Attachment 1.a

STORMWATER MANAGEMENT REPORT

South Parcel Project

Prepared for: CalPortland

Project No. 040001-016-02 • February 23, 2021

Aspect CONSULTING

earth + water

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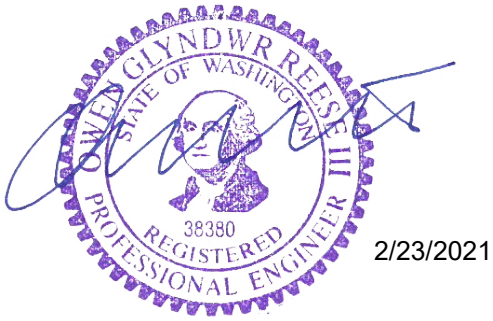

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Acronyms

Aspect	Aspect Consulting, LLC
BMP	best management practice
cf	cubic feet
cfs	cubic feet per second
DMC	City of DuPont Municipal Code
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
ft/day	feet per day
H:V	horizontal to vertical
NCRS	Natural Resources Conservation Service
NGVD 29	National Geodetic Vertical Datum of 1929
NPDES	National Pollution Discharge Elimination System
O&M	operation and maintenance
PGHS	pollution-generating hard surfaces
PGPS	pollution-generating pervious surfaces
SCS	Soil Conservation Service
sf	square feet
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	stormwater pollution prevention plan
WWHM2012	Western Washington Hydrology Model 2012

1 Project Overview

The Pioneer Aggregates South Parcel Project (hereinafter referred to as the "project") is an expansion of the existing mine operated by Glacier Northwest, Inc., doing business as CalPortland, in DuPont, Washington. The project includes horizontal expansion of mining into approximately 188 acres previously undisturbed by mining, and vertical expansion of approximately 125 acres where re-mining will deepen a portion of the existing mine. The project would extend mining at the current rate for approximately 14 additional years. This document describes the proposed stormwater management system for the project.

CalPortland is currently permitted to extract sand and gravel from a 497-acre area that includes the original mine permitted in 1997 (355 acres) and the North Parcel Expansion (142 acres), permitted in 2014. Activities on the existing site include extraction of sand and gravel, aggregate processing, concrete manufacture, and loading for transportation by barge and truck. Mining began in 1997, and the current mine has an estimated remaining life of 6 to 10 years. Mining is currently limited to 10 feet above groundwater.

The project would expand the mine area by 175 acres and allow deeper mining within portions of the existing mine. No changes are proposed to the processing area. The mine expansion would also include:

- Creation of a mitigation berm along a portion of the southern boundary to reduce noise and visual impacts.
- Creation of a wetland in the existing mine to mitigate for impacts to the Kettle Wetland.

Groundwater is present at shallow depths in the expansion area and the portion of the existing mine underlain by the Olympia beds (a lower permeability geologic unit below the glacial sand and gravels being mined). Mining in these areas requires constructing a temporary dewatering system consisting of a series of wells to draw down groundwater and allow mining to advance along the eastern perimeter of the expansion area. After removing the overlying sand and gravel, a drainage swale would be constructed in the underlying low permeability soils to intercept groundwater seepage and discharge it to a new mitigation wetland to be constructed on the bottom of the existing mine. Overflow from the mitigation wetland would flow to a new infiltration facility complete in the Steilacoom gravels on the bottom of the existing mine. Infiltrated water will join the sea level aquifer and ultimately flow into Puget Sound.

This report describes the proposed stormwater management system at completion of mining. These facilities would be constructed as mining advances and would also be used as the primary components of temporary stormwater management.

2 Summary of Minimum Requirements

The minimum requirements for stormwater management for new development and redevelopment are established in Chapters 22.01.200 and 22.01.090 of the City of DuPont Municipal Code (DMC), which collectively adopt the minimum requirements of the 2012 Washington State Department of Ecology's (Ecology) Stormwater Management Manual for Western Washington, as amended in 2014 (2014 SWMMWW; Ecology, 2014a) and as further amended by Appendix 1 of the National Pollution Discharge Elimination System (NPDES) Phase II general permit (Ecology, 2014b), which specifically addresses minimum requirements. This section describes how the proposed project complies with the nine minimum requirements identified in Appendix 1 of the Phase II NPDES permit.

As the project would disturb more than 7,000 square feet and would convert greater than 2.5 acres of native vegetation, all nine minimum requirements apply.

2.1 Minimum Requirement #1 – Preparation of Stormwater Site Plan

CalPortland will prepare a Stormwater Site Plan in accordance with Section 4.1 of Appendix 1 of the Phase II NPDES permit.

2.2 Minimum Requirement #2 – Construction Stormwater Pollution Prevention Plan

A Construction Stormwater Pollution Prevention Plan has been developed and is included as Appendix A. Much of the site will drain internally. Erosion and sediment control for the internally draining areas will generally be governed by the Sand and Gravel NPDES General Permit and the Reclamation Plan.

2.3 Minimum Requirement #3 – Source Control of Pollution

Source control best management practices (BMPs) will be implemented to prevent contamination of surface or ground waters.

2.4 Minimum Requirement #4 – Preservation of Natural Drainage Systems and Outfalls

The natural drainage pattern would be preserved with site development. Precipitation falling on the project site would be collected and infiltrated. From there it would join the sea-level aquifer and flow through subsurface to Puget Sound, as it does currently. There are no outfalls or other discharges of stormwater to surface water.

2.5 Minimum Requirement #5 – On-site Stormwater Management

All stormwater falling within the closed depression of the mine will be infiltrated, preserving the natural drainage pattern and retaining runoff on-site. The specific on-site stormwater management BMPs identified in List #2 of Section 4.5 of Appendix 1 of the Phase II NPDES permit are generally not applicable to the project as no hard surfaces will be created. Soil quality and depth will be managed in accordance with a Washington State Department of Natural Resources (DNR)-approved Reclamation Plan.

2.6 Minimum Requirement #6 – Runoff Treatment

Runoff treatment is required for sites that exceed minimum thresholds for pollution-generating pervious or hard surface areas as stated in Section 4.6 of Appendix 1 of the Phase II NPDES permit.

The proposed project exceeds the thresholds requiring treatment for pollution-generating surfaces. The type of treatment required is Basic Treatment as the project discharges to ground and the groundwater flows to a marine water. The site does not require Oil Control as the heavy vehicle and traffic loading does not meet the threshold for a "high-use" site.

Runoff treatment BMPs (two-celled wet ponds) are included upstream of proposed infiltration facilities. Treatment facility types were selected based on guidance in the 2014 SWMMWW. The facilities were sized to treat 91 percent of site runoff using the Western Washington Hydrology Model 2012 (WWHM2012).

2.7 Minimum Requirement #7 – Flow Control

Section 4.7 of Appendix 1 of the Phase II NPDES permit requires all projects that do not discharge to a flow control-exempt surface water to provide flow control to reduce the impacts of stormwater runoff. The proposed project meets this requirement by draining internally to infiltration ponds. Thus, the proposed surface flow leaving the site would be 0 cubic feet per second (cfs) for all storms; with sufficient infiltration capacity to infiltrate 100 percent of runoff simulated with WWHM2012.

2.8 Minimum Requirement #8 – Wetlands Protection

Additional water quality and flow control protections are required for stormwater discharges to wetlands. No stormwater will be discharged to any natural wetlands. Once reclaimed, stormwater from the eastern slope of the proposed mine expansion will be collected along with groundwater inflows and drain to a mitigation wetland to be constructed on the floor of the existing mine. There are no pollution generating hard surfaces (PGHS) or pervious surfaces (PGPS) within the drainage area tributary to the wetland.

2.9 Minimum Requirement #9 – Operation and Maintenance

An operation and maintenance (O&M) manual, consistent with Volume V of the 2014 SWMMWW will be provided for the proposed stormwater facilities and BMPs.

3 Existing Site Conditions

This section describes the existing site conditions within the active mine site and proposed project area. The existing site features and adjacent streams and wetlands are shown on Figure 1.

3.1 Site Geology

The geologic unit being mined is the Quaternary Vashon recessional outwash, predominantly comprised of sand and gravel. The first detailed study of the outwash sequence in the mine was conducted by CalPortland in 1988 and 1989 to evaluate the resource (Lonestar Northwest, 1989). At that time, borings were drilled through the sand and gravel and into the underlying silts on approximately 500-foot centers. Numerous subsequent studies were conducted for the specific area being proposed for mining in these plans, beginning largely in 1999 (CH2M Hill, 2000 and 2003; Aspect, 2004 and 2005a).

The sand and gravel outwash includes two generalized units in the area of the mine: the Steilacoom gravel, and an older Vashon outwash unit. The Steilacoom gravel is a highly permeable flood deposit that occurs at ground surface throughout the Sequalitchew Creek basin. Steilacoom gravel is the deposit that is currently being mined by CalPortland. It is estimated to be roughly 40 to 50 feet thick in the eastern expansion area.

Below the Steilacoom gravel is an older outwash deposit indicated by greater density, more silty layers, and lower hydraulic conductivity. This lower section of sand and gravel occurs in the eastern expansion area (Figure 2). It is approximately 30 to 40 feet thick.

Underlying the sand and gravel outwash are the Olympia Beds—a glacially overridden sequence of nonglacial, low-permeability silts and sands. This unit has been called the Kitsap Formation in geologic reports older than 1999 (Troost, 1999). The Olympia Beds occur at an elevation ranging from approximately 90 to 140 feet[1] in the planned mining area. This unit is estimated to be at least 40 feet thick in the project area and to occur to an elevation of 50 feet or lower (URS, Inc. and Pioneer Technologies Corporation, 2003).

Figure 2 presents a hydrogeologic cross section through the existing mine and the proposed expansion area. Depositional processes of the Steilacoom gravel eroded away the western end of the Olympia Beds and older outwash creating a discontinuity between the existing mine and the expansion area. In the eastern expansion area, the Olympia Beds hold groundwater elevations high by its relatively low permeability compared to the Steilacoom gravel to the west. The absence of Olympia Beds to the west creates a groundwater fall into the existing mine area. In this area, the

[1] All elevations presented in this report reference the National Geodetic Vertical Datum of 1929 (NGVD 29).

groundwater levels drop by over 100 feet in less than 500 feet (gradient between 0.1 and 0.2 feet/feet).

Appendix B provides more detailed descriptions of the expansion area geology and groundwater conditions.

3.1.1 Surficial Soils

According to the Natural Resource Conservation Service (NRCS) 2004 soil study for Pierce County, two surficial soil types are present in the planned mine area: Alderwood sandy gravelly loam and Spanaway sandy gravelly loam (NRCS, 2004). Both are typical of outwash gravels. The extent of these soils is shown on Figure 1. Both soils allow rapid infiltration of stormwater and their easy drainage encourages the establishment of plant communities that tolerate dry conditions.

3.2 Groundwater Conditions

Groundwater occurs at an average depth of approximately 10 to 15 feet below ground surface within the Steilacoom gravel. Groundwater levels fluctuate annually with precipitation and precipitation readily infiltrates the area soils. In the expansion area, groundwater levels are typically 7 feet higher in the winter/spring months than in summer/fall, ranging from approximately 197 to 190 feet elevation.

The aquifer is differentiated into an upper zone in the Steilacoom gravel, and a lower zone in the older outwash. The upper aquifer zone is more permeable with an estimated average hydraulic conductivity of 850 feet per day (ft/day). The lower zone is estimated to have an average hydraulic conductivity of 31 ft/day.

Four pumping tests were conducted in the aquifers beneath the site, with monitoring in both the upper and lower zones. Wells TW-1, TW-2, TW-3, and TW-4 (see Figure 1) were located and tested around the eastern boundary of the proposed expansion area. The 1- to 3-day tests provide good information on expected groundwater conditions during mining. These data, together with groundwater flow modeling and area-wide hydrology monitoring (Aspect, 2004, 2005b, 2007, and 2017b) have been used evaluate the groundwater system, and groundwater control during mining. The South Parcel Monitoring Plan (Appendix B) provides additional information on the predicted groundwater conditions during and following mining.

3.2.1 Sensitive Areas

Sensitive areas are present within the project site and would be impacted by the proposal. The following sections describe the wetlands, stream, and steep-slope sensitive areas present on-site and summarize any project activities within them.

3.2.2 Wetlands

One wetland, known as the Kettle wetland, is present within the proposed project area. It was delineated by Anchor QEA and is more thoroughly described and evaluated in their Kettle Wetland Delineation Report (Anchor QEA, 2020a).

The Kettle wetland is 1.78 acres of Category III wetland located near the eastern boundary of the existing lease area (Figure 1). The Kettle wetland would be dewatered shortly after the dewatering system is brought on line and subsequently removed by

mining. The dewatering and subsequent removal would be mitigated via the construction of a mitigation wetland within the existing mine.

3.2.3 Stream

Sequalitchew Creek forms the southern boundary of the project area. In accordance with DMC 25.105.070 (4)(a), a 100-foot buffer measured from the stream bank is maintained along the stream corridor throughout the project area.

3.2.4 Steep Slopes

Steep slopes (greater than 40 percent) are present along the Sequalitchew Creek ravine and western slope facing Puget Sound. The boundary of steep slope areas was defined using ArcGIS and light detection and ranging (LiDAR) topographic data (which provides better resolution than aerial mapping in areas of dense vegetation).

In accordance with DMC 25.105.070(2), the project Geotechnical Report (Aspect, 2020) recommends maintaining at least a 50-foot buffer from the top of steep slopes. Consistent with the 2012 Settlement Agreement, the project includes a 100-foot buffer along the top of the slope along the Sequalitchew Creek ravine. The 100-foot buffer provides ample protection for steep slopes.

3.3 Site Hydrology

The existing site hydrology is dominated by evapotranspiration and infiltration. Surface soils are coarse, so precipitation falling on the site infiltrates and either is ultimately transpired by vegetation or flows in the subsurface to Puget Sound or to a lesser extent to Sequalitchew Creek (e.g., through the seeps in the ravine, such as the Seep wetland located near the proposed confluence).

The expansion area is generally flat and vegetated, with some cleared areas and gravel roads. Conifer forest, dominated by Douglas fir, covers 90 percent of the expansion area. A smaller clearing, approximately 13 acres in size in the northern portion of the expansion area, was once considered a prairie-type habitat, but is now dominated by Scot's broom. Surficial soils, shown on Figure 1, are classified by the NRCS Soil Survey (2004) as Spanaway gravelly sandy loam, which are characterized as "deep somewhat excessively drained soils formed in glacial outwash."

The Kettle wetland is the only surface water body within the existing mine or expansion area. The Kettle wetland is hydrologically connected to the Vashon aquifer. The Kettle wetland receives water primarily from groundwater inflows, but also from direct precipitation and any runoff generated within the kettle that surrounds it. The Kettle wetland does not have a surface discharge.

The active mine forms a closed depression so all stormwater generated within the mine either infiltrates or evaporates. Exposed soils within the existing mine consist of bare sand and gravel side slopes, where active mining is occurring, and compacted roads and equipment operating areas. Within the reclaimed portions of the mine the side slopes have been covered with topsoil and revegetated, and fine soil resulting from gravel washing (i.e., belt press fines) has been placed on the mine bottom. There have been no

water quality or flooding problems associated with stormwater management within the active mine. There are no surface water discharges from the mine.

Several industrial warehouses, including Industrial Place and the Amazon Fulfillment Center, are located east of the project. These warehouses manage stormwater through infiltration, preceded by water quality treatment. There is no off-site run-on to the proposed project site.

Existing site stormwater conditions were not analyzed with a hydrologic model because there is no runoff currently occurring. As stormwater management for the mine will largely use infiltration, hydrologic model results for the existing condition are not important for correctly designing the water quality treatment and infiltration facilities.

4 Developed Site Conditions

The project would allow for the extraction of approximately 25 million cubic yards of sand and gravel from the expansion area and newly dewatered areas of the existing mine. Postmining conditions are shown on Figure 3. The project includes multiple two-cell stormwater treatment ponds and infiltration basins. The project also includes the following additional elements:

- A constructed wetland to mitigate impacts to the Kettle wetland. Groundwater emanating from the toe of the eastern mine slope of the South Parcel will be collected and conveyed to the wetland to be constructed within the existing mine.
- A berm along the southern boundary to mitigate noise and visual impacts.
- Grading for two future roads descending into the mine from the southwest corner. The road beds would be graded, but would not be paved as a component of this project.

4.1 Dewatering Plan

Dewatering will be required for control of groundwater during mining as outlined in the South Parcel Monitoring Plan (Monitoring Plan; Aspect, 2017a).

Mining of the South Parcel will proceed slowly from the north to the south over a period of 5 to 8 years, extracting gravel to create a broad trough along the eastern property boundary. Wells will be installed and pumped in advance of mining to intercept groundwater and dry out the gravels for mining. The purpose of mining a trough is to minimize the amount of time that active dewatering by pumping wells is required. Once mining of each section of trough is completed, the adjacent wells can be turned off, allowing groundwater to passively seep from the stable mine slope and flow by gravity to an infiltration facility on floor of the existing mine. After mining the trough along the perimeter, gravel will be extracted from the interior area.

The dewatering plan consists of four steps:

Step 1 – Initial Pumping Test. The initial step is a 60-day pumping test that is completely reversible (i.e., no gravel will be extracted during the test). The results of that test will be analyzed and evaluated, and plans adjusted as necessary prior to commencing the next phase.

Step 2 – Preparation for Mining/Dewatering Test. The second step involves installing and pumping additional dewatering wells to lower water levels in the first mine segment in preparation for mining. This step would last about 6 months and functions as a greatly expanded pumping test. As with the first step, it is also completely reversible.

Step 3 – Active Dewatering during Mining. This step involves mining the trough described above. Additional dewatering wells will be installed and pumped as mining

progresses. Mining would begin at the location farthest from the Edmond Marsh and Sequalitchew Creek and proceed slowly south. Completing the trough would require 5 to 8 years depending on market conditions and the success in meeting predicted groundwater levels. The potential impact on groundwater levels builds slowly over time as wells are added and mining progresses south. This allows ample opportunity to monitor and adapt to the conditions observed before mining proceeds into each dewatered segment.

Step 4 – Cessation of Active Dewatering. The final step begins when mining of the trough is complete and the last dewatering well is turned off. Groundwater, no longer intercepted by wells, would form seeps at the toe of the eastern mine slope. It would flow by gravity through newly created wetlands and a vegetated swale to an infiltration pond located at the bottom of the existing mine. Groundwater discharge from the toe of the slope would continue in perpetuity. Once this step has begun, further mining activities in the interior of the South Parcel would not affect groundwater.

4.2 Mine Phasing

Mining activity has been divided into four segments, each consisting of two to four sequence areas. Sequence areas generally represent 1 to 2 years of mining, but the actual rate of mining will vary based on market conditions unforeseeable at this time. The mining sequence is shown on Sheet C3 of the Conditional Use Permit plan set.

Segment 1. Mining would begin from the bottom of the existing conveyor in the northeast corner of the existing permit area. Mining in Segment 1 involves excavating a deep, relatively narrow trough going south along the eastern property boundary. The trough would have a bottom width of about 200 feet, allowing room for a conveyor with access roads on each side, and toe ditches to convey stormwater and any intercepted groundwater.

