5. Special habitat features: | |
|--|---------------|
| Check the habitat features that are present in the wetland. The number of checks is the number of points. | |
| Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). | |
| Standing snags (dbh > 4 in) within the wetland | |
| Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) | |
| over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) | |
| Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree | |
| slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered | |
| where wood is exposed) | \cap |
| At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are | C. |
| permanently or seasonally inundated (structures for egg-laying by amphibians) | |
| Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of | |
| strata) | |
| Total for H 1Add the points in the boxes above | 0 |
| Rating of Site Potential If score is: 15-18 = H7-14 = M 💥 0-6 = L Record the rating on t | he first page |
| H 2.0. Does the landscape have the potential to support the habitat functions of the site? | |
| H 2.1. Accessible habitat (include only habitat that directly abuts wetland unit). | |
| Calculate: % undisturbed habitat \bigcirc + [(% moderate and low intensity land uses)/2] $\stackrel{>}{>}$ = $\stackrel{?}{>}$ % | |
| If total accessible habitat is: | |
| $> \frac{1}{2}$ (33.3%) of 1 km Polygon points = 3 | |
| 20-33% of 1 km Polygon points = 2 | and a super- |
| 10-19% of 1 km Polygon points = 1 | \bigcirc |
| < 10% of 1 km Polygon points ∉0 | |
| H 2 2 Undisturbed babitat in 1 km Polygon around the wetland | |
| Calculate: % undisturbed habitat $2^{\circ} + 1(\%$ moderate and low intensity land uses $1/21^{\circ} = 25^{\circ}$ % | |
| $\frac{1}{100} = \frac{1}{100} = \frac{1}$ | |
| Undisturbed habitat $10-50\%$ and in 1-3 patches | 1 |
| Undisturbed habitat 10-50% and h 1-5 patches | I |
| Undisturbed habitat < 10% of 1 km Polygon | |
| U 2.2 Lond use intensity in 1 km Polygon If | |
| H 2.3. Land use intensity in 1 km rolygon. If | 9 |
| 50% of 1 km Polygon is high intensity land use | -6 |
| S 50% of 1 km Polygon is high intensity points = 0 | 1 |
| Total for H 2 Add the points in the boxes above | e== |
| Rating of Landscape Potential If score is:4-6 = H1-3 = M X < 1 = L Record the rating on the | e first poge |
| H 3.0. Is the habitat provided by the site valuable to society? | |
| H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score | |
| that applies to the wetland being rated. | |

Site meets ANY of the following criteria:

 $earrow ext{It}$ It has 3 or more priority habitats within 100 m (see next page)

--- It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)

- It is mapped as a location for an individual WDFW priority species

- It is a Wetland of High Conservation Value as determined by the Department of Natural Resources

---- It has been categorized as an important habitat site in a local or regional comprehensive plan, in a 5horeline Master Plan, or in a watershed plan

Site has 1 or 2 priority habitats (listed on next page) within 100 m

Site does not meet any of the criteria above

Rating of Value If score is: $\chi^2 = H$ ___1 = M ___0 = L

Record the rating on the first page

2

points 7

points = 1

points = 0

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** This question is independent of the land use between the wetland unit and the priority habitat.

- Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- --- 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*).
- Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature forests: <u>Old-growth west of Cascade crest</u> Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. <u>Mature forests</u> – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- --- Oregon White Oak: Woodland 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 see web link above*).
- **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 see web link above).
- 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 see web link on previous page).
- 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 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus: Homogenous areas of rock rubble ranging in average size 0.5 6.5 ft (0.15 2.0 m), 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 > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

| Wetland Type | Category |
|---|----------|
| Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met. | |
| SC 1.0. Estuarine wetlands | |
| Does the wetland meet the following criteria for Estuarine wetlands? | |
| — The dominant water regime is tidal, | |
| — Vegetated, and | |
| | |
| SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area | |
| Yes = Category I No - Go to SC 1.2 | Cat. I |
| SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? | |
| — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less | |
| than 10% cover of non-native plant species. (If non-native species are Spartina, see page 25) | Cat. I |
| 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. | Cat. II |
| — The wetland has at least two of the following features: tidal channels, depressions with open water, or | |
| contiguous freshwater wetlands. Yes = Category I No = Category I | |
| SC 2.0. Wetlands of High Conservation Value (WHCV) | |
| SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High | |
| Conservation Value? Yes – Go to SC 2.2 (No 2 Go to SC 2.3 | Cat. I |
| SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? | |
| Yes = Category I No = Not a WHCV | |
| SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? | |
| http://wwwl.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwellands.pdf | |
| SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on | |
| their website? Yes = Category I No = Not a WHCV | - |
| SC 3.0. Bogs | |
| Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key | |
| below. If you answer YES you will still need to rate the wetland based on its functions. | |
| SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or | |
| more of the first 32 in of the soil profile? Yes – Go to SC 3.3 (No) Go to SC 3.2 | |
| SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep | |
| over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or | |
| pond? Yes – Go to SC 3.3 No Is not a bog | |
| SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% | |
| cover of plant species listed in Table 4? Yes = is a Lategory Loog NO = Go to SC 3.4 | |
| more: If you are uncertain about the extent of mosses in the understory, you may substitute that chemon by more understory, you may substitute that chemon by | |
| niant species in Table 4 are present, the wetland is a bog. | Cat. I |
| SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar. | |
| western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the | |
| species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? | |
| Yes = Is a Category I bog No = Is not a bog | |