The trough would begin in the existing mine area and would proceed to advance to the southeast, parallel to the conveyor, until reaching the eastern boundary of the expansion area. Mining would then turn to the south, advancing the trough along lease boundary for approximately 2,500 feet. From there, the trough would turn to the southwest and would be advanced about 2,000 feet and widened out

Segment 1 would be graded to drain to the north to a new water quality treatment pond and infiltration pond (Pond C) located in the existing mine.

Segment 2. Mining in Segment 2 would proceed to the northwest, ultimately connecting to the existing mine excavation. As the last sequence of Segment 2, mining would return to excavate the benches in the southeast corner of the expansion area.

Segments 3 and 4. Segments 3 and 4 involve extracting material from the center of the expansion area and existing mine. Mining would start at the southern portion of the trench and proceed west toward the existing mine. On reaching the existing mine, mining would start again from the trench in the next Segment to the north. The conveyor would be retracted as mining proceeds to the north.

4.3 Developed Site Hydrology

Site hydrology for developed conditions was evaluated using guidance provided in the 2014 SWMMWW. The WWHM2012 was used for sizing of the infiltration and water quality facilities per Ecology standards. Model input and out for WWHM2012 is included in Appendix C.

4.3.1 Basins

The site was divided into five drainage basins, labeled C, D, E1, E2, and E3[2]. These drainage basins were based on the proposed topography (Figure 4). A brief description of drainage patterns of each basin follows.

Basins C and D drain internally to infiltration ponds located in the existing mine and include about 390 acres of the existing mine and expansion area. When mining is completed, each basin will include mine side slopes, large areas of rolling terrain where sand and gravel will be excavated exposing the lower-permeability Olympia Beds, and a relatively flat area at elevation 25 to 50 feet in the bottom of the existing mine.

Basins E1, E2 and E3 consists of 92.6 acres of the mine side slopes and mitigation wetland which drain to the ditches designed to capture and convey groundwater emanating from the toe of the mined slope once active dewatering has ceased. Basin E1 consists of the slopes on the southern and southwestern corner of the mine as well as the mitigation wetland itself. Basin E1 drains to the mitigation wetland, then eventually infiltration pond E. . Basin E2 includes the western slopes that will drain to the ditch that conveys outflow from the wetland to the infiltration pond; it also includes infiltration pond E. Basin E3 consists of the eastern slopes that drain to the groundwater capture trench running along the toe of those slopes.

4.3.2 Land Types

Each basin was subdivided into smaller areas based on soil types, vegetative cover, and slope (Figure 4). The total areas calculated for each resulting land classification are presented in Table 1.

Table 1. Land Types by Basin in Acres

	Till Lawn			Outwash Lawn				Imperv.	
Basin	Flat	Mod.	Steep	Flat	Mod.	Steep	Wetland	Steep	Total
C	57.5	49.3	20.7	19.2	0.0	14.4	0.0	1.0	162.1
D	11.9	144.1	26.3	4.0	41.5	0.0	0.0	0.0	227.8
E1	2.2	0.0	0.0	0.0	0.0	34.1	4.3	0.0	40.6
E2	10.5	0.0	0.0	3.5	0.0	20.1	0.0	0.0	34.2
E3	0.0	0.0	0.0	0.0	0.0	17.9	0.0	0.0	17.9
Total	82.1	193.5	47.0	26.6	41.5	86.5	4.3	1.0	482.5

[2] Basins A and B are part of the North Parcel Mine Expansion (Aspect, 2012).

After the final phase of mining is complete, the developed site will be primarily composed of two types of pervious soils:

- Advance outwash and/or Steilacoom gravel deposits, which were modeled as outwash (Soil Conservation Service [SCS] soil type A/B), and
- Olympia Beds, which will be still covered by about 10 feet of gravel left in place after mining, but were conservatively modeled as till (SCS soil type C).

WWHM2012 uses three slope classifications: flat (0 to 5 percent slope), moderate (5 to 15 percent slope) and steep (greater than 15 percent slope). Vegetation categories are lawn, pasture, or forest, of which lawn generates the most runoff and is typically used to represent developed landscapes even if actual plantings will eventually more closely resemble a pasture or forest. As such, lawn was used as the vegetation for all land uses in the model.

The WWHM2012 categories were applied to different areas of the mine as follows:

- Till Lawn – Used for the Olympia Beds (even though overlain by 10 feet of gravel), areas of the existing mine where belt press fines have been placed (assumed to be 75 percent of the mine floor west of the edge of the Olympia Beds), and the mitigation berm.
- Outwash Lawn – Surfaces comprised of advance outwash and/or Steilacoom gravel, including mine side slopes, and the terraces in the southwest corner of the South Parcel. Twenty-five percent of the mine floor west of the edge of the Olympia Beds was assumed to be outwash lawn.
- Impervious – The surface of the compacted gravel access road in Basin C.

4.3.3 Incorporating Groundwater Inflow

Groundwater discharges were added to the WWHM2012 model for Basin E to ensure the infiltration pond has adequate capacity to infiltrate captured groundwater in the long-term.

A three-dimensional groundwater model was used to predict groundwater discharge at the toe of the mined slope after the cessation of active dewatering (i.e., in Step 4). The model results are documented in the Groundwater Model Update (Aspect, 2017b).

Groundwater discharge at the toe of the mine slope will vary from year to year and month to month. The maximum, average, and minimum groundwater discharges predicted by the model over the 12-year period simulated are shown on Figure 5. The maximum predicted groundwater discharge was 13.7 cfs, occurring in November, and the minimum was 4 cfs.

For design of infiltration pond E, groundwater inflow was conservatively assumed to be the maximum predicted by the model for each month (i.e., the blue line shown on Figure 5). A time series of the maximum monthly values was created and added as an inflow to the infiltration pond in WWHM2012. The maximum monthly values were used for all years in WWHM2012, regardless of the precipitation occurring in that year.

4.3.4 Peak Flows

Model-predicted peak flows for each basin are shown in Table 2. These flows represent the inflow to the infiltration ponds. The 15-minute time-step peak flows for the 100-year event ranged from 14.1 cfs for Basin E to 68.9 cfs for Basin C (Table 2).

Table 2. 15-Minute Peak Flows in cfs

Basin	Return Interval		
	2-year	25-year	100-year
C	7.2	31.8	55.9
D	9.5	42.8	75.7
E	14.2	16.3	17.1

5 Proposed Drainage System

This section describes the permanent drainage system that would be constructed as mining advances and would continue to operate after completion of mining and dewatering. The permanent system consists of water quality treatment facilities, infiltration ponds, and a network of open ditches to convey stormwater.

5.1 Water Quality Facilities

There are two water quality treatment facilities proposed for the project. The infiltration ponds in Basins C and D are preceded by two-cell wet ponds for solids settlement.

The volume of the water quality design storm for each basin was calculated using WWHM2012 (Table 3). Each water quality wet pond was designed to hold the BMP water quality volume determined by the model.

Table 3. Water Quality Design Volumes

Basin	Volume of Water Quality Storm in cf	Type of Settling Pond	Size Factor	Volume Required in cf
C	264,845	Basic Wet Pond	1	264,845
D	372,438	Basic Wet Pond	1	372,438

Notes: cf = cubic feet

The resulting wet-pond designs are summarized in Table 4. The ponds range in depth from 6 to 7 feet deep and each have 3:1 horizontal to vertical (H:V) side slopes. Two-celled ponds were designed to provide 30 percent of required storage in the first cell. Pond geometry was shaped to provide a flow path length to width ratio at least 3:1 at mid-depth. Each pond is equipped with 1 foot of freeboard and the upstream cell of each two-cell facility is designed to hold 1 foot of silt. The first cell of each wet pond would be lined with a compacted till layer a minimum 18 inches thick and compacted to 95 percent to retain water at all times, improving wet-pond function. The second cell would be unlined to promote infiltration.

Table 4. Wet Pond Dimensions

Pond	Cell	Depth in feet	Volume Provided in cf	Volume Required in cf
C	1	6	79,704	79,453
	2	7	187,614	185,391
D	1	6	111,816	111,731
	2	7	263,739	260,707

Notes: cf = cubic feet

5.2 Constructed Mitigation Wetland

As described in Section 3.2.1, above, the 1.78-acre Kettle wetland will be dewatered and ultimately removed by the proposed mining activities. To mitigate these wetland impacts, a constructed mitigation wetland is included in the proposed drainage system.

Groundwater discharges from the southern and southeastern mine slope and stormwater runoff from Basin E1 will provide the water source for the mitigation wetland. The groundwater source will provide a continuous inflow to the wetland throughout the year. Upon the completion of mining and revegetation, Basin E1 would not contain any PGPS and thus does not require water quality treatment.

5.3 Infiltration Studies

The three proposed infiltration ponds (C, D and E) will receive runoff from approximately 162, 228, and 93 acres, respectively. The ponds would be located on native outwash soils on the floor of the existing mine, as shown on Figure 3. These locations were evaluated and found suitable for the proposed facilities.

The infiltration ponds were designed to infiltrate all stormwater and groundwater generated within the mine. Key dimensions of the infiltration ponds are summarized in Table 5. The ponds were assumed to be rectangular with 3H:1V slopes, and a total depth of 6 feet (5 feet of active depth with 1 foot of freeboard).

The infiltration properties of soils in the pond areas were estimated using the methodology provided in Volume III, Chapter 3.3.6, Section 3 of the 2014 SWMMWW. This methodology relates infiltration rates to the grain-size characteristics of the soil. Grain-size information was obtained from CalPortland's gridded borings at the location and depth closest to the proposed pond locations (Lonestar Northwest, 1989). Data from the two borings closest to each infiltration pond, in the 168- to 188-foot depth range (which corresponds to the soils below the bottom of the infiltration ponds) were used to estimate infiltration rates. Conservative correction factors of CF_v = 0.33, CF_t = 0.40, and CF_m = 0.9 were applied.

The long-term infiltration rates corresponding with these grain-size results are 8.2, 8.1, and 8.2 inches per hour for Ponds C, D, and E, respectively. Calculations for the estimation of infiltration rates are presented in Appendix D.

The 'size infiltration pond' function in WWHM2012 was then used to determine the appropriate size of the infiltration pond, with preliminary dimensions being based on the amount of storage needed to fit the design volume simultaneously, and reducing it to account for infiltration, evaporation, and design storm hydrograph (Table 5). Infiltration Pond E also received groundwater inputs, as described above.

Table 5. Infiltration Pond Dimensions

Pond	Depth in feet (without freeboard)	Bottom Area in sf	Top Area at Max Water Level in sf	Side Slopes
C	5	50,762	66,748	3H:1V
D	5	37,655	68,755	3H:1V
E	6	57,807	82,120	3H:1V

Notes: sf = square feet

5.4 Conveyance

The conveyance system will consist of a network of open ditches that collect and route stormwater to the water quality facilities described above. In places where the slope is less than 2.5 percent, the ditches would be vegetated. Steeper ditches would require lining with cobbles for slopes up to 5 percent, or rip rap for steeper. The conveyance system was designed to convey the 25-year peak flow.

5.5 Dewatering System Flows and Discharges

The proposed dewatering system consists of two lines of wells located east and west of Segment 1 of mine excavation (Sheet C3 of Construction Plan Set). Groundwater pumped from these wells would be discharged to an infiltration pond on the floor of the existing mine.

The dewatering system would be constructed in phases ahead of the advancing mine excavation along the new creek corridor. Three phases are planned with each phase adding new pumping wells. As mining advances beyond the dewatering wells, the wells will be turned off, allowing groundwater to naturally discharge at the toe of the mined slope. The groundwater discharges will be collected in ditches and ponds and conveyed with the stormwater system into Pond E in the existing mine.

5.5.1 Groundwater Discharges to Stormwater System

Discharges to the infiltration ponds constructed for the stormwater system would include dewatering water from the wells located along the northern (DW-1 through DW-5) and west side of the Segment 1 mining area, and groundwater inflows to the base of the mine as mine sequences are completed and dewatering wells are turned off. Dewatering modeling results (Appendix A) indicate permanent discharges to the stormwater system, ultimately reaching Pond E, would reach a potential maximum of 13.7 cfs (Table 6).

Dewatering model results were incorporated into the WWHM2012 model by building a 15-minute time-step time-series flow file with the maximum monthly average groundwater inflow (in cfs) for each month. This time series uses the maximum average flow to produce a conservatively sized pond. The time series was inputted into infiltration Pond E along with stormwater runoff from watershed E, and the pond was sized based on those two inputs.

Table 6. Groundwater Discharges to Infiltration Pond E in cfs

	Dewatering Step	Average Annual Pumping Rate	Average Wet Season Pumping Rate	Groundwater Inflow to Base of Mine
1	Initial Pumping Test	3.6	5.5	-
2	Preparation for Mining/Expanded Pumping Test	5.2	8.8	-
3	Active Dewatering during Mining	6.9	12.2	-
4	Cessation of Active Dewatering	-	-	6.6 - 13.7

Notes: cfs = cubic feet per second

Dewatering discharges would be conveyed to internal infiltration Pond E through a pipeline system. The pipeline would parallel the well alignment, starting along the expansion area lease boundary and running north, then curving in and downslope near the existing access road from the processing plant.

6 Off-site Analysis

A qualitative downstream analysis was conducted in accordance with Option Guidance #2 of the 2014 SWMMWW.

Relevant and available information on the study area was reviewed, including boring logs from on-site resource evaluation, WRIA 14 basin planning efforts, DNR Forest Practices Activity Map, wetland inventories, and groundwater studies from adjacent sites (Fort Lewis Landfill 5). The Kettle wetland is the only surface water body present on the site. No streams or drainage channels were identified on the project site on the DNR Forest Practice Activity Map for the area. There were no existing drainage problems identified.

The off-site analysis indicated that there would be no potential impacts from the proposed stormwater management approach of infiltrating all stormwater within the closed depression of the proposed mine.

6.1 Spills and Discharges of Priority Pollutants

Mining equipment primarily would operate within the closed depression of the mine, which reduces the potential for discharges to surface water. A stormwater pollution prevention plan (SWPPP) has been developed for mine as a component of complying with the Sand and Gravel General NPDES permit. The SWPPP BMPs for mobile fueling, vehicle and equipment maintenance, and spill prevention and response. However, due to the internally draining nature of the project, discharges to surface water are not expected.

6.2 Discharges to Groundwater Recharge Zones

The infiltration ponds would discharge to the unconfined aquifer that in turn flows to Puget Sound. The stormwater discharges would be treated to remove suspended sediments prior to discharge. As infiltrated stormwater is treated and vehicle activity is generally limited to a few pieces of equipment, there is little risk of contamination of the shallow aquifer. There are no water supply wells downgradient of the site, so the proposed activities will not affect local drinking water supplies.

7 Special Reports and Studies

The following special reports and studies have been prepared as a component of the South Parcel Mine Expansion:

- Groundwater Model Update (Aspect, 2017b)
- Geotechnical Report (Aspect, 2020)
- Kettle Wetland Delineation Report (Anchor QEA, 2020a)
- Critical Areas Report (Anchor QEA, 2020b)

8 Other Permits

This section provides a list of other permits and approvals required for the project that would include conditions that affect the drainage plan. Those permits and approvals are:

- Sand and Gravel General NPDES Permit, issued by Ecology.
- Surface Mine Reclamation Permit, issued by DNR.

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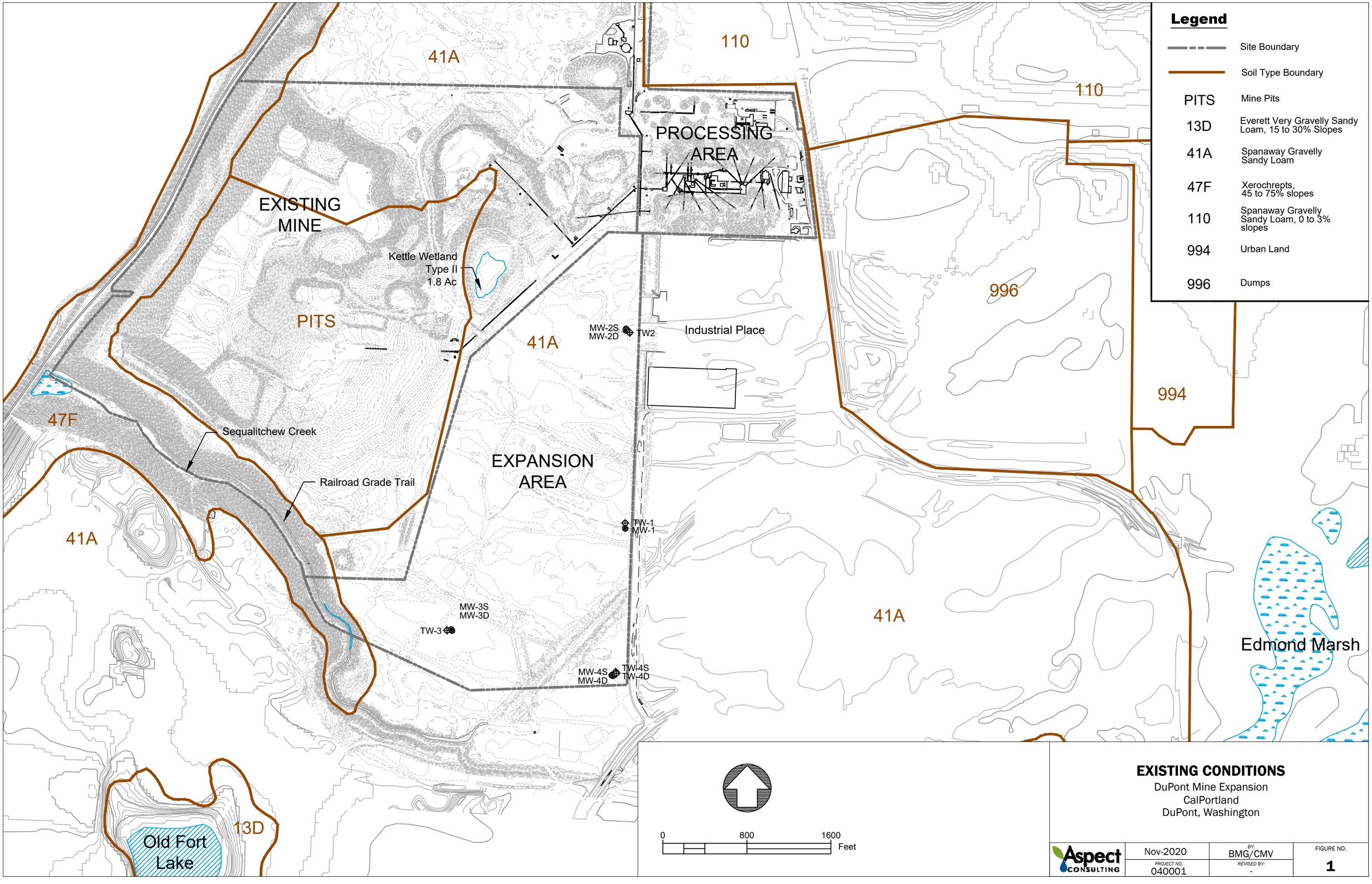
Washington State, Department of Ecology (Ecology), 2014b, Western Washington Phase II Municipal Stormwater Permit, Appendix 1 – Minimum Technical Requirements for New Development and Redevelopment. Accessed at: https://ecology.wa.gov/DOE/files/7a/7a6940d4-db41-4e00-85fe-7d0497102dfd.pdf. Modification Date: January 16, 2014.

10 Limitations

Work for this project was performed and this report prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of CalPortland for specific application to the referenced property. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

FIGURES

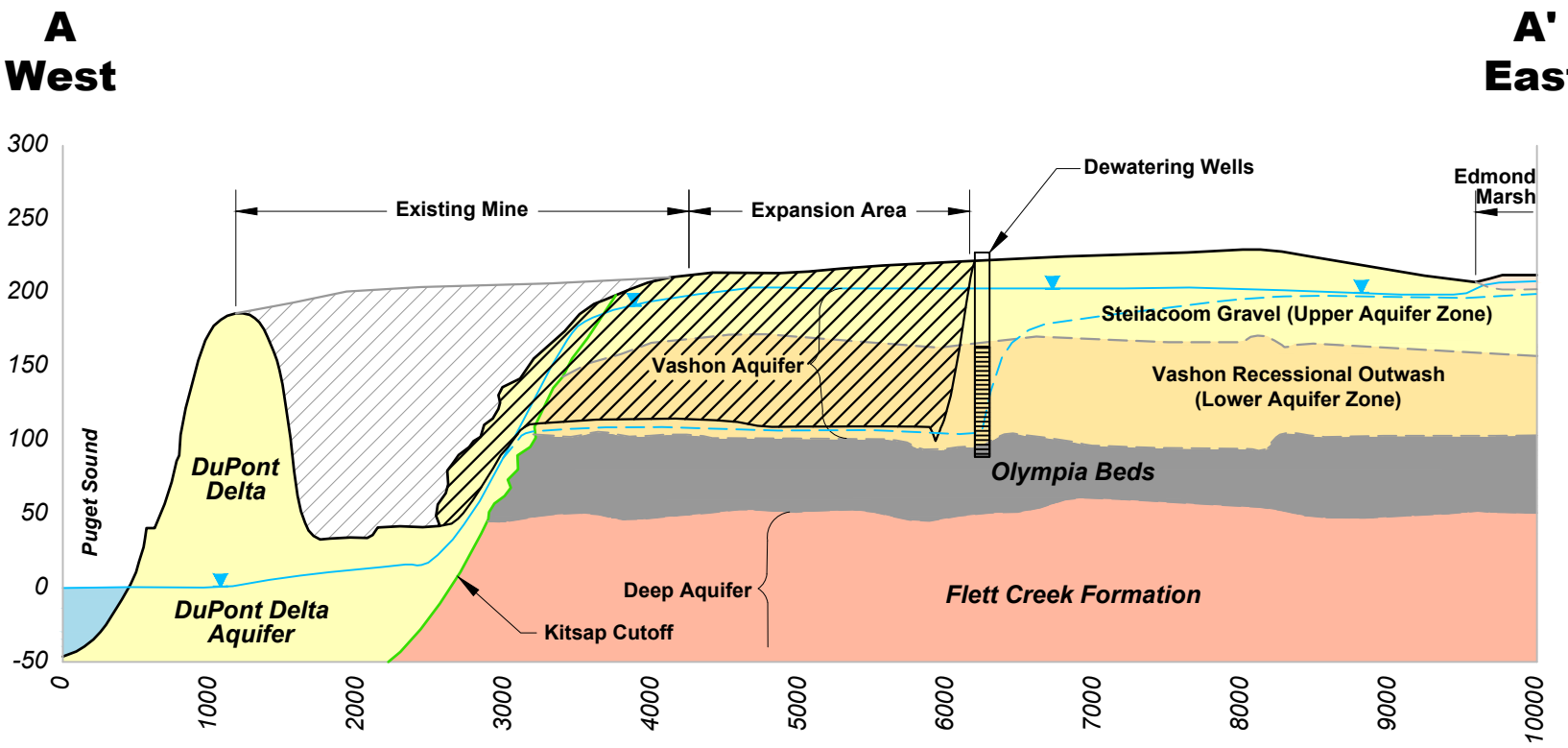


EXISTING CONDITIONS

DuPont Mine Expansion
CalPortland
DuPont, Washington

Aspect CONSULTING	Nov-2020	BY: BMG/CMV	FIGURE NO. 1
	PROJECT NO. 040001	REVISED BY: -	

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2020-11 SW Mgmt Report Figures\040001-01.dwg Figure 1 || Date Saved: Nov 25, 2020 4:17pm || User: ovanslyke



Note: Cross-Section from CH2M Hill, 2003, Figures 1-2 and 1-3.

Legend

- Existing Water Table
- Future Water Table
- Area to be Mined

0 125 250 Feet

0 1250 2500 Feet

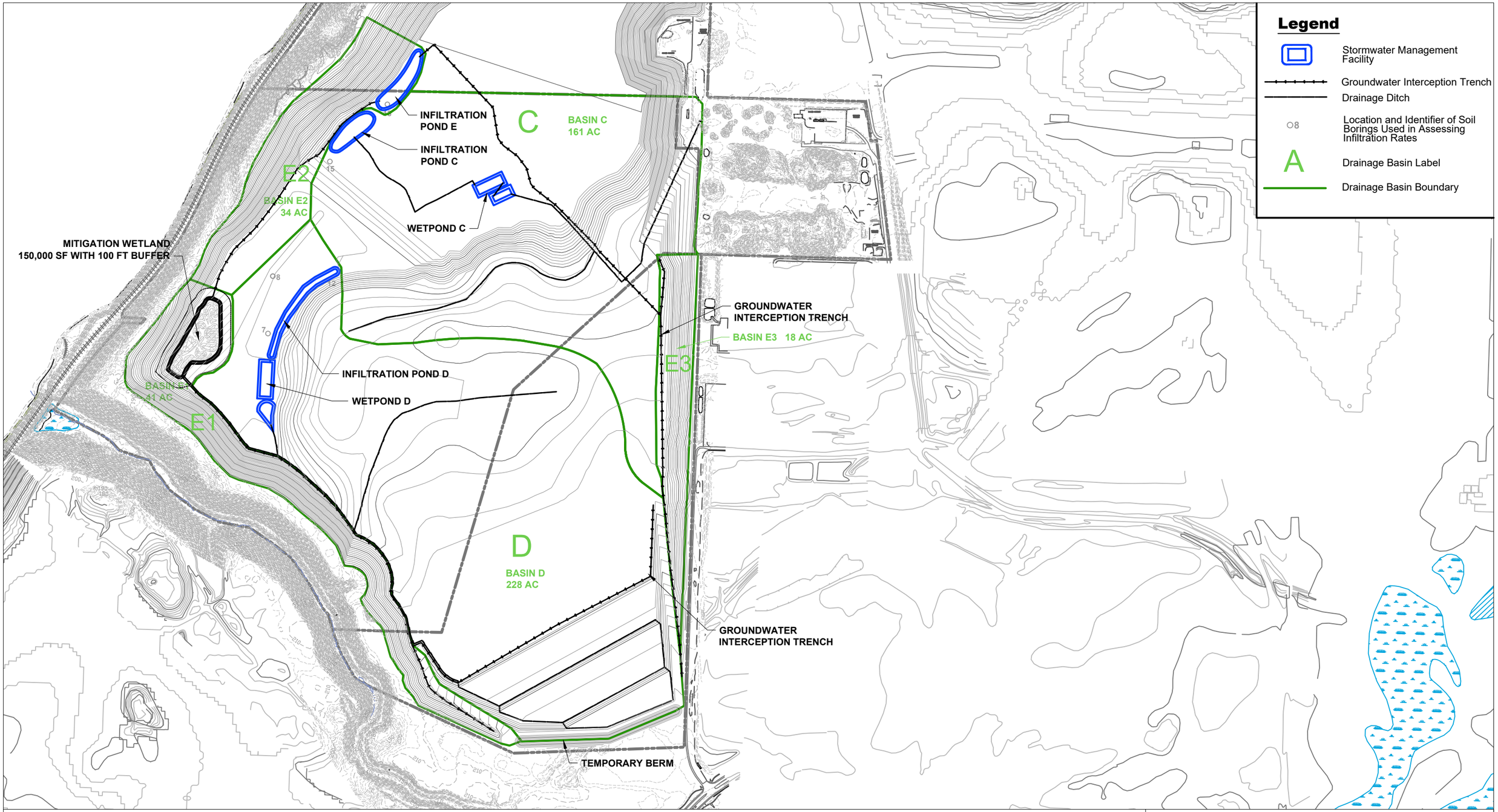
Horizontal Scale: 1" = 1250'
Vertical Scale: 1" = 125'
Vertical Exaggeration 10x

GENERALIZED GEOLOGIC CROSS-SECTION

DuPont Mine Expansion
CalPortland
DuPont, Washington

Aspect Consulting	Nov-2020	BY: BMG/CMV	FIGURE NO. 2
	PROJECT NO. 040001	REVISED BY: -	

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2020-11 SW Mgmt Report Figures\040001-02.dwg Fig 2 || Date Saved: Nov 25, 2020 4:17pm || User: cvanslyke



PROPOSED CONDITIONS

CalPortland
Dupont, Washington

Aspect CONSULTING	Nov-2020	BY: BMG/CMV	FIGURE NO. 3
	PROJECT NO. 040001	REVISED BY: -	

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2020-11 SW Mgmt Report Figures\040001-03.dwg Figure 3 || Date Saved: Nov 25, 2020 4:17pm || User: cvanslyke

Legend

- OUTWASH LAWN
- 25% OUTWASH LAWN 75% TILL LAWN
- TILL LAWN
- IMPERVIOUS
- WETLAND
- SITE BOUNDARY

0 800 1600 Feet

STORMWATER MODEL INPUT

DuPont Mine Expansion
CalPortland
DuPont, Washington

Aspect CONSULTING	Nov-2020	BY: BMG/CMV	FIGURE NO. 4
	PROJECT NO. 040001	REVISED BY: -	

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2020-11 SW Mgmt Report Figures\040001-04.dwg Figure 4 || Date Saved: Nov 25, 2020 4:51pm || User: oreese

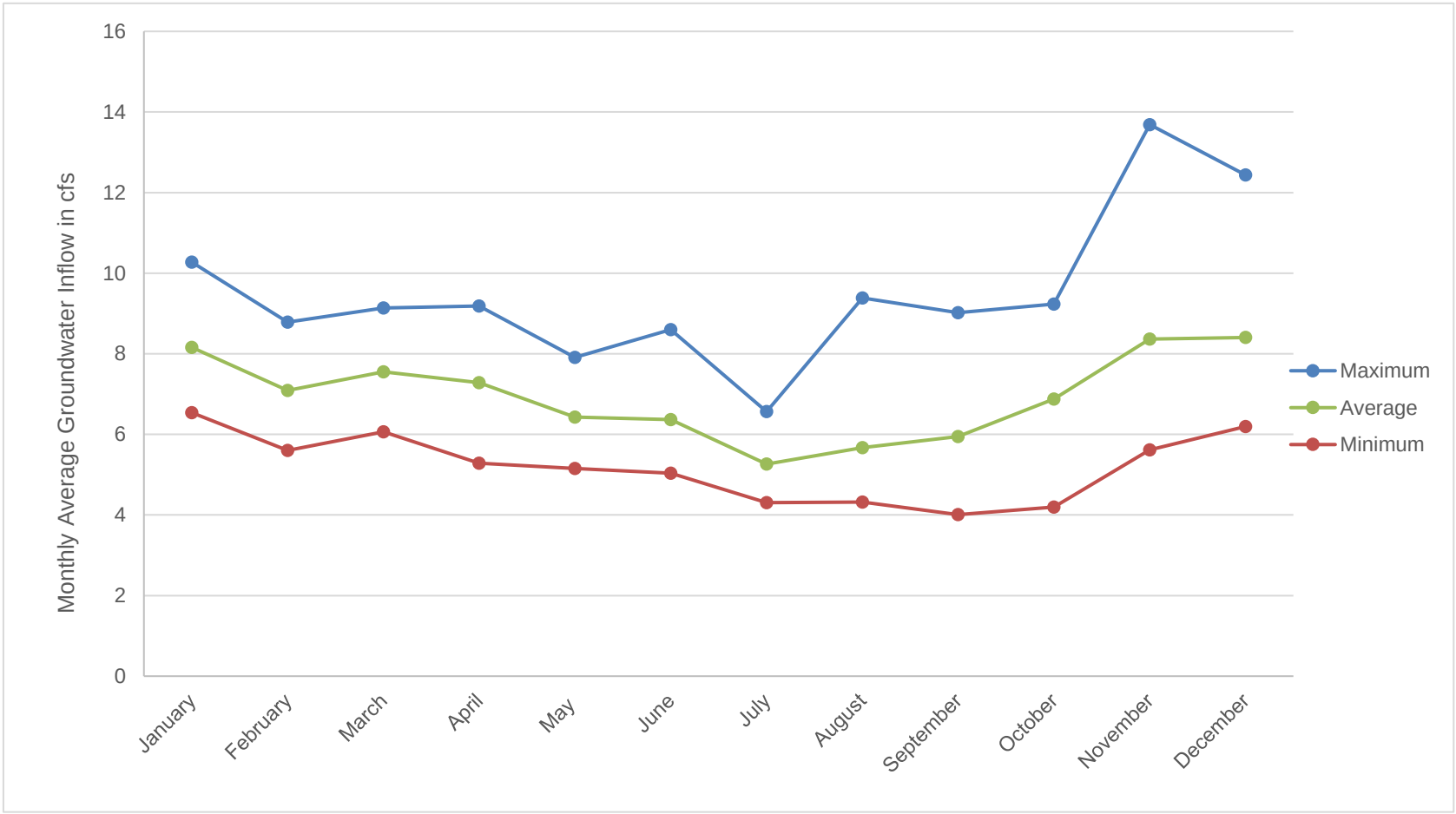


Figure 5
Monthly Variation in Groundwater Inflows
Preliminary Stormwater Management Report
DuPont WA

Aspect Consulting
02/23/2021
V:\040001 DuPont South Parcel\2021 Prelim SW Mngmt Report\Figures

APPENDIX A

Construction Stormwater Pollution Prevention Plan

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pioneer Aggregates South Parcel Project

Prepared for: CalPortland

Project No. 040001-016 • February 23, 2021

Aspect CONSULTING

earth + water

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Pioneer Aggregates South Parcel Project

Prepared for: CalPortland

Project No. 040001-016 • February 23, 2021

Aspect Consulting, LLC

02/23/2021

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Introduction

This document describes the Construction Stormwater Pollution Prevention Plan (CSWPPP) for CalPortland's Pioneer Aggregates South Parcel Project (hereafter referred to as the project) in DuPont, Washington. The project includes a 188-acre expansion of the existing mine.

Throughout the project, the following basic principles will form the core of the approach to preventing erosion at the site:

- Design the project to drain internally.
- Emphasize erosion control rather than sediment control.
- Minimize the extent and duration of area exposed.
- Keep runoff velocities low by encouraging infiltration where possible.
- Retain sediment on the site.
- Thoroughly monitor the site and maintain erosion and sediment control (ESC) measures.

The site will drain internally, eliminating the risk of off-site sediment delivery from erosion. ESC measures will be governed by the Sand and Gravel NPDES Permit requirements and Reclamation Plan.

Minimum Requirements

City of DuPont Municipal Code 22.01.200 requires that all projects comply with the *2012 Stormwater Management Manual for Western Washington* as Amended in December 2014 (2014 SMMWW; Ecology, 2014). Minimum Requirement #2 states that all projects disturbing 7,000 square feet or more prepare a Construction Stormwater Pollution Prevention Plan (SWPPP). The SWPPP contains 15 erosion and sediment control element requirements. The requirements are described individually below, with the code requirement in italic bullets followed by a description of how that requirement has been addressed in the proposed project. The summary of code requirements is omitted for elements that are not applicable.

Element #1: Preserve Vegetation/Mark Clearing Limits

- *Before beginning land disturbing activities, including clearing and grading, clearly mark all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area.*
- *Retain the duff layer, native top soil, and natural vegetation in an undisturbed state to the maximum degree practical.*

Clearing limits for the mine will be marked with frequent and brightly colored flagging or posts. Given the size of the site, use of continuous clearing limit fencing would be economically and environmentally wasteful. The topsoil layer will be temporarily removed to facilitate mining, but those soils will be stockpiled on-site and used in mine reclamation in accordance with a Surface Mine Reclamation Permit from the Washington State Department of Natural Resources (DNR).

Element #2: Establish Construction Entrance

- *Limit construction vehicle access and exit to one route, if possible.*
- *Stabilize access points with a pad of quarry spalls, crushed rock, or other equivalent Best Management Plans (BMPs), to minimize tracking sediment onto roads.*
- *Locate wheel wash or tire baths on site, if the stabilized construction entrance is not effective in preventing tracking sediment onto roads.*
- *If sediment is tracked off site, clean the affected roadway thoroughly at the end of each day, or more frequently as necessary (for example, during wet weather). Remove sediment from roads by shoveling, sweeping, or pick up and transport the sediment to a controlled sediment disposal area.*
- *Conduct street washing only after sediment is removed in accordance with the above bullet.*

- *Control street wash wastewater by pumping back on site or otherwise preventing it from discharging into systems tributary to waters of the State.*

All equipment and trucks, if leaving the property, will use the existing wheel wash in the Processing Area. No new construction entrances will be created.

Element #3: Control Flow Rates

- *Protect properties and waterways downstream of development sites from erosion and the associated discharge of turbid waters due to increases in the velocity and peak volumetric flow rate of stormwater runoff from the project site, as required by local plan approval authority.*
- *Where necessary to comply with the bullet above, construct stormwater retention or detention facilities as one of the first steps in grading. Assure that detention facilities function properly before constructing site improvements (e.g. impervious surfaces).*
- *If permanent infiltration ponds are used for flow control during construction, protect these facilities from siltation during the construction phase.*

The proposed site drains internally into the mine depression and, therefore, poses little risk of discharging sediment past project boundaries. Construction of infiltration ponds will be sequenced to avoid siltation from active mining.

Element #4: Install Sediment Controls

- *Construct sediment control BMPs (sediment ponds, traps, filters, etc.) as one of the first steps in grading. These BMPs shall be functional before other land disturbing activities take place.*
- *Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.*
- *Direct stormwater runoff from disturbed areas through a sediment pond or other appropriate sediment removal BMP, before the runoff leaves a construction site or before discharge to an infiltration facility. Runoff from fully stabilized areas may be discharged without a sediment removal BMP, but must meet the flow control performance standard in Element #3, bullet #1.*
- *Locate BMPs intended to trap sediment on site in a manner to avoid interference with the movement of juvenile salmonids attempting to enter off-channel areas or drainages.*
- *Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal, and maximize stormwater infiltration, unless infeasible.*

- *Where feasible, design outlet structures that withdraw impounded stormwater from the surface to avoid discharging sediment that is still suspended lower in the water column.*

The proposed site drains internally and, therefore, poses little risk of discharging sediment from the construction site. All permanent infiltration ponds are preceded by water quality treatment BMPs to prevent clogging or reduction in long-term infiltration performance.