Wetland name or number

| SC 4.0. Forested Wetlands | | | | | |
|---|----------|--|--|--|--|
| Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate</i> | | | | | |
| the wetland based on its functions. | | | | | |
| | | | | | |
| age OB have a diameter at breast height (dbh) of 32 in (81 cm) or more. | | | | | |
| - Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the | ŀ | | | | |
| species that make up the canopy have an average diameter (dbh) exceeding 21 in (S3 cm). | | | | | |
| Yes = Category I No Not a forested wetland for this section | Cat. i | | | | |
| SC 5.0. Wetlands in Coastal Lagoons | | | | | |
| 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 ponded water that is saline or brackish (> 0.5 ppt) | Cat. I | | | | |
| during most of the year in at least a portion of the lagoon (needs to be measured neor the bottom) Yes $-$ Go to SC S 1 (No $=$ Not a wetland in a coastal lagoon | | | | | |
| SC 5.1. Does the wetland meet all of the following three conditions? | | | | | |
| - The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less | | | | | |
| than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). | Cat. II | | | | |
| — 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 /10 ac (4350 ft) Ves = Category I No = Category I | | | | | |
| ics - category i no - category i | | | | | |
| SC 6.0. Interdunal Wetlands | | | | | |
| is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? If | : | | | | |
| In practical terms that means the following geographic areas: | | | | | |
| Long Beach Peninsula: Lands west of SR 103 | | | | | |
| Grayland-Westport: Lands west of SR 105 | Cat I | | | | |
| Ocean Shores-Copalis: Lands west of SR 115 and SR 109 | | | | | |
| Yes – Go to SC 6.1 (Not not an interdunal wetland for rating | | | | | |
| SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M | Cat. II | | | | |
| for the three aspects of function)? Yes = Category I No – Go to SC 6.2 | | | | | |
| SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? | C-1 11 | | | | |
| Yes = Category II No – Go to SC 6.3 | Cat. III | | | | |
| SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? | | | | | |
| Tes - Category III 10 - Category IV | Cat. IV | | | | |
| Category of wetland based on Special Characteristics | NA | | | | |
| If you answered No for all types, enter "Not Applicable" on Summary Form | * /*1 | | | | |







Path: Q:\Vancouver\2017\A17.0202\00\GIS\02_MXD\Wetland Delineation\IDD_Delineation\Fig3_WetlandD_1kmLU.mxd

Stats



Washington State Water Quality Atlas





Palouse

Puyallup

Sammamish River

Oxygen TMDL

Soos Creek multiparameter TMDL

Spokane River

reduction project

Temperature & Dissolved

Soos Creek bacteria TMDL

Yakima watershed toxics

| A Home | Air & C | limate | Water & Shore | lines We | aste & Toxics | Spills & Cleanup |
|-----------------------------------|-------------------|--------|--------------------------|--------------|-------------------|----------------------------|
| Henderson inlet parameter TMDL | multi- | | - Review Whatcom Coun | ty project | | |
| Lake Whatcom W multi-parameter | Vatershed TMDL | - | | | | |
| Little Spokane Riv and pH TMDL | ver DO | Wate | r quality impro | vement pro | ojects | |
| Mid Yakima Basir TMDL | n Bacteria | County | Waterbody Name | Pollutant(s) | Status | TMDL Lead(s) |
| North Ocean Bea | aches | 1000 | 1.000 | - | | |
| Padilla Bay FC TMDL | | Adams | Palouse | Dissolved | Under development | <u>Elaine</u> Snouwaert |

| Palouse | Dissolved oxygen Fecal Coliform PCBs Temperature Toxics | Under development EPA approved Has an implementation plan | Elaine Snouwaert 509-329- 3503 |
|------------------------------------|---|---|---|
| East Fork Lewis River | Fecal Coliform Temperature | Under development | Andrew Kolosseus 360-407- 7543 |
| North Ocean Beaches | Shellfish Closure Response Fecal Coliform Bacteria source investigation study | Under development | Donovan Gray 360-407- 6407 |
| Sammamish River and Tributaries | Dissolved Oxygen Temperature | Under Development | Joan Nolan 425-649- 4425 |
| | Palouse East Fork Lewis River North Ocean Beaches North Ocean Beaches Sammamish River and Tributaries | PalouseDissolved oxygen Fecal Coliform PCBs Temperature ToxicsEast Fork Lewis RiverFecal Coliform TemperatureNorth Ocean BeachesShellfish Closure Response Fecal Coliform Bacteria source investigation studySammamish River and TributariesDissolved Oxygen Temperature | PalouseDissolved oxygen Fecal Coliform PCBs Temperature ToxicsUnder development EPA approved Has an implementation planEast Fork Lewis RiverFecal Coliform TemperatureUnder development molement TemperatureNorth Ocean BeachesShellfish Closure Response Fecal Coliform Bacteria source investigation studyUnder developmentSammamish River and TributariesDissolved Oxygen TemperatureUnder development |