Element #5: Stabilize Soils

- *Stabilize exposed and unworked soils by application of effective BMPs that prevent erosion. Applicable BMPs include, but are not limited to: temporary and permanent seeding, sodding, mulching, plastic covering, erosion control fabrics and matting, soil application of polyacrylamide (PAM), the early application of gravel base early on areas to be paved, and dust control.*
- *Control stormwater volume and velocity within the site to minimize soil erosion.*
- *Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion.*
- *Soils must not remain exposed and unworked for more than the time periods set forth below to prevent erosion.*
  - *During the dry season (May 1 – Sept. 30): 7 days.*
  - *During the wet season (October 1 – April 30): 2 days.*
- *Stabilize soils at the end of the shift before a holiday or weekend if needed based on the weather forecast.*
- *Stabilize soil stockpiles from erosion, protect with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.*
- *Minimize the amount of soil exposed during construction activity.*
- *Minimize the disturbance of steep slopes.*
- *Minimize soil compaction and, unless infeasible, preserve topsoil.*

As the mine is internally draining, CalPortland proposes to comply with Element 5 by implementing the erosion control and reclamation requirements of their DNR Surface Mine Reclamation Permit.

Element #6: Protect Slopes

- *Design and construct cut-and-fill slopes in a manner to minimize erosion. Applicable practices include, but are not limited to, reducing continuous length of slope with terracing and diversions, reducing slope steepness, and roughening slope surfaces (for example, track walking).*

- *Divert off-site stormwater (run-on) or ground water away from slopes and disturbed areas with interceptor dikes, pipes, and/or swales. Off-site stormwater should be managed separately from stormwater generated on the site.*
- *At the top of slopes, collect drainage in pipe slope drains or protected channels to prevent erosion.*
    - *Temporary pipe slope drains must handle the peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. Alternatively, the 10-year, 1-hour flow rate predicted by an approved continuous runoff model, increased by a factor of 1.6, may be used. The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as "landscaped" area.*
- *Place excavated material on the uphill side of trenches, consistent with safety and space considerations.*
- *Place check dams at regular intervals within constructed channels that are cut down a slope.*

Mine cut slopes will be constructed by cutting to final grade, followed by topsoil, surface roughening, and reclamation planting according to established reclamation practices currently used in the existing mine. CalPortland's mining technique leaves a series of ridges on the slope that helps prevent erosion prior to reclamation, by encouraging infiltration on the mine slopes.

Element #7: Protect Drain Inlets

Not applicable, no storm drain inlets are proposed.

Element #8: Stabilize Channels and Outfalls

- *Design, construct, and stabilize all on-site conveyance channels to prevent erosion from the following expected peak flows:*
    - *Channels must handle the peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. Alternatively, the 10-year, 1-hour flow rate indicated by an approved continuous runoff model, increased by a factor of 1.6, may be used. The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as "landscaped area.*

- *Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent streambanks, slopes, and downstream reaches at the outlets of all conveyance systems.*

No temporary conveyance channels are proposed in areas with the potential to discharge off-site. CalPortland requests that the sizing and armoring requirements not apply within the internally draining portions of the mine. Current erosion control and mine reclamation practices within the existing mine have prevented erosion without requiring the use of armored drainage channels.

Element #9: Control Pollutants

- *Design, install, implement and maintain effective pollution prevention measures to minimize the discharge of pollutants.*
- *Handle and dispose of all pollutants, including waste materials and demolition debris that occur on-site in a manner that does not cause contamination of stormwater.*
- *Provide cover, containment, and protection from vandalism for all chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment. On-site fueling tanks must include secondary containment. Secondary containment means placing tanks or containers within an impervious structure capable of containing 110% of the volume contained in the largest tank within the containment structure. Double-walled tanks do not require additional secondary containment.*
- *Conduct maintenance, fueling, and repair of heavy equipment and vehicles using spill prevention and control measures. Clean contaminated surfaces immediately following any spill incident.*
- *Discharge wheel wash or tire bath wastewater to a separate on-site treatment system that prevents discharge to surface water, such as closed loop recirculation or upland land application, or to the sanitary sewer, with local sewer district approval.*

CalPortland manages other potential pollutants at the existing mine under the requirements of the Sand and Gravel General Permit. The site is managed under a SWPPP that includes BMPs for mobile fueling, vehicle maintenance, and the loading, unloading, storage, and containment for potential pollutants. The SWPPP also includes a Spill Control Plan.

With the proposed project, CalPortland would continue to manage potential pollutants using the existing established BMPs. No new potential pollutant sources would be created.

Element #10: Control Dewatering

- *Discharge foundation, vault, and trench dewatering water, which have characteristics similar to stormwater runoff at the site, into a controlled conveyance system before discharge to a sediment trap or sediment pond.*
- *Discharge clean, non-turbid de-watering water, such as well-point ground water, to systems tributary to, or directly into surface waters of the State, as specified in Element #8, provided the de-watering flow does not cause erosion or flooding of receiving waters or interfere with the operation of the system. Do not route clean dewatering water through stormwater sediment ponds. Note that "surface waters of the State" may exist on a construction site as well as off site; for example, a creek running through a site.*
- *Handle highly turbid or contaminated dewatering water separately from stormwater.*
- *Other treatment or disposal options may include:*
    1) *Infiltration.*
    2) *Transport off-site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute state waters.*
    3) *Ecology-approved on-site chemical treatment or other suitable treatment technologies.*
    4) *Sanitary or combined sewer discharge with local sewer district approval, if there is no other option.*
    5) *Use of a sedimentation bag with outfall to a ditch or swale for small volumes of localized dewatering.*

Dewatering is a significant component of the proposed project. CalPortland intends to manage dewatering via the Groundwater Model Update (Aspect, 2017). This comprehensive plan includes a cyclical process of dewatering, disposal, and monitoring that requires design modifications should the requirements not be met. Further, all dewatering discharge will be disposed of internally into an infiltration basin that will return the water to the deep aquifer than flows to the Puget Sound. No dewatering water will flow off-site.

Element #11: Maintain BMPs

- *Maintain and repair all temporary and permanent erosion and sediment control BMPs as needed to assure continued performance of their intended function in accordance with BMP specifications.*
- *Remove all temporary erosion and sediment control BMPs within 30 days after achieving final site stabilization or after the temporary BMPs are no longer needed.*

Maintenance would be performed according to the requirements of Ecology's 2014 SMMWW. Most of the ESC BMPs included in this plan are components of final site stabilization and would remain in place. However, if any Temporary Erosion and Sediment Control (TESC) measures are installed, they will be removed when no longer necessary.

Element #12: Manage the Project

- *Phase development projects to the maximum degree practicable and take into account seasonal work limits.*
- *Inspection and monitoring – Inspect, maintain, and repair all BMPs as needed to assure continued performance of their intended function. Conduct site inspections and monitoring in accordance with the Construction Stormwater General Permit or local plan approval authority.*
- *Maintaining an updated construction SWPPP – Maintain, update, and implement the SWPPP in accordance with the Construction Stormwater General Permit.*

CalPortland will manage the proposed mining project in compliance with Element #12, the Sand and Gravel General Permit, and DNR Surface Mine Reclamation Permit. Routine inspections and maintenance of the SWPPP would be performed as required by the Sand and Gravel General Permit.

Financial Liability

Per City of Dupont Municipal Code 22.01.295:

> *Performance bonding, or other appropriate financial instruments shall be required as determined necessary by the City to ensure compliance with these standards.*

Under the Washington State Surface Mining Act, CalPortland is required to obtain a Reclamation Permit and provide the DNR sufficient performance security to reclaim the permitted mine. Because DNR will hold the performance security and exclusive authority to regulate reclamation under Chapter 78.44 Revised Code of Washington (RCW), CalPortland respectfully requests that the City of DuPont waive their performance bond requirement for the area covered by the Surface Mine Reclamation Permit.

ESC Measures

The mine area will be graded to drain internally to three infiltration facilities located on the floor of the mine. Two of the infiltration facilities would be preceded by water quality treatment to remove suspended sediments, enhancing long-term performance of the infiltration ponds. The third infiltration facility has no Pollution Generating Pervious or impervious surfaces draining to it.

ESC in the internally draining areas is generally governed by the Sand and Gravel NPDES Permit, and the Reclamation Plan, which establishes the plan for permanently stabilizing the site for the postmining condition. As portions of the site are mined, slopes will be stabilized and replanted using methods and practices prescribed in the Reclamation Plan approved by DNR.

Construction Sequence

Because this project includes ongoing operation and removal of materials, the CSWPPP is flexible to allow for adjustments in operation. In addition, a phased approach will be adopted. Some erosion control measures apply regardless of the phase of the project, while other measures are specific to certain phases as described in the previous section.

The following describes the general sequence of project actions as they pertain to erosion control measures.

1. Initial site preparation of the Expansion Area (clearing and removal of overburden).
2. Excavation of Sequence Areas 1–4.
    a. Grade and plant slopes as mining progresses.
    b. Clear and grub next mine area concurrently with mining.
3. Continued excavation of overburden, mining, and sequential reclamation of remaining phases of the mine development (Segments 1, 2, 3, and 4).
4. Removal of equipment from mine area and conveyor route.
5. Final stabilization of site.

References

Aspect Consulting, LLC (Aspect), 2017, Groundwater Model Update, DuPont Mine South Parcel Expansion Area, Prepared for CalPortland, June 29, 2017.

Washington State Department of Ecology (Ecology), 2014, Stormwater Management Manual for Western Washington. Publication No. 04-10-076. Water Quality Program, Washington State Department of Ecology, Olympia, WA.

Limitations

Work for this project was performed and this report prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of CalPortland for specific application to the referenced property. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

APPENDIX B

South Parcel Monitoring Plan

SOUTH PARCEL MONITORING PLAN

DuPont Mine South Parcel Expansion Area

Project No. 040001-014-02 • November 22, 2017

CONFIDENTIAL
This document is confidential, and is intended for the sole use of CalPortland and the Environmental Caucus (and their designated attorneys and consultants) for the purpose of effectuating the provisions of the 2012 Settlement Agreement. Any distribution of this document to any other party, or use of this document for any other purpose, is prohibited.

Aspect CONSULTING

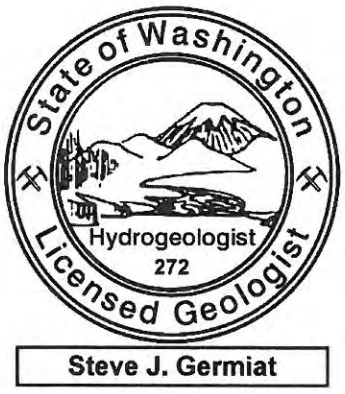
earth + water

SOUTH PARCEL MONITORING PLAN

DuPont Mine South Parcel Expansion Area

Project No. 040001-014-02 • November 22, 2017

Aspect Consulting, LLC



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1 Introduction

This document presents the Monitoring Plan for dewatering of the South Parcel of CalPortland's DuPont Mine. The South Parcel is a 177-acre property located southeast of the existing mine, shown on Figure 1. CalPortland proposes to expand the existing mine by extracting sand and gravel from the South Parcel. Groundwater saturates the lower level of gravels that are proposed for extraction. For mining to occur, these gravels of the South Parcel would need to be dewatered by installing a series of pumping wells to capture groundwater. The dewatering activity would affect groundwater levels in the surrounding area.

In 2011, CalPortland, the City of DuPont, Washington State Department of Ecology (Ecology), and a group of seven environmental organizations collectively known as the Environmental Caucus entered into a Settlement Agreement to define the conditions under which mining of the South Parcel could occur. The Settlement Agreement requires the development and permitting of a Restoration Plan for the Sequalitchew Creek watershed. It also requires the development of a Monitoring Plan for ensuring that changes in groundwater levels resulting from dewatering are within expected (and agreed-upon) limits.

Section 7.3 of the 2011 Settlement Agreement specifies that the Monitoring Plan will *"…include a series of monitoring actions to allow a comparison of predicted and actual changes in groundwater draw-down levels, and a process for the Parties to meet and confer if groundwater monitoring results do not meet the criteria provided in the Monitoring Plan."* This document was developed to meet that requirement.

The aim of the Restoration Plan is to increase available habitat for aquatic species through the restoration and enhancement of creek flow from Sequalitchew Lake to the Puget Sound. The Restoration Plan includes the following restoration actions, among others: comprehensive beaver management to restore flow from Sequalitchew Lake to West Edmond Marsh, improvements to the outlet of Sequalitchew Lake to reduce barriers to flow down the creek system, rehabilitating fish passage through the DuPont Railroad Trail by replacing a section of trail that is built on fill with a pedestrian bridge, culvert evaluation and replacement, and habitat restoration in Sequalitchew Creek downstream of Edmond Marsh. Implementing these actions will involve changes to marsh water levels and increases in Sequalitchew Creek flows.

The Restoration Plan actions are intended to occur concurrently with South Parcel mining activities. Under the terms of the Settlement Agreement, mining of the South Parcel cannot commence until all necessary permits for the Restoration Plan have been obtained. The Restoration Plan will include a monitoring component aimed at measuring the success of restoration actions and adaptively responding if goals are not met.

As specified in the Settlement Agreement, this Monitoring Plan focuses on observing and responding to changes in groundwater levels. Marsh water levels and streamflows will

also be monitored (as required by Section 7.2 of the Settlement Agreement), but they are not the focus of the adaptive management actions identified in the Monitoring Plan.

This Monitoring Plan consists of three components:

1) The main text, which outlines the framework for monitoring and decision making at a conceptual level.

2) A set of figures illustrating the performance thresholds for each month at each well in each dewatering step (Appendix A).

3) A sampling and analysis plan (SAP; Appendix B), which provides the specific details of monitoring, such as identification of monitoring locations, parameters, and frequency, as well as monitoring methods.

The parties acknowledge that the Monitoring Plan may be updated or amended by mutual agreement of the parties.

2 Goals and Objectives

This Monitoring Plan strives to monitor and respond to maintain groundwater at or above predicted levels beneath the marshes and Sequalitchew Creek, and manage groundwater to maintain conditions conducive to safe and efficient mining in the South Parcel.

Articulating the specific goals, objectives, and performance thresholds of a plan provides clarity in measuring the success of the actions taken and guidance for managing unanticipated circumstances. Goals are the overarching principles behind the Monitoring Plan. Objectives identify specific, measurable elements that are undertaken to meet the goal(s) of a project. They provide more detail on how the goals will be achieved, and criteria for determining when their achievement has occurred.

For each objective, a performance threshold is identified to measure success in meeting that objective. Failure to meet the performance threshold will trigger the adaptive management process and require iterative additional actions until it is met. If monitoring indicates that a performance threshold is not being met, additional action will be necessary and the adaptive management process (described in Section 4) will be used iteratively to identify and implement actions intended to improve conditions until the performance threshold has been met.

The goals, objectives, and thresholds of the Monitoring Plan are:

Goal 1. Maintain groundwater at or above predicted levels beneath Edmond Marsh and Sequalitchew Creek.

> **Objective 1A**. Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted levels.
>
> **Performance Threshold**: Monthly groundwater level measurements are at or above target levels established for each step of the dewatering process at each well and for each month of the year, based on statistical analysis of groundwater model predictions over a range of historical climate conditions. Initial target levels are included in Tables 4, 6, 8, and 10.

Goal 2. Maintain groundwater conditions conducive to safe and efficient mining and processing of the South Parcel aggregates.

> **Objective 2A**. Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.

3 Dewatering Plan Overview

The entire mining process will take many years and is designed to proceed slowly from areas of least potential impact toward areas of increasing potential impact, allowing time and opportunity to confirm predictions and adaptively manage the mining and dewatering effort before irreversible changes occur.

Mining of the South Parcel will proceed slowly from the north to the south over a period of 5 to 8 years, extracting gravel to create a broad trough along the eastern property boundary. Wells will be installed and pumped in advance of mining to intercept groundwater and dry out the gravels for mining. The purpose of mining a trough is to minimize the amount of time that active dewatering by pumping wells is required. Once mining of each section of trough is completed, the adjacent wells can be turned off, allowing groundwater to passively seep from the stable mine slope and flow by gravity to an infiltration facility on floor of the existing mine. After mining the trough along the perimeter, gravel will be extracted from the interior area.

The following section describes four steps of the dewatering plan, but it is important to recognize that these steps occur on very different time scales. Figure 2 provides an overview of the timeline for the four steps of dewatering, assuming that mining proceeds rapidly during the period of active dewatering (Step 3).

The initial step is a 60-day pumping test that is completely reversible (i.e., no gravel will be extracted during the test). The results of that test will be analyzed and evaluated, and plans adjusted as necessary prior to commencing the next phase.

The second step involves installing and pumping additional dewatering wells to lower water levels in the first mine segment in preparation for mining. This step would last about six months and functions as a greatly expanded pumping test. As with the first step, it is also completely reversible.

The third step—active dewatering during mining—involves mining the trough described above. Additional dewatering wells will be installed and pumped as mining progresses. Mining will begin at the location farthest from the Edmond Marsh and Sequalitchew Creek and proceed slowly south. Completing the trough would require 5 to 8 years depending on market conditions and the success in meeting predicted groundwater levels. The potential impact on groundwater levels builds slowly over time as wells are added and mining progresses south. This allows ample opportunity to monitor and adapt to the conditions observed before mining proceeds into each dewatered segment.

The final step—passive dewatering—begins when mining of the trough described above is complete and the last dewatering well is turned off. Passive dewatering represents the groundwater condition that will continue in perpetuity. Groundwater, no longer intercepted by wells, would form seeps at the toe of the eastern mine slope. It would flow by gravity through newly created wetlands and a vegetated swale to an infiltration pond located at the bottom of the existing mine. Once this step has begun, further mining activities in the interior of the South Parcel would not affect groundwater.

Additional detail about each of these steps is described in the following section.

3.1 Four Steps of Dewatering Plan

The dewatering necessary to accomplish the mine expansion will occur in four steps as outlined below to address the needs of the mining operations and to provide an opportunity for adaptive management, as described in Section 4. Figure 3 depicts locations of the wells planned for installation in each step. All water generated during dewatering will be infiltrated within the footprint of the current mine, west of the expansion area. Infiltrated water will travel vertically into the ground to the aquifer then flow westward and discharge as seeps to Puget Sound

Step 1. Initial Pumping Test: The first step is a 10-well pumping test, conducted for a minimum of 60 days, to validate model predictions of dewatering effectiveness in the local vicinity of the test wells and make any necessary changes to the model parameters and/or plans for subsequent dewatering and mining activities. The 10 wells will be located in the northeastern portion of the South Parcel as shown on Figure 3. Monitoring will be conducted throughout the test in the pumping wells and existing monitoring wells. The combined pumping rate during Step 1 is predicted to be approximately 3.5 cubic feet per second (cfs) on average, and up to approximately 5 cfs if pumping during the wet season. The model predicts that groundwater level changes will stabilize within approximately 60 days of the start of pumping. No mining will occur in the South Parcel during this step. Step 1 could occur at any time prior to mining; it is not anticipated that all permits for mining would need to be obtained before Step 1 could occur.

Step 2. Preparation for Mining/ Dewatering Test: Following completion of the initial pumping test, the next step of the dewatering plan involves expanding the dewatering well network along the eastern edge of the mine area with two purposes: 1) to evaluate model predictions across a wider extent (making any necessary changes to model parameters and/or to subsequent dewatering/mining activities); and 2) to dewater gravels for the first segment of mining. No mining will occur in the South Parcel before this step is completed.

During Step 2, an expected 14 additional dewatering wells will be installed along the South Parcel mine boundary, including wells located interior to the mine, as shown on Figure 3. The dewatering wells will be arranged in two lines on either side of the initial mine trough, including 19 boundary wells and 5 interior wells. Two additional monitoring wells will also be installed to measure drawdown within the mine interior. Step 2 is expected to last for up to 6 months,with the first two months being a second pumping test again lasting a minimum of 60 days, followed by an estimated four additional months of pumping to dry gravels in the Segment 1A in preparation for mining. The results from the first 60 days would be used to evaluate the model; this evaluation would occur concurrently with the continued dewatering in preparation for mining. The predicted total system pumping rate of approximately 5.1 cfs on average and up to approximately 8 cfs during the wet season.

Since a key component of Step 2 is preparation of the site for mining, pumping during Step 2 would only occur once mining and restoration permits have been obtained.

Step 3. Active Dewatering during Mining: Step 3 is active dewatering as mining begins to form a broad trough in the northeastern corner of the site. Over the next 5 to 8 years,

mining will then proceed from north to south along eastern boundary of site. Step 3 dewatering is predicted to use 66 dewatering wells arranged in two lines on either side of the initial mine trough, with 54 boundary wells and 12 inner wells, as shown on Figure 3. The wells are installed and pumped ahead of the trough's southern progression; as mining of an area is completed, wells along that portion of the trough are shut off, allowing groundwater to begin seeping from the newly mined slope. Groundwater seeping into the mine will be collected in a vegetated swale and conveyed to the infiltration pond located at the bottom of the existing mine.

If all 66 dewatering wells were operating, the combined pumping rate is predicted to be approximately 6.8 cfs on average and up to approximately 11 cfs during the wet season. However, it is unlikely that all dewatering wells would need to be operated at any one time as wells will be phased off as mining progresses.

Step 4. Cessation of Active Dewatering: During Step 4, pumping from the dewatering well network will cease, and the post-mining groundwater flow condition will be established consistent with reclamation objectives. Once all dewatering wells are off, mining above the water table will continue in the interior of the South Parcel. Groundwater will flow from the toe of the newly mined slope on the eastern boundary of the property and be collected and conveyed to an infiltration pond in the bottom of the existing mine, from where it will continue its westward flow, ultimately entering Puget Sound. Groundwater levels will increase slightly following the cessation of active dewatering as they adjust to long-term equilibrium with the new spring locations that will form along the toe of the mined slope. Step 4 lasts through mining of the remaining interior areas and through the post-mining period.

3.2 Dewatering Well Construction

The dewatering wells are designed to accommodate large drawdowns (up to 70 feet), and operate under a wide range of flow rates against a wide range of heads. All dewatering wells will be screened to the depth of the Olympia Beds, with nominal 10-foot sumps installed into the top of the Olympia Beds. Expected well depths will range from about 75 to 115 feet to accommodate the variation in aquifer thickness (between ground surface and the Olympia Beds contact) and the 10-foot sump into the Olympia Beds. The dewatering wells will be screened across the lower zone and a portion of the upper aquifer zone (generally 40- to 50-foot screen lengths). Continuous slot, v-wire wrapped stainless-steel well screens will be used for maximum dewatering efficiency (low head loss). Anticipated well flows range from approximately 400 gallons per minute (gpm) initially to an average of approximately 50 to 200 gpm to maintain drawdown once storage is depleted.

3.3 Predicted Effects of Dewatering on Groundwater Levels

The effects of the four-step dewatering plan on groundwater levels have been evaluated using a numerical, three-dimensional, groundwater model developed specifically for the project (DuPont model). The model is transient, meaning that it simulates changes in groundwater levels over time, and runs on a monthly time step for a roughly 12-year period from March 2004 to December 2015 that includes wet and dry climate conditions.

This allows the model to be used to analyze the effects of the proposed dewatering plan over a range of weather conditions.

The model was developed using data from 2004 to 2010 and calibrated to observed water levels at 19 wells. The calibrated model achieved a "good fit" with a mean residual (difference between predicted and observed) of 1.7 feet or about 6 percent of the difference in minimum and maximum groundwater levels at the calibration targets. The model was validated over 2004 to 2015 (after a change in the precipitation data source) and the validation statistics were similar to the calibration with a mean residual of 1.87 feet providing confidence in its use to simulate groundwater conditions. Additional detail on groundwater model development, calibration, validation and predictive results is available in the Groundwater Model Update (Aspect, 2017).

The DuPont model was used to predict changes in groundwater conditions during the four sequential steps of proposed dewatering and mining activity in the South Parcel. These predictive runs used the same weather and boundary conditions as model calibration with the only change being the addition of pumping wells and changes in surface topography with mining. Dewatering Steps 1, 2, and 3 simulated 10, 24, and 66 active dewatering wells, respectively. Step 4 simulated the post-mining condition with pumping terminated and groundwater passively discharging at the toe of the newly mined slope.

Results of the predictive models are discussed below by dewatering step, in terms of predicted changes in groundwater levels. Baseline groundwater levels are sensitive to seasonal and longer-term precipitation patterns, and the model indicates that groundwater levels during the four dewatering steps will likewise remain sensitive to precipitation patterns. Monitoring well locations are shown on Figure 4.

In Step 1, the changes in groundwater levels are most evident at the monitoring wells closest to the pumping test (CHMW-2S and CHMW-2D). The maximum groundwater level change at CHMW-2D is predicted to be approximately 9 feet, whereas minimal groundwater level change (less than 0.5 foot) is predicted at monitoring wells in Edmond Marsh (MW-EM-1D and MW-EM-2D).

During Step 2, the maximum change in groundwater level is approximately 45 feet and would occur at CHMW-2D located on the northeastern edge of the South Parcel and within the dewatering well network. The maximum groundwater level changes in the closest monitoring wells in Edmond Marsh (MW-EM-1D and MW-EM-2D) are predicted to be approximately 1.3 feet and 0.2 feet, respectively.

During Step 3, maximum groundwater level changes of up to about 60 feet are predicted at wells within the mine area. The maximum groundwater level changes at MW-EM-1D and MW-EM-2D (Edmond Marsh) are predicted to be approximately 5.2 feet and 0.4 feet, respectively. The groundwater levels during Step 3 are predicted to be approximately 10 to 20 feet above the Olympia Beds along the mine trough.

During Step 4, following cessation of active pumping, the maximum change in groundwater levels along the eastern slope of the mine ranges from about 14 to 49 feet. The maximum groundwater level changes at the closest Edmond Marsh Wells (MW-EM-1D and MW-EM-2D) are predicted to be approximately 5.0 feet and 0.4 feet,

respectively. A map of the predicted contours of groundwater drawdown after cessation of active pumping is shown on Figure 5. Solid drawdown contours on Figure 5 indicate areas of greater certainty closer to the monitoring well network and model calibration targets, dashed drawdown contours indicate areas of lesser certainty.

The groundwater model was used to develop performance thresholds for each well in each month during each dewatering step. The thresholds are based on the predicted range in water levels under seasonal and annual variation in climate. The performance thresholds were established at the lower 95^{th}-percentile confidence interval for the predicted water levels.

As an example, Figure 6 provides the range of model predictions (groundwater elevation, and change from baseline water levels) over varying climate conditions for well CHMW-2D, located near the proposed location of the pumping test. The vertical lines in Figure 6 indicate the lower end of the predicted range. The bottom of the vertical line is the performance threshold. The performance threshold will change by well, by month (to account for annual seasonal patterns), and by dewatering steps. Similar figures have been prepared for each monitoring well and are presented in Appendix A.

4 Adaptive Management

This Monitoring Plan implements adaptive management to observe and respond to changes in groundwater levels occurring during mining of the South Parcel. This section first introduces the fundamental steps of effective adaptive management, then establishes key commitments by CalPortland to be met throughout the adaptive management process, and then walks through the detailed adaptive management plan, including the groundwater performance thresholds, for each dewatering step.

4.1 Process of Adaptive Management

Adaptive management has been described as "*a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs"* (Nyberg, 1999). Adaptive management typically consists of a monitoring system to identify changes in the environment coupled with a response system to adjust the activities in response to monitoring results. The adaptive management system proposed for implementation on this project was developed as a combination of the systems proposed by Ralph and Poole (2003) and Nyberg (1999). It consists of five key sequential elements, as illustrated on Figure 7:

A. **Assess:** Information is compiled from monitoring data, geologic investigations, groundwater modeling, and other available sources. The compiled information is used to identify issues, refine objectives, and screen potential alternative approaches. Predictions of the potential effects of the action on groundwater levels are developed.

B. **Design:** Based on the results of the assessment stage, design of the proposed action proceeds. Design will result in a specific plan of action, and supporting evaluations to ensure that the anticipated results are consistent with the identified objectives, the Monitoring Plan, and prior environmental assessments. Predictions of groundwater levels are refined as the design evolves. Analyses conducted during the design stage could result in an iterative process of assessment and design. Any required permitting is also included in the design stage.

C. **Implement and Monitor:** The approved plan is put into action, concurrently with monitoring focused on key indicators tied to the identified objectives. Monitoring data indicating conditions worse than forecasted are acted on rapidly, moving into the evaluation and adjustment stages.

D. **Evaluate:** Monitoring data are evaluated relative to the objectives and forecasted results developed in the assessment and design stages. Differences between forecasts and results are identified and the causes for those differences investigated.

E. **Adjust:** Information learned in previous steps is used to adjust the actions, if necessary. The Monitoring Plan provides an initial identification of potential adjustments in each dewatering step, but additional adjustments could be developed to fit specific situations.

The adaptive management process is iterative and would repeat until the mining project is completed. If an adjustment is identified, the process would begin again from the assessment and design stages, followed by implementation of the adjustment and associated monitoring, then evaluation and further response (if necessary). If an adjustment is not necessary, then the process still repeats. In this case, the assessment and design stages would largely rely on the previously approved plans, but there is still potential for more minor refinements based on the information learned.

Throughout the adaptive management process, status updates, monitoring data, and final reports will be shared with the Environmental Caucus. Should groundwater levels not meet the performance thresholds established in this plan, then CalPortland would notify the Environmental Caucus and plan and implement adjustments. If adjustments are unsuccessful in meeting predicted groundwater levels, CalPortland and the Environmental Caucus would initiate a technical review conference and, if necessary, meet and confer to share information and determine the appropriate additional steps.

4.2 Key Adaptive Management Commitments

This section establishes the commitments related to key components of adaptive management. First, an overview of the anticipated schedule for the four dewatering steps is presented. Then the commitments to the frequency that groundwater levels will be compared with the performance thresholds is established, followed by a summary of the notifications that will be provided if certain events occur (such as starting to pump new wells, or measurements of groundwater levels that are below performance thresholds). The next section summarizes the reports that will be provide throughout the process, ranging from relatively simple progress updates to detailed reports on the pumping tests. Then several overall limitations on advancement of mining and dewatering are established. Finally, the meet and confer process for resolving disputes is defined.

Additional detail about the adaptive management process as it applies to each dewatering Step is presented in Section 4.3.

4.2.1 Anticipated Schedule

Mining of the South Parcel will occur over many years, and the anticipated project schedule has been designed to include sufficient time for the adaptive management process to succeed in meeting performance thresholds before mining or dewatering advances. An overview of the anticipated schedule is presented on Figure 8; additional schedule detail is presented in the detailed adaptive management plan for each Step presented in Section 4.3.

Mining and dewatering activities would not begin until a series of conditions identified in Section 4.3 of the 2011 Settlement Agreement have been met. Those conditions include: 1) environmental review (SEPA) has been completed; 2) permits for the Restoration Plan have been issued [including the required authorizations and approvals from Joint Base Lewis-McChord (JBLM) for restoration activities on JBLM property], and applicable appeal periods have expired (except for federal permits); and 3) all necessary permits and approvals for South Parcel mining have been obtained. This paragraph is intended as a summary only; to the extent that it is inconsistent with the Settlement Agreement, the Settlement Agreement shall govern.

Step 1 is anticipated to require a year to complete from initial planning through reporting and discussion of the results and any resulting adjustments to the dewatering plan. Planning and well installation for Step 2 would overlap with completion of the reporting and review components of Step 1. Once Step 1 has been completed, the pumping test component of Step 2 would begin.

Step 2 is anticipated to require 6 months of active pumping—the first 2 months would be a larger-scale pumping test, and dewatering would continue over the subsequent 4 months in preparation for the start of mining. Reporting and review of results would be performed while dewatering continues.

Step 3 would only commence when groundwater levels are above the performance thresholds and water levels are at appropriately low levels for safe and efficient mining and processing. If groundwater levels meet performance thresholds, Step 2 would flow into Step 3 and the start of mining. Otherwise, Step 2 may require a longer period to perform the necessary adjustments to achieve sufficient dewatering for mining while maintaining groundwater levels consistent with the performance thresholds and prior environmental analyses, or update the environmental analyses, if necessary.

Mining would proceed south over a period of multiple years. The actual rate of mining depends on market demand. CalPortland expects that mining the first four segments (1A through 1D) would take 4 to 8 years and has committed (see Section 4.2.5) to completing those four segments in no less than 3 years total, or a minimum of 9 months for each segment. Figure 8 shows the timeline for mining of the South Parcel in the unlikely event that mining were to progress at this accelerated pace and the first four segments were to be completed in three years.

Step 4 will begin after active dewatering ceases. Depending on market demand for aggregate products, mining of the remainder of the South Parcel is expected to occur over 5 to 8 years after cessation of active dewatering.

4.2.2 Comparison of Groundwater Levels with Performance Thresholds

Success of the dewatering plan is evaluated by comparing groundwater levels with the performance thresholds.

A summary of the monitoring events where comparisons with the predicted ranges will be performed is provided in Table 1. The frequency of these comparisons will vary over time with more frequent evaluations at the start of each dewatering step or when changes to dewatering are made. If any of these monitoring results indicate groundwater levels are not above the performance thresholds, CalPortland will notify the Environmental Caucus according to the timelines described in Section 4.2.3, which vary by dewatering Step, and begin the adjustment process.

Table 1. Frequency of Comparison to Performance Thresholds

Dewatering Step	Frequency of Comparison
Step 1 – Initial Pumping Test	Changing frequency during test: hourly -> daily -> weekly
Step 2 – Preparation for Mining/ Dewatering Test	Changing frequency during first 2 months/ pumping test: daily -> weekly, then Weekly at key wells, Twice monthly at all others
Step 3 – Active Dewatering during Mining	For 3 months when new wells start pumping: weekly at key wells and twice monthly at all others, then Monthly.
Step 4 – Cessation of Active Dewatering	Monthly

Note: Key wells are the monitoring wells in the South Parcel (CHMW-1 through 4) and the closest marsh monitoring stations (EM-1 and -2), including both shallow and deep wells at those locations.

4.2.3 Notifications

Notifications are intended to alert the Environmental Caucus to the occurrence of an event. Routine reporting, including project status updates, data summaries, pumping test analyses, are described in the next section (Section 4.2.4).

CalPortland will inform the designated representative of the Environmental Caucus of each of the following types of events:

1) At the start of each dewatering step;

2) Major milestones within each step (such as addition of new pumping wells);

3) Upon collection of monitoring data indicating actual groundwater levels are lower than the performance thresholds; and

4) Implementation of response actions.

The Environmental Caucus will provide timely notice of any changes in its attorney, consultant, or designated representative or their contact information.

Notification points in each of the dewatering steps are summarized in Table 2, except for routine reporting milestones (which are summarized in Table 3). Notifications will be provided in writing by email, letter, or memorandum/report, as appropriate for the nature of the notification. It is anticipated that most notifications will be provided by email.

Groundwater monitoring data (including raw data) would be provided within 2 days of any notification that monitoring results are below performance thresholds.

Table 2. Summary of Notifications by Dewatering Step

Dewatering Step	Events Triggering Notification of Environmental Caucus	Timeline for Notification
Step 1 – Initial Pumping Test	Updates to pumping test plan	Within 3 days of updating plan
	Installation of pumping test wells	1 week prior to start of drilling
	Start of pumping test	1 week prior to start of pumping
	Monitoring results below performance thresholds	Within 24 hours of measurement
	Any adjustments implemented during pumping test	Within 24 hours of change
	End of pumping test	Within 24 hours
Step 2 – Preparation for Mining/ Dewatering Test	Updates to dewatering plan based on Step 1 results	Within 3 days of updating plan
	Installation of Step 2 dewatering wells	1 week prior to start of drilling
	Start of dewatering	1 week prior to start of pumping
	Monitoring results below performance thresholds	Within 48 hours of measurement
	Any adjustments implemented during dewatering	Within 24 hours of change
Step 3 – Active Dewatering during Mining	Commencement of mining in the South Parcel	1 month prior to start of mining
	Initiation of pumping at new wells	1 week prior to start of pumping
	Monitoring results below performance thresholds	Within 3 days of measurement
	Any adjustments implemented during dewatering	Within 3 days of change
	Cessation of active dewatering	Within 1 week of ceasing dewatering
Step 4 – Cessation of Active Dewatering	Monitoring results below predicted values	Within 3 days of measurement
	Completion of mining in South Parcel	Within 1 month of completion

The timeline for notification that monitoring results are below performance thresholds increases from 24 hours in Step 1 to 48 hours in Step 2 to 3 days in Steps 3 and 4 for four reasons:

1) the rate of change in groundwater levels will slow as mining progresses;

2) confidence increases over time as the number of wells pumping and set of successful groundwater measurements grows (mining and dewatering only advance when performance thresholds are met; see Section 4.2.5 for the specific limitations);

3) new wells begin pumping substantially in advance of mining both in time and space and dewatering proceeds from farthest away towards the creek and

marshes, which allows for the marginal impact of adding new wells to be reversible, even in during Step 3; and

4) Gravel would continue to be mined, but the volume that could be mined during the notification period is nominal compared with the volume of each mine segment, which are expected to require 1.5 to 2 years of mining to complete.

4.2.4 Routine Reporting

CalPortland will routinely share information about mining, dewatering, and the adaptive management process with the Environmental Caucus to achieve a variety of purposes, including sharing and interpreting monitoring data, documenting actions taken during a dewatering step, providing updated model predictions and analysis, and response actions, if necessary.

The specific reports required during each step of dewatering are summarized in Table 3. Additional detail about the individual reports and their role in the adaptive management process is presented in the Detailed Adaptive Management Plan in Section 4.3.

Table 3. Summary of Reporting by Dewatering Step

Dewatering Step	Reports	Minimum Frequency of Reporting
Step 1 – Initial Pumping Test	Pumping Test Design	One time
	Pumping Test Progress	Weekly during test
	Pumping Test Results	One time
Step 2 – Preparation for Mining/ Dewatering Test	Dewatering Plan for Step 2, if revised.	One time
	Pumping Test Progress	Weekly for first 2 months
	Pumping Test Results	One time – 4 months after start of Step 2
	Dewatering Summary Memos	Monthly
Step 3 – Active Dewatering during Mining	Dewatering Plan, Mining Plan, or SAP, if revised.	One time
	Dewatering Summary Memos,	Monthly for 3 months after each new set of dewatering wells, then quarterly
Step 4 – Cessation of Active Dewatering	Dewatering Summary Memos for first year	Quarterly for 2 years, then annually

The purpose and contents of each report are outlined below:

- Pumping Test Design/Dewatering Plans will provide the plan for performing the pumping tests and/or dewatering. These plans will include the proposed well pumping and observation well locations, depths, well construction, drilling methods, data collection, and timelines.

- Pumping Test Progress will provide a status update during the pumping test including an overview of progress toward completing the test, identifying which wells are pumping and pumping rates, locations and frequency of monitoring, any changes to the pumping test plan, and notes on how the test is proceeding.

- Pumping Test Results will present a detailed reporting of the execution of the pumping test, a summary of the data collected, including figures showing groundwater levels and pumping rates over time, comparisons of groundwater levels with performance thresholds, data analysis and results (estimates of key hydrogeologic parameters), and a comparison between model predictions and pumping test results for the purpose of model evaluation and validation.

- Dewatering Summary Memos will provide a summary of mining and dewatering progress, including information on any new wells installed, initiation of pumping at new wells, overview of wells that are pumping and pumping rates, cessation of pumping at wells, areas of active mining, and reclamation activities.

Reports will be prepared by a third-party consultant to be selected and paid for by CalPortland. The reports will be distributed to the Environmental Caucus electronically in protected documents, with hard copies available on request. Raw monitoring data will be provided with any groundwater measurement below a performance threshold, or when requested by the Environmental Caucus.

4.2.5 Limitations on Mining

In order to establish bounds on the pace and advancement of mining that will allow time for the adaptive management process to succeed, CalPortland commits to the following limitations on mining and dewatering activities in the South Parcel:

1) Mining associated with active dewatering (i.e., mining of the trough along the eastern boundary of the South Parcel; Figure 3) will last at least 3 years.

2) The mine trough has been divided into four segments (1A to 1D; Figure 3). Mining of each segment will last at least 9 months.

3) Mining will not advance into the next segment, unless groundwater levels meet performance thresholds.

4) Dewatering activity will not intensify through commencing pumping at new wells or increasing pumping rates at existing wells (except for normal seasonal changes in pumping rates), unless groundwater levels meet performance thresholds.

These limitations do not apply to operations of the existing mine and processing area, or extraction of gravel from areas west of the Olympia Bed truncation within the existing mine or North Parcel as these areas do not require dewatering.

4.2.6 Meet and Confer Process

Section 7.3 of the Settlement Agreement states that the Monitoring Plan will include a "process for the Parties to meet and confer if the groundwater levels do not meet the criteria provided in the Monitoring Plan." The process described below involves two steps for the parties (CalPortland and the Environmental Caucus) to follow with respect to groundwater information and data obtained during the monitoring process. The first step is for the parties' technical consultants to engage in one or more technical review conferences. If necessary, the second step would involve one or more meetings between the parties' designated representatives to discuss any differences of opinion or interpretation that the technical consultants are unable to resolve. Each of these two steps is discussed further below. This two-step process may be invoked at any time, including but not limited to the various specific points in the adaptive management process identified in Section 4.3 below.

Technical Review Conferences. The Environmental Caucus may initiate a request for a technical review conference of the parties' technical consultants at any time to discuss any questions or concerns it might have about any aspect of the groundwater monitoring data. The conferences may be in person or via conference call or other communications technology, and there may be multiple conferences to discuss any issues identified by the Environmental Caucus. The technical consultants would work in good faith during these review conferences to resolve any differences in interpretation of the groundwater monitoring data.

Party Representative Discussions. If the good-faith efforts of the technical consultants are unable to resolve any differences of opinion regarding the interpretation of the groundwater data, including but not limited to what the data shows regarding groundwater levels, either CalPortland or the Environmental Caucus may request a meeting of the parties' designated representatives or principals by providing notice to the other party of the desire to meet, and a brief explanation of the reasons for the request.

Once noticed is provided, CalPortland and the Environmental Caucus would work collaboratively to agree on a meeting format, date, time, and place to be held within 30 days of the request to hold a Technical Review Conference or a Party Representative Discussion. Meetings may be in person or via conference call or other communications technology, and there may be multiple meetings. This paragraph is intended to generally describe, but not constrain, the ways that the parties may choose to meet. Based on the issue raised, CalPortland would prepare and provide appropriate information summarizing the issue and current status of mining and dewatering activities, sharing related monitoring data (including raw data, if requested), and identifying potential responses.

Representatives of CalPortland and the Environmental Caucus will confer during the meeting on the most appropriate response with the goal of reaching consensus. If consensus cannot be reached, the parties would enter mediation, making good-faith efforts to hold a meeting with a mutually agreed-upon mediator within 45 days of the initiation of any request to the other party for mediation.

4.3 Detailed Adaptive Management Plan

This section is the core of the Monitoring Plan. It walks through each step of the dewatering plan providing conceptual details about how the stages of adaptive management would apply to that step. Specifically, this section establishes the objectives, provides an overview of monitoring activities, outlines an approximate schedule, summarizes the approach for data evaluation, and provides initial identification of potential response actions for each step of the dewatering plan.

Specific details of the monitoring activities (e.g., monitoring locations, frequency, and methods) are provided in the SAP in Appendix B.

Although the stages of adaptive management are presented sequentially in each step, it is important to recognize that the adaptive management process will be implemented iteratively within the step, particularly for Steps 2 and 3. For example, evaluation will be conducted each time monitoring data is collected, and that evaluation could trigger adjustment and looping back through the process during the same dewatering step. Alternately, if the monitoring data consistently indicate that performance thresholds are being met, the adaptive management process for a step could be completed without requiring iteration or adjustments.

4.3.1 Step 1 – Initial Pumping Test

Step 1 is envisioned as a 10-well pumping test, conducted for a minimum of 60 days, to validate model predictions of dewatering effectiveness in the local vicinity of the test wells, and make any necessary changes to the model parameters and/or to plans for subsequent dewatering and mining activities. No mining will occur in the South Parcel during Step 1.

The adaptive management process in Step 1 is illustrated on Figure 9.

A. Assess

The assessment stage for Step 1 will include compilation of existing monitoring data, geologic information, results from prior pumping tests conducted by CH2M Hill (2000), and the latest groundwater modeling simulations of the Step 1 pumping test. Monitoring data will continue to be collected and will be incorporated into the assessment for the pumping test.

Two initial objectives have been identified for the Step 1 pumping test:

1) Evaluate model predictions near the test wells.

2) Test dewatering design for meeting mining needs (i.e., achieving necessary drawdown), collecting information to refine the dewatering design, such as the number, screening, and spacing of wells.

B. Design

Based on the information collected during the assessment phase, CalPortland, and its consultants, will prepare a detailed plan for the pumping test. The plan will identify the number and location of pumping and observation wells, well drilling and construction, pumping rates, duration, monitoring locations, equipment, and frequency, etc.

The pumping test plan will be provided to the Environmental Caucus.

C. Implement and Monitor

CalPortland will install the pumping wells and any new observation wells, and conduct the pumping test. The minimum duration of pumping during the test will be 60 days.

Monitoring would consist of two components: 1) high-frequency automated monitoring at wells that are expected to be affected by the pumping test and at sensitive receptors, and 2) continuation of routine manual monitoring at other groundwater and surface water locations.

High-frequency monitoring using pressure transducers would be performed in observation wells near the pumping test location (CHMW-2D, -2S, and MW-D-3), and at wells located nearest to Sequalitchew Creek and West Edmond Marsh (CHMW-3S &-3D and MW-EM-1D). Typically, the frequency of data collection is programmed to vary throughout a pumping test with rapid data collection at the start tapering to less frequent as groundwater levels near stabilization.

Routine monitoring would continue to occur at the normal monitoring locations, including wetland, stream, and groundwater locations outside the area of influence of the pumping test. The streamflow monitoring stations are continuously recording. Manual measurements will be used at the wetland and groundwater locations not near the pumping test.

The Environmental Caucus will be notified of the installation of wells and the start and end of the pumping test. CalPortland will also provide weekly summaries of pumping test progress, and notification (within 24 hours) of any monitoring results below the performance thresholds. Routine reporting is summarized in Table 3 and notifications are outlined in Table 2.

D. Evaluate

Data will be screened as they are collected to determine if immediate action is required. In such an event, the Environmental Caucus would be notified within 24 hours, and the project would move immediately to the adjustment stage.

As monitoring data are collected, they also will be evaluated to see if the test is well-designed and the monitoring network is effective. If necessary, the project may enter the adjustment step to improve the pumping test to collect better information.

Once representative monitoring results are being collected, they will be screened against performance thresholds in Table 4 for the appropriate well and month. The performance thresholds were established at the lower 95^{th}-percentile confidence interval for the predicted water levels [see Section 3.3 and the Groundwater Model Update (Aspect, 2017)]. The frequency of screening will vary during the test beginning with hourly at the start and reducing to daily then weekly as the test progresses, as outlined in Table 1.

If the monitoring results indicate that groundwater levels near the marshes are lower than the performance thresholds, CalPortland would develop and implement appropriate adjustments during the pumping test.

If monitoring results indicate groundwater levels are lower than the performance thresholds in wells that are not near the marshes or other sensitive receptors (i.e., monitoring wells on the South Parcel), then the test would be completed as planned. These results would be evaluated and any anticipated adjustments for future steps identified.

Even if the observations made during the test are above the performance thresholds, they still may provide valuable information for refining the model, mine plan, and Monitoring Plan. Those observations will be considered during assessment and design for Step 2.

The evaluation will also include comparison of climate and water level conditions prior to the test with the range of conditions experienced during the model calibration and validation period.

E. Adjust

Adjustments during the pumping test could occur for two reasons:

1) The monitoring data indicate that data collected are not sufficient to achieve the objectives of the test; or

2) The monitoring data indicate that groundwater levels are below the performance thresholds.

Potential adjustments consist of modifying or terminating the pumping test, and are listed in Table 5. Since no mining below the pre-project groundwater elevation would occur during this dewatering step, any change in groundwater could be reversed by turning the dewatering wells off.

Table 5. Potential Response Actions during Step 1 – Initial Pumping Test

Modify pumping test:
Changing pumping rates
Changing the number of pumping wells
Changing the duration of pumping
Changing monitoring locations including installing new wells
Performing additional testing
Cease pumping test.

CalPortland will notify the Environmental Caucus of any adjustments to the pumping test within 24 hours of the change.

Reporting and Discussion

At the conclusion of the Step 1 pumping test, whether completed as planned, adjusted, or terminated, CalPortland will prepare an interpretative report documenting the pumping test, summarizing the monitoring data, comparing monitoring results with prior model predictions, and making recommendations for the assessment and design phases of the next step.

The report will be provided to the Environmental Caucus, with a 3-month period for review and discussion of the results. CalPortland commits to meeting with the Caucus as often as necessary during the review period to facilitate open communications and timely review. Should the Environmental Caucus and CalPortland have different interpretations

of the dewatering test results, either party may request technical review conferences of the parties' technical consultants, followed by, if necessary, meetings of the parties' representatives, as described in Section 4.2.6 above.

Anticipated Schedule
The schedule for Step 1, in the context of the overall mining schedule, is illustrated in Figure 8. It is expected to require about a year to complete Step 1, with the following anticipated schedule:

- Planning the Pumping Test 1 month
- Installing and Developing Wells 2–3 months
- Performing the Pumping Test 2 months
- Evaluating Results and Reporting 2 months
- Model Updates (if necessary) 2–3 months
- Review by and discussion with Environmental Caucus 3 months

Incorporation of the results into the design of future steps could require additional time.

4.3.2 Step 2 – Preparation for Mining/ Dewatering Test

In Step 2, additional dewatering wells will be installed and will be pumped for several months to draw down groundwater until the gravel in the first mine segment of the South Parcel is dry enough to mine. If monitoring results are above performance thresholds during Step 2, the intent is to continue dewatering from those wells and transition smoothly into Step 3 – Active Dewatering during Mining. Step 3 would only commence when groundwater levels are above the performance thresholds.

The dewatering activity will also serve as a greatly expanded pumping test, the effects of which are completely reversible. The information collected in the first 60 days is most valuable as a pumping test, so evaluation and reporting on the test will focus on this period. The pumping test portion of Step 2 will occur for a minimum of 60 days.

The adaptive management plan for Step 2 is illustrated on Figure 10.

A. Assess
The planning for Step 2 will incorporate the results of Step 1, including any updates to the groundwater model, this Monitoring Plan, or mine plan resulting from Step 1.

In the assessment phase for Step 2, the results of the pumping test in Step 1 will be compared with the groundwater model. If they agree, then design would move forward as planned. If there are notable differences, the groundwater model would be evaluated and potentially modified.

The first level of model evaluation and modification would consist of updating the model to reflect the specific conditions of the Step 1 test (well locations, well construction, pumping rates, antecedent weather conditions, etc.) and developing a set of model predictions specific to the actual test conditions. These updates only modify the scenario for Step 1 and would not require recalibration of the model.

If the predictions from the updated model are notably inconsistent with the results of the pumping test, then the model parameters would be modified and calibrated to the observed data. Then, the full suite of predictive scenarios would be evaluated and compared with the groundwater levels included in the environmental analyses and permitting. If within the contemplated range, the project would move forward to the design phase with the revised model. If not, additional environmental analysis may be necessary.

The initially identified objectives for Step 2 are:

1) Evaluate whether groundwater levels at monitoring wells are above the performance thresholds; and,

2) Confirm that groundwater levels are low enough within the material to be mined to allow for safe and efficient mining and processing.

B. Design

Based on the results of the assessment step, the dewatering plan for Step 2 and the associated monitoring will be designed by CalPortland. Updates to the design will be simulated with the groundwater model and compared with prior environmental analyses as described above. If the model was updated in Step 1 or the assessment stage of Step 2, the predictive results from the updated model will be used to establish new performance thresholds.

Updates to the design and predictions of its impacts on groundwater will be provided to the Environmental Caucus.

C. Implement and Monitor

The additional dewatering wells for Step 2 will be installed and begin pumping. Pumped water will be discharged to an infiltration facility on the floor of existing mine. Pumping will occur for a minimum of 60 days to complete the dewatering test plus an estimated four additional months to dry gravels in Segment 1A sufficiently for mining.

Monitoring would consist of weekly monitoring at the key wells on the South Parcel in the portions of Edmond Marsh closest to the mine (key wells are defined in Table 1) and twice monthly monitoring at the other well, staff gage, and flow monitoring stations. Stations with continuously recording instrumentation, such as the flow monitoring stations, will be downloaded during these visits. Pressure transducers would also be installed to allow for continuous monitoring in key monitoring wells. Manual measurements will be collected from the other locations, such as staff gages and more distant wells.

The Environmental Caucus will be notified of the installation of wells and the start of dewatering. CalPortland will also provide weekly summaries of dewatering progress during the first two months, then monthly summaries. CalPortland will notify the Environmental Caucus (within 24 hours) of any monitoring results below the performance thresholds. Routine reporting is summarized in Table 3 and notifications are outlined in Table 2.

D. Evaluate

The evaluation stage in Step 2 is very similar to the evaluation stage of Step 1, as both actions are essentially pumping tests at different spatial scales.

Data will be screened as they are collected to determine if immediate action is required. In such an event, the Environmental Caucus would be notified and the project would move immediately to the adjustment stage.

Monitoring results will be screened against the performance thresholds in Table 6 for the appropriate well and month. The performance thresholds were established at the lower 95th-percentile confidence interval for the predicted water levels [see Section 3.3 and the Groundwater Model Update (Aspect, 2017)]. If the monitoring results indicate that groundwater levels are lower than the performance thresholds, CalPortland will develop and implement appropriate adjustments.

Even if the groundwater levels are above the performance thresholds, they still may provide valuable information for refining the model, mine plan, and/or this Monitoring Plan. Those observations will be considered during assessment and design for the next dewatering step.

The evaluation will also consider the effect of conditions occurring at the time of monitoring (such as climate conditions, development, and Restoration Plan activities) with the range of conditions experienced during the model calibration and validation period, and include that information in the interpretation of results.

E. Adjust

Adjustment during the pumping test could occur for two reasons:

1) The monitoring data indicate that dewatering could cause groundwater drawdown beyond that previously contemplated and permitted; or

2) The monitoring data indicate that groundwater levels are not sufficiently low within the mine to allow for safe and efficient mining and processing in Step 3.

The first case would trigger rapid development and implementation of adjustments by CalPortland. If adjustments are not feasible or are exhausted without success, CalPortland would request to initiate the technical review conference of the parties' technical consultants, followed by, if necessary, meetings of the parties' representatives, as described in Section 4.2.6. The Environmental Caucus may also initiate this process.

In the second case, CalPortland would refine the dewatering plan while pumping continues. Potential adjustments include modifying or terminating the pumping test, and are listed in additional detail in Table 7. The list of adjustments provided in Table 7 is not intended to limit the range of potential responses.

CalPortland will notify the Environmental Caucus of any adjustments within 24 hours of the change.

Step 2 is completely reversible as no mining below the pre-project groundwater elevation would occur. Any change in groundwater could be reversed by ceasing to pump from the dewatering wells.

Table 7. Potential Response Actions during Step 2 – Preparation for Mining/Dewatering Test

Revise monitoring (change frequency of monitoring, or monitoring locations).
Install additional monitoring locations.
Change pumping rates.
Change pumping locations (adding or decommissioning) wells.
Modify the duration of pumping.
Cease dewatering.

Reporting and Discussion

In addition to the dewatering summaries described above, an interpretative report will be prepared in the third month of pumping for Step 2. The report will summarize the pumping-test portion of Step 2 by summarizing the first 2 months of data, comparing monitoring results with prior model predictions, documenting any response actions taken, and making recommendations for the assessment and design phases of the next step.

The report will be provided to the Environmental Caucus, with a 2-month period for review and discussion of the results. CalPortland commits to making its technical consultant available to meet with the Caucus's technical consultant as often as necessary during the review period to facilitate open communications and timely review. Should the parties' technical consultants be unable to resolve any difference in opinion in interpreting the dewatering test results, either party may request a meeting of the parties' designated representatives, as described in Section 4.2.6 above.

Anticipated Schedule

Step 2 is expected to require a about a year to complete, though the planning and well installation stages may overlap with the later reporting and discussions related to Step 1. The schedule for Step 2 and relationship with the Step 1 pumping test are shown on Figure 8. The anticipated schedule for key elements of Step 2, assuming performance thresholds are met, is:

Planning the Dewatering	2 months	
Installing and Developing Wells	2–3 months	
Performing the Pumping Test	2 months	
Evaluating Results and Reporting	2 month	Simultaneously: Continue Dewatering in Preparation for Mining
Update Model (if necessary)	1 month	
Review by and discussion with EC	2 months	4 months

If groundwater levels meet performance thresholds, Step 2 would flow into Step 3 and the start of mining. Otherwise, Step 2 may require a longer period to perform the

necessary adjustments to achieve sufficient dewatering for mining while maintaining groundwater levels consistent with the performance thresholds and prior environmental analyses, or update the environmental analyses, if necessary.

Step 3 would only commence when groundwater levels are above the performance thresholds and water levels are at appropriately low levels for safe and efficient mining and processing.

4.3.3 Step 3 – Active Dewatering during Mining

During Step 3, mining will begin in the northeastern portion of the South Parcel and proceed south to mine a trough along the eastern boundary. Additional dewatering wells will be installed and pumped to dewater gravel in subsequent mine segments in the South Parcel. CalPortland would not start pumping additional dewatering wells until groundwater levels are at or above performance thresholds.

As mining is completed, reclamation of the eastern mined slope will begin. Pumping wells adjacent to mine segments that are under reclamation will be turned off incrementally to allow natural springs to form at the toe of the mined slope and vegetation to become established.

Steps 3 and 4 are different from the first two steps in that changes to groundwater in these steps are not as easily reversed. As such, the adaptive management plan is focused on identifying when adjustments are necessary.

The adaptive management plan for Step 3 is iterative, and activities would loop continuously through the adaptive management stages throughout implementation of Step 3. The adaptive management plan for Step 3 is illustrated on Figure 11.

A. Assess

The planning for Step 3 will begin prior to the completion of Step 2 to allow for a potentially smooth transition, if performance thresholds are being met. The planning stage will incorporate previously collected monitoring data as well as any updates to the groundwater model, monitoring plan, or dewatering and mining plans.

If monitoring data from prior steps meet the performance thresholds, the planning for Step 3 is expected to move forward in accordance with the mine plan.

Differences between monitoring results and predictions would result in re-evaluation of the groundwater model. The re-evaluation would first simulate the specific conditions of Step 2, then more broadly update the model if predictions still do not match observations. If significant model updates are required, the full suite of scenarios would be simulated and results compared with the prior environmental analyses and permitting. Only if model results are within the predicted range may the project move forward to the design phase with the revised model.

The initially identified objectives for Step 3 are:

1) Evaluate whether groundwater levels at monitoring wells are above the performance thresholds for the appropriate month; and

2) Confirm that groundwater levels are low enough within the material to be mined to allow for safe and efficient mining and processing.

B. Design

Based on the results of the prior steps and assessment for Step 3, the dewatering plan, mining plan, and the associated monitoring will be updated by CalPortland, if necessary. Updates to the design will be simulated with the groundwater model and compared with the performance thresholds. Updated documents will be provided to the Environmental Caucus.

C. Implement and Monitor

Mining will begin at the northern edge of the South Parcel in the area dewatered in Step 2. As mining progresses, additional dewatering wells will be installed to the south of the current wells and begin pumping. As mining is completed in an area, the nearby wells will be turned off, allowing groundwater to emerge from springs from the toe of the completed slope. Both pumped groundwater and spring flow will be conveyed to an infiltration pond installed on the floor of the existing mine.

Monitoring would continue at all normal well, wetland, and streamflow monitoring stations. Streamflow and select well monitoring stations would have continuous recording instruments installed. Other locations would use manual measurements.

The frequency of monitoring would vary during Step 3. In the 3 months after the start of pumping for each new group of monitoring wells, monitoring would be weekly at key wells (defined in Table 1) and twice monthly monitoring at the other well, staff gage, and flow monitoring stations. After that, monitoring will be performed monthly.

D. Evaluate

As with prior steps, monitoring results will be screened against performance thresholds for Step 3 (Table 8) for the appropriate well and month. The performance thresholds were established at the lower 95^{th}-percentile confidence interval for the predicted water levels [see Section 3.3 and the Groundwater Model Update (Aspect, 2017)]. If the model was previously updated, performance thresholds based on predictive results from the updated model will be used for the comparison. The evaluation will also consider the effect of conditions occurring at the time of monitoring (such as climate conditions, development, and Restoration Plan activities) with the range of conditions experienced during the baseline period.

If the monitoring results indicate that groundwater levels are lower than the performance thresholds, CalPortland would evaluate and implement appropriate adjustments.

Although the primary focus is on changes in groundwater levels, streamflow and surface water monitoring results will also be reviewed. By this point in the project, streamflow and surface water monitoring results will be affected by Restoration Plan activities, which are likely to have a larger effect than mining on the surface water bodies. The Restoration Plan will incorporate its own adaptive management process.

E. Adjust

Step 3 involves mining below the current aquifer level. As such, it is more difficult to reverse than prior steps; however, mining is designed to begin away from the marshes

and Sequalitchew Creek and proceed southward toward them over a period of years. This will slowly change water levels beneath the marshes and creek and allow time for response actions should the monitoring data and evaluations indicate they are necessary.

If groundwater levels are below the performance thresholds, CalPortland would develop and implement adjustments. Unlike in the prior steps, re-examination of the groundwater model is not a first element of evaluating potential response actions in Step 3.

Either party may initiate a request for a technical review conference and, if necessary, meetings of the parties' representatives, as described under Section 4.2.6 above. If adjustments are not feasible or are exhausted without meeting performance thresholds, CalPortland would initiate the process to discuss alternative approaches and next steps.

Selection of potential response actions is shown in Table 9. The suite of appropriate response actions will change over time as mining progresses. For example, early in Step 3 there is more flexibility to alter the mine plan. As mining progresses further south, the ability for alterations to the mine plan to produce a meaningful change in groundwater levels is reduced.

Table 9. Potential Response Actions during Step 3 – Active Dewatering during Mining

Revise mine phasing to allow time for additional monitoring, analyses, testing, and planning.
Revise dewatering plan (number of wells, spacing, alignment, pumping duration).
Revise mining plan to change depth or extent of mining.
Install partial slurry cutoff wall.
Provide additional mitigation.
Cease dewatering and mining.

Reporting and Discussion

During Step 3, CalPortland will prepare summary memos providing comparison of observed groundwater levels over the past 3 months with model predictions, as well as an update on dewatering and mining status, and any response actions taken. The summary memos will be prepared monthly for 3 months after each new set of dewatering wells begins pumping, then quarterly. The memos will be provided to the Environmental Caucus.

Anticipated Schedule

Mining would proceed south over a period of years. Completion of Step 3 is expected to take 4 to 8 years. The mining schedule is, in part, driven by the market demand for aggregate. CalPortland has committed to complete Step 3 in no less than 3 years, or a minimum of 9 months per each of the first four segments (1A to 1D). The minimum timeline for completion of Step 3 is illustrated in Figure 8.

4.3.4 Step 4 – Cessation of Active Dewatering

This final step of dewatering commences once mining and reclamation advances to the point that the last dewatering wells installed in Step 3 have been turned off. At that point, groundwater will emerge from springs along the length of the toe of the mined (and reclaimed) slope along the eastern and a portion of the southern mine boundaries. Step 3 is expected to transition smoothly into Step 4, given the multiple-year duration of Step 3 and that ceasing to pump the dewatering wells will result in lower environmental impact.

Several steps of the adaptive management process (i.e., assess and design) are not as relevant in Step 4, because it is a largely passive step with respect to the effects on groundwater levels. Mining and reclamation activities will continue within the South Parcel, but those activities would no longer influence groundwater levels.

As such, this discussion focuses on ongoing monitoring, data evaluation, and potential response actions. The adaptive management plan for Step 4 is illustrated on Figure 12.

C. Monitoring

Monthly monitoring would continue for the duration of mining at the normal well, wetland, and streamflow monitoring stations. Continuous instrumentation will be maintained at streamflow monitoring stations. Staff gage and well monitoring locations will be manually measured.

D. Evaluate

Monitoring results would continue to be screened relative to the performance thresholds shown in Table 10, or as refined from the most recent groundwater model. The performance thresholds were established at the lower 95th-percentile confidence interval for the predicted water levels [see Section 3.3 and the Groundwater Model Update (Aspect, 2017)]. It is unlikely that events will result in short-term changes in groundwater levels in Step 4. Therefore, the evaluation will focus on longer-term comparisons with model predictions and observations of changes in the marshes and Sequalitchew Creek.

E. Adjust

If groundwater levels persist lower than the performance thresholds, CalPortland and the Environmental Caucus would hold one or more technical review conferences of the parties' technical consultants and, if necessary, meetings of the parties' representatives (as described in Section 4.2.6). to discuss and select appropriate adjustments. Either party may initiate this process.

Reporting

Quarterly summary memos will be prepared for the first year after cessation of dewatering. Annual reports will be prepared for the remaining duration of mining of the South Parcel.

Anticipated Schedule

Step 4 will begin after active dewatering ceases. Depending on market demand for aggregate products, mining of the remainder of the South Parcel is expected to occur over 5 to 8 years after cessation of active dewatering. Active adaptive management during Step 4 would cease when the following conditions are met:

- Mining of the South Parcel is complete, and

- Measured groundwater levels have been met performance thresholds for at least 3 consecutive years.

5 Relationship of Adaptive Management Process to Sequalitchew Creek Restoration Plan

Mining of the South Parcel and the restoration of Sequalitchew Creek are separate, but interacting, projects. Each project has its own adaptive management process tailored to achieving the goals and objectives of that project. The interaction between the two adaptive management processes is three-fold: 1) project schedules that encourage restoration in advance of the potential impacts from mining; 2) development of performance thresholds for mining that support restoration based on prior technical studies, including the cumulative effects analysis prepared in 2016 (Aspect and Anchor, 2016); and 3) coordinated monitoring and open sharing of information.

Project Schedules. The mining and restoration projects have been designed to facilitate restoration occurring in advance of the potential impacts from mining. This relationship between the project schedules is founded in key elements of the settlement agreement:

1) The mining project cannot begin until all permits for restoration have been obtained and the required authorizations or approvals from JBLM needed to implement the restoration elements on JBLM have been obtained.

2) The first actions of the mining project are pumping and dewatering tests (i.e., Steps 1 and 2) and are expected to take about 1.5 to 2 years to complete and no less than 9 months[1], as described in Section 4.2.1. The effects of Steps 1 and 2 on groundwater are completely reversible.

3) The first South Parcel mining segment is located furthest from the wetlands and Sequalitchew Creek. Mining and dewatering proceed slowly toward the Creek over a period of not less than 3 years, and more likely 4 to 8 years.

4) There are no schedule constraints or limits imposed on the pace of restoration activities.

The Restoration Plan schedule is anticipated to begin with the elements that immediately restore flow through the system—specifically, beaver management and improvements at the outlet of Sequalitchew Lake. The actions will be followed by improvements that enhance flows (e.g., connections from Hamer Marsh) and make it easier to maintain flows (e.g., installation of the Railroad Trail bridge and sealing\restoration of the losing reach). Finally, habitat restoration, through culvert replacements and enhancement of wetland and stream habitats, is the final component of the Restoration Plan.

Although a detailed schedule has not been developed for implementation of the Restoration Plan, it is anticipated restoration activities will begin immediately shortly after Restoration Plan permits are obtained and it should require no more than 6 years to complete construction and implementation of all elements of the Restoration Plan. The

[1] Minimum durations for the pumping test and review and discussion stages of Steps 1 and 2 are established in Section 4.3. The specified timeframes add up to a minimum duration of 9 months, however this duration is unrealistically short as it does not include time for other key steps, like well installation or report writing.

flow restoration actions should be completed within two years from the start of the project, and followed by flow maintenance and enhancement, which may require 3 years to complete, but could overlap with the flow restoration actions. Finally, construction of habitat restoration improvements could be completed within 3 years and could overlap or dovetail with the related flow maintenance and enhancement elements.

A timeline relating the anticipated schedules for restoration and mining is presented on Figure 13. Restoration activities should be successful in restoring flows to Sequalitchew Creek within the first 2 years. During this time, the mining project would complete the second pumping test (Step 2) and, if groundwater levels meet performance thresholds and mining progresses at the fastest allowable pace, mine Segment 1A and advance into Segment 1B. The anticipated increase in flow is much greater than the potential impact from the mining project, and the full benefit in flow quantity may be achieved in these first 2 years; whereas the impact from mining is minimal at first and increases slowly over time. The impact from mining is expected to peak during mining of Segment 1C, when the greatest number of wells are pumping[2].

Even if mining is proceeding rapidly, CalPortland has committed that mining of Segment 1 would not be completed in less than 3 years, with each segment lasting at least 9 months. At this pace, the peak impact from mining could be expected around 2 to 3 years after the start of restoration. Even if delayed, the flow restoration action should have occurred by this time and only a fraction of flow restoration is necessary to offset the impacts from mining.

Performance Thresholds that are Supportive of Restoration. The cumulative effects analysis (Aspect and Anchor, 2016) found that the changes in the marshes would be dominated by the Restoration Project (which requires lowering marsh water levels to achieve flow from Sequalitchew Lake to the ravine), rather than increased infiltration resulting from lower groundwater levels. The marshes would have significantly more water flowing through them than under current conditions, resulting in consistent water levels year-round at the target levels established in the Restoration Plan, except for some periods in the driest years.

The cumulative effects analysis also concluded that the predominant cumulative effect on Sequalitchew Creek would be an increase in annual average flows by approximately 10 cfs, with abundant year-round flow most of the time. By comparison, the stream flow reductions from mining is expected to be less than 1 cfs, and only apparent during limited periods in atypical summers.

The anticipated benefits to streamflow from restoration are much larger than the potential impacts from mining. As a result, the success of the restoration project is not expected to be particularly sensitive to the groundwater levels resulting from mining. Monitoring during mining will ensure that groundwater levels remain within the expected range that will support the anticipated increases in stream flow from the restoration project. If

[2] To be conservative, the potential impacts of mining described in the cumulative effects analysis (Aspect and Anchor, 2016) were based on all wells pumping at the same time. In practice, this condition is unlikely to occur as initial wells would be phased off as mining progresses.

groundwater levels are not maintained within the expected range, corrective actions will be implemented in accordance with the adaptive management plan for mining.

Coordinated Monitoring and Information Sharing. To facilitate the coordinated collection and exchange of information, the two projects share an integrated SAP (Appendix B). The SAP outlines the collection of information on groundwater levels, surface water levels, streamflow, and surface water quality to support both plans. Each plan also outlines how information will be shared so that plan implementers have the data necessary to make informed management decisions.

6 References

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Aspect Consulting, LLC and Anchor QEA (Aspect and Anchor), 2016, Memorandum Re: Summary of Cumulative Effects of DuPont Mining and Restoration Projects on Aquatic Habitat, Surface Water and Groundwater, November 29, 2016.

CH2M Hill, 2000, Groundwater Investigation Report, North Sequalitchew Creek Project, DuPont, Washington, June 2, 2000.

Nyberg, J.B., 1999, An Introductory Guide to Adaptive Management for Project Leaders and Participants, British Columbia Forest Service, Victoria, Canada, URL: http://www.for.gov.bc.ca/hfp/amhome/Training/am-intro-guide.htm.

Ralph, S. C., and G. C. Poole, 2003, Putting monitoring first: designing accountable ecosystem restoration and management plans, D. R. Montgomery, S. Bolton, and D. B. Booth, editor, Restoration of Puget Sound Rivers, University of Washington Press, Seattle, pp 188.

7 Limitations

Work for this project was performed for CalPortland (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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TABLES

Table 4 - Performance Thresholds for Step 1 - Initial Dewatering Test

Project No. 040001-014-02, South Parcel, DuPont, Washington

Well	Performance Threshold = Groundwater Elevation in Feet (NGVD 29)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MW-EM-1S	203.6	202.4	202.9	202.2	202.3	201.4	200.4	200.4	199.5	199.5	202.1	202.9
MW-EM-1D	204.6	203.4	203.9	203.2	203.3	202.5	201.5	201.5	200.7	200.7	203.1	203.9
MW-EM-2S	210.6	210.3	210.4	210.3	210.2	210.0	209.7	209.6	209.3	209.5	210.2	210.4
MW-EM-2D	210.8	210.4	210.6	210.5	210.4	210.2	209.8	209.7	209.4	209.6	210.4	210.5
MW-EM-3	212.1	211.9	211.8	211.9	212.0	211.6	211.4	210.8	210.2	210.3	211.5	211.9
MW-SRC-2	213.2	212.4	212.7	212.6	212.8	212.0	211.4	210.2	209.6	210.5	212.3	212.7
MW-BM-1	218.0	217.0	216.6	217.4	217.3	216.6	216.1	213.1	213.3	214.2	216.8	217.4
MW-HM-1	214.2	213.5	213.3	213.8	213.6	212.7	211.8	211.2	210.6	211.1	213.1	213.6
MW-PL-1	200.8	200.1	200.4	200.1	200.0	199.4	198.6	198.7	198.0	197.7	199.6	200.2
CHMW-1	191.3	189.9	190.4	189.6	189.7	189.0	188.1	188.0	187.4	187.5	190.0	190.7
CHMW-2S	184.6	183.3	183.7	183.0	183.0	182.5	181.7	181.6	181.2	181.4	183.5	184.0
CHMW-2D	183.4	181.8	182.4	181.4	181.5	180.8	179.8	179.7	179.3	179.4	182.1	182.7
CHMW-3S	193.3	191.7	192.4	191.3	191.5	190.6	189.6	189.5	188.7	188.8	191.7	192.6
CHMW-3D	193.2	191.5	192.2	191.1	191.3	190.4	189.2	189.1	188.3	188.4	191.5	192.5
CHMW-4S	196.1	194.7	195.3	194.4	194.6	193.7	192.7	192.6	191.9	191.9	194.6	195.5
CHMW-4D	194.3	192.9	193.5	192.6	192.7	191.9	190.9	190.8	190.1	190.1	192.8	193.6
MW-D-3	196.5	195.3	195.7	195.0	195.1	194.6	193.9	193.7	193.3	193.5	195.6	195.9
MW-93-MFS-C5-3	192.3	191.2	191.7	191.0	191.0	190.5	190.0	189.9	189.5	189.8	191.6	191.7

Table 6 - Performance Thresholds for Step 2 - Preparation for Mining/Expanded Dewatering Test

Project No. 040001-014-02, South Parcel, DuPont, Washington

Well	Performance Threshold = Groundwater Elevation in Feet (NGVD 29)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MW-EM-1S	202.3	201.1	201.6	200.9	201.1	200.1	199.1	199.2	198.4	198.3	200.8	201.5
MW-EM-1D	203.4	202.3	202.8	202.2	202.3	201.4	200.5	200.5	199.7	199.7	202.0	202.7
MW-EM-2S	210.6	210.2	210.3	210.2	210.1	210.0	209.6	209.5	209.2	209.4	210.1	210.3
MW-EM-2D	210.8	210.4	210.5	210.4	210.3	210.1	209.7	209.6	209.3	209.5	210.3	210.5
MW-EM-3	212.1	211.9	211.8	211.9	212.0	211.6	211.4	210.8	210.2	210.3	211.5	211.9
MW-SRC-2	213.2	212.4	212.6	212.6	212.8	212.0	211.4	210.2	209.5	210.5	212.0	212.7
MW-BM-1	218.0	217.0	216.5	217.3	217.2	216.6	216.1	213.0	213.3	214.1	216.8	217.3
MW-HM-1	214.2	213.4	213.3	213.8	213.6	212.7	211.8	211.2	210.5	211.1	213.0	213.6
MW-PL-1	200.4	199.7	200.1	199.8	199.8	199.1	198.2	198.4	197.7	197.4	199.2	199.8
CHMW-1	187.0	185.7	186.3	185.5	185.6	184.9	184.0	184.0	183.3	183.4	185.8	186.4
CHMW-2S	143.8	141.4	142.2	141.0	141.0	140.1	139.1	138.9	138.3	138.6	141.8	142.9
CHMW-2D	142.5	141.0	141.6	140.7	140.7	140.0	139.1	138.9	138.3	138.5	141.2	141.9
CHMW-3S	190.6	189.0	189.8	188.8	189.0	188.1	187.0	187.0	186.2	186.2	189.0	189.8
CHMW-3D	190.2	188.6	189.4	188.3	188.5	187.5	186.3	186.3	185.4	185.3	188.4	189.3
CHMW-4S	193.7	192.3	193.0	192.1	192.3	191.4	190.4	190.4	189.6	189.6	192.2	193.0
CHMW-4D	191.8	190.5	191.2	190.3	190.5	189.6	188.6	188.6	187.8	187.8	190.4	191.1
MW-D-3	193.7	192.5	193.0	192.3	192.3	191.9	191.2	191.1	190.7	190.9	192.9	193.4
MW-93-MFS-C5-3	190.8	189.8	190.3	189.6	189.6	189.1	188.7	188.5	188.2	188.5	190.2	190.5

Table 8 - Performance Thresholds for Step 3 - Active Dewatering during Mining

Project No. 040001-014-02, South Parcel, DuPont, Washington

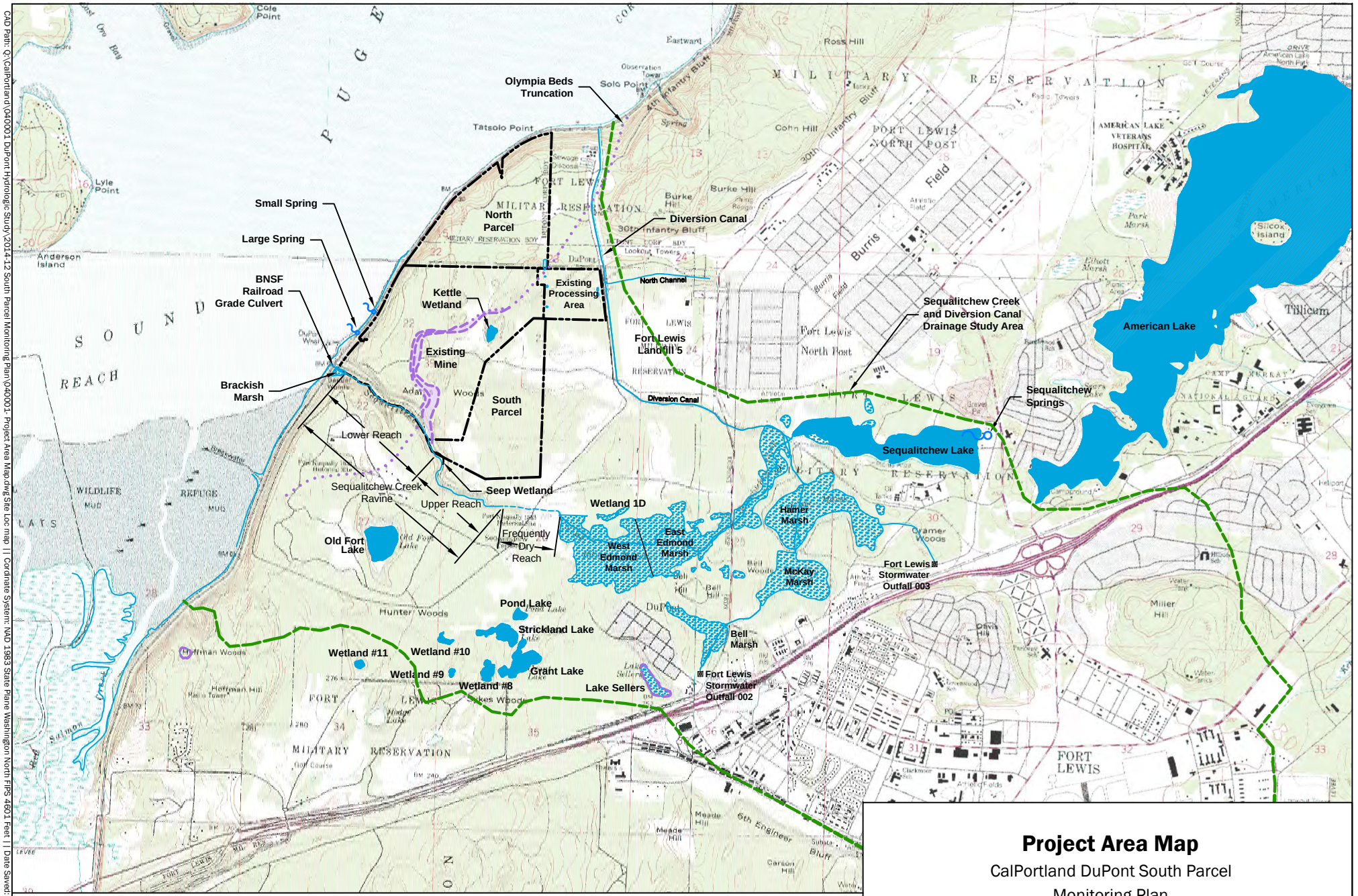
Well	Performance Threshold = Groundwater Elevation in Feet (NGVD 29)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MW-EM-1S	197.5	196.4	196.9	196.4	196.5	195.6	194.7	194.8	194.1	194.1	196.1	196.8
MW-EM-1D	199.4	198.4	198.9	198.3	198.4	197.6	196.8	196.9	196.2	196.2	198.1	198.7
MW-EM-2S	210.3	210.0	210.1	209.9	209.9	209.7	209.4	209.3	209.0	209.2	209.9	210.0
MW-EM-2D	210.5	210.1	210.3	210.1	210.0	209.8	209.5	209.4	209.1	209.3	210.0	210.2
MW-EM-3	212.1	211.9	211.8	211.9	212.0	211.6	211.4	210.8	210.2	210.3	211.5	211.8
MW-SRC-2	213.2	212.4	212.7	212.6	212.8	212.0	211.4	210.2	209.5	210.5	212.0	212.7
MW-BM-1	217.8	216.8	216.4	217.2	217.1	216.4	215.9	212.8	213.1	213.9	216.7	217.2
MW-HM-1	214.2	213.4	213.3	213.8	213.6	212.7	211.8	211.2	210.4	211.1	213.0	213.6
MW-PL-1	199.4	198.7	199.0	198.8	198.7	198.0	197.1	197.3	196.6	196.2	198.1	198.8
CHMW-1	129.8	129.1	129.4	128.9	128.9	128.5	127.8	127.8	127.3	127.4	129.2	129.5
CHMW-2S	136.0	134.5	135.0	134.1	134.1	133.5	132.9	132.8	132.3	132.5	134.9	135.5
CHMW-2D	135.9	134.7	135.1	134.3	134.2	133.7	133.1	132.9	132.4	132.6	134.9	135.5
CHMW-3S	131.1	128.4	130.3	128.9	129.2	127.9	126.6	127.0	126.2	126.3	129.0	130.2
CHMW-3D	128.3	127.4	127.9	127.6	127.6	126.8	125.8	126.1	125.4	125.1	127.0	127.6
CHMW-4S	181.0	179.7	180.4	179.6	179.7	178.8	177.7	177.8	176.9	176.9	179.5	180.3
CHMW-4D	178.5	177.3	178.0	177.1	177.3	176.4	175.3	175.4	174.5	174.4	177.1	177.8
MW-D-3	189.9	188.6	189.1	188.4	188.4	187.9	187.4	187.3	186.9	187.3	189.1	189.6
MW-93-MFS-C5-3	189.5	188.5	189.0	188.4	188.3	187.9	187.5	187.4	187.2	187.5	189.0	189.3

Table 10 - Performance Thresholds for Step 4 - Cessation of Active Dewatering

Project No. 040001-014-02, South Parcel, DuPont, Washington

Well	Performance Threshold = Groundwater Elevation in Feet (NGVD 29)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MW-EM-1S	198.1	197.0	197.6	197.0	197.1	196.2	195.4	195.3	194.8	194.7	196.8	197.4
MW-EM-1D	199.9	198.9	199.4	198.8	199.0	198.2	197.3	197.3	196.7	196.7	198.7	199.3
MW-EM-2S	210.3	210.0	210.1	210.0	209.9	209.7	209.4	209.3	209.0	209.2	209.9	210.1
MW-EM-2D	210.5	210.2	210.3	210.1	210.1	209.9	209.5	209.4	209.1	209.3	210.1	210.2
MW-EM-3	212.1	211.9	211.8	211.9	212.0	211.6	211.4	210.8	210.2	210.3	211.5	211.8
MW-SRC-2	213.2	212.4	212.7	212.6	212.8	212.0	211.4	209.9	209.4	210.4	212.0	212.7
MW-BM-1	217.9	216.9	216.4	217.2	217.1	216.5	216.0	212.3	213.0	213.8	216.7	217.2
MW-HM-1	214.2	213.4	213.3	213.8	213.6	212.7	211.8	211.0	210.3	211.1	213.0	213.6
MW-PL-1	199.5	198.8	199.2	198.9	198.9	198.2	197.3	197.5	196.8	196.4	198.2	198.9
CHMW-1	163.2	162.7	162.9	162.7	162.6	162.4	162.1	162.1	161.8	162.0	162.9	163.1
CHMW-2S	169.3	165.0	168.1	163.2	162.8	158.9	157.1	157.2	156.2	156.9	167.9	168.8
CHMW-2D	160.3	158.5	159.2	158.1	157.9	156.9	155.4	155.5	154.6	155.2	159.1	159.8
CHMW-3S	140.4	140.2	140.3	140.2	140.2	140.0	139.7	139.7	139.5	139.7	140.3	140.3
CHMW-3D	141.9	141.6	141.8	141.6	141.6	141.4	141.1	141.1	140.9	141.0	141.6	141.8
CHMW-4S	183.0	181.9	182.5	181.8	181.9	181.3	180.5	180.5	179.9	180.0	181.9	182.4
CHMW-4D	181.0	180.0	180.6	179.9	180.0	179.4	178.7	178.7	178.2	178.2	180.0	180.5
MW-D-3	191.4	190.2	190.7	190.0	189.9	189.5	188.9	188.8	188.5	188.9	190.7	191.1
MW-93-MFS-C5-3	190.1	189.1	189.5	188.9	188.8	188.4	187.9	187.9	187.6	188.0	189.6	189.9

FIGURES



Project Area Map

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect CONSULTING	DEC-2014	BY: OGR/SCC	FIGURE NO. 1
	PROJECT NO. 040001-014	REVISED BY: -	

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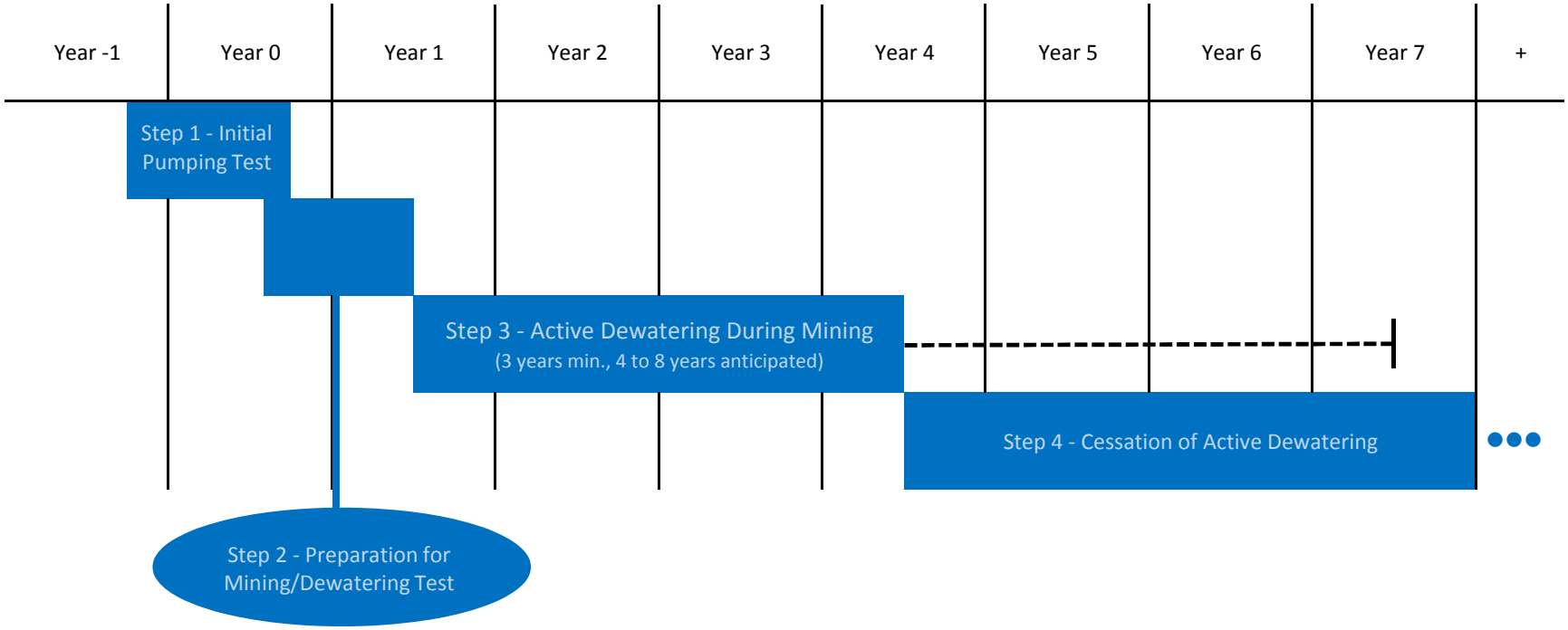
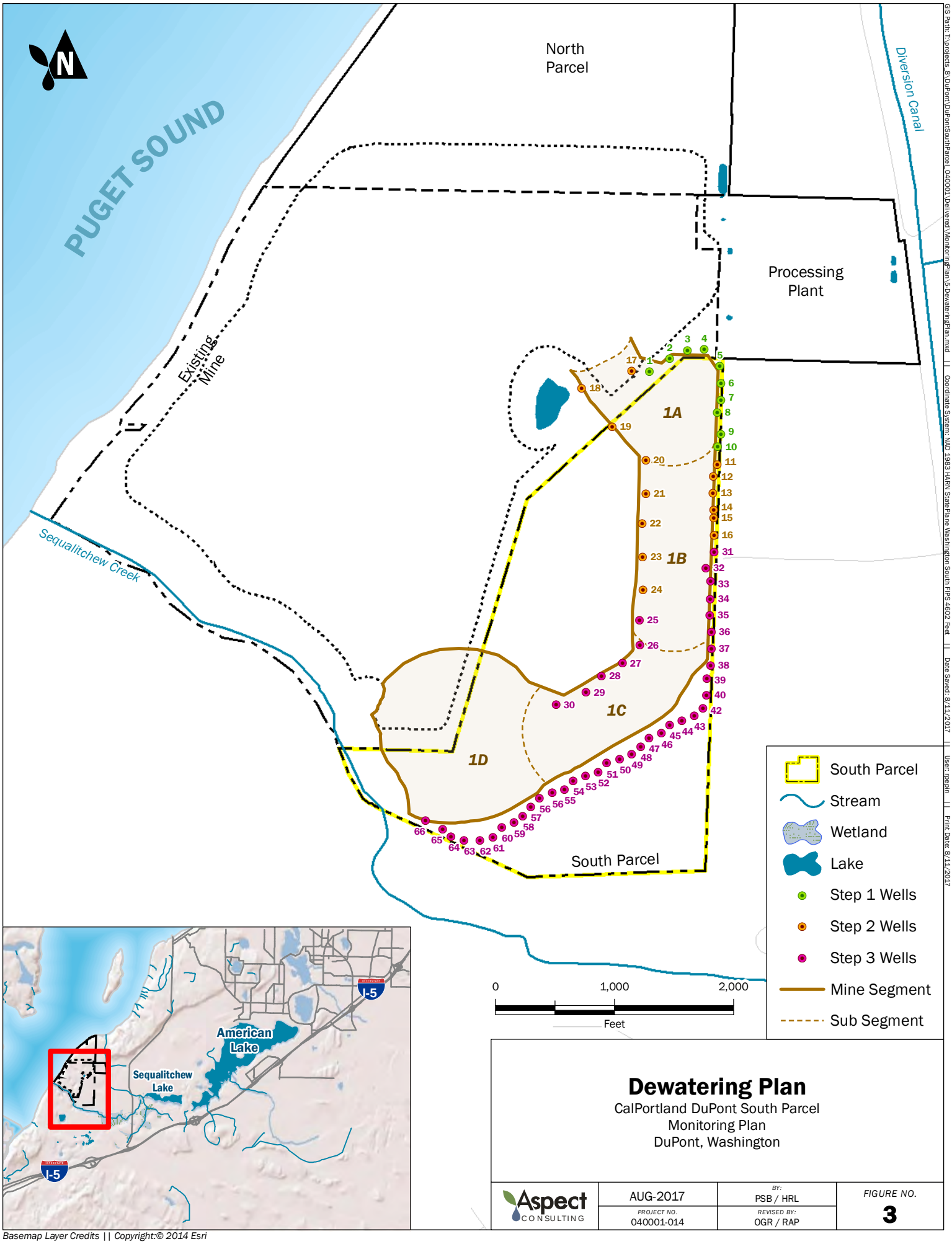


Notes:

1) Year 1 begins with the start of pumping in Step 2.

2) Timeline for Step 3 is based on CalPortland's commitment to a minimum duration of 3 years. The dashed line indicates the anticipated duration (6 years).

Figure 2
Timeline of Dewatering Steps
South Parcel Monitoring Plan
DuPont, Washington



Dewatering Plan

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect CONSULTING	AUG-2017	BY: PSB / HRL	FIGURE NO. 3
	PROJECT NO. 040001-014	REVISED BY: OGR / RAP	

Basemap Layer Credits || Copyright:© 2014 Esri

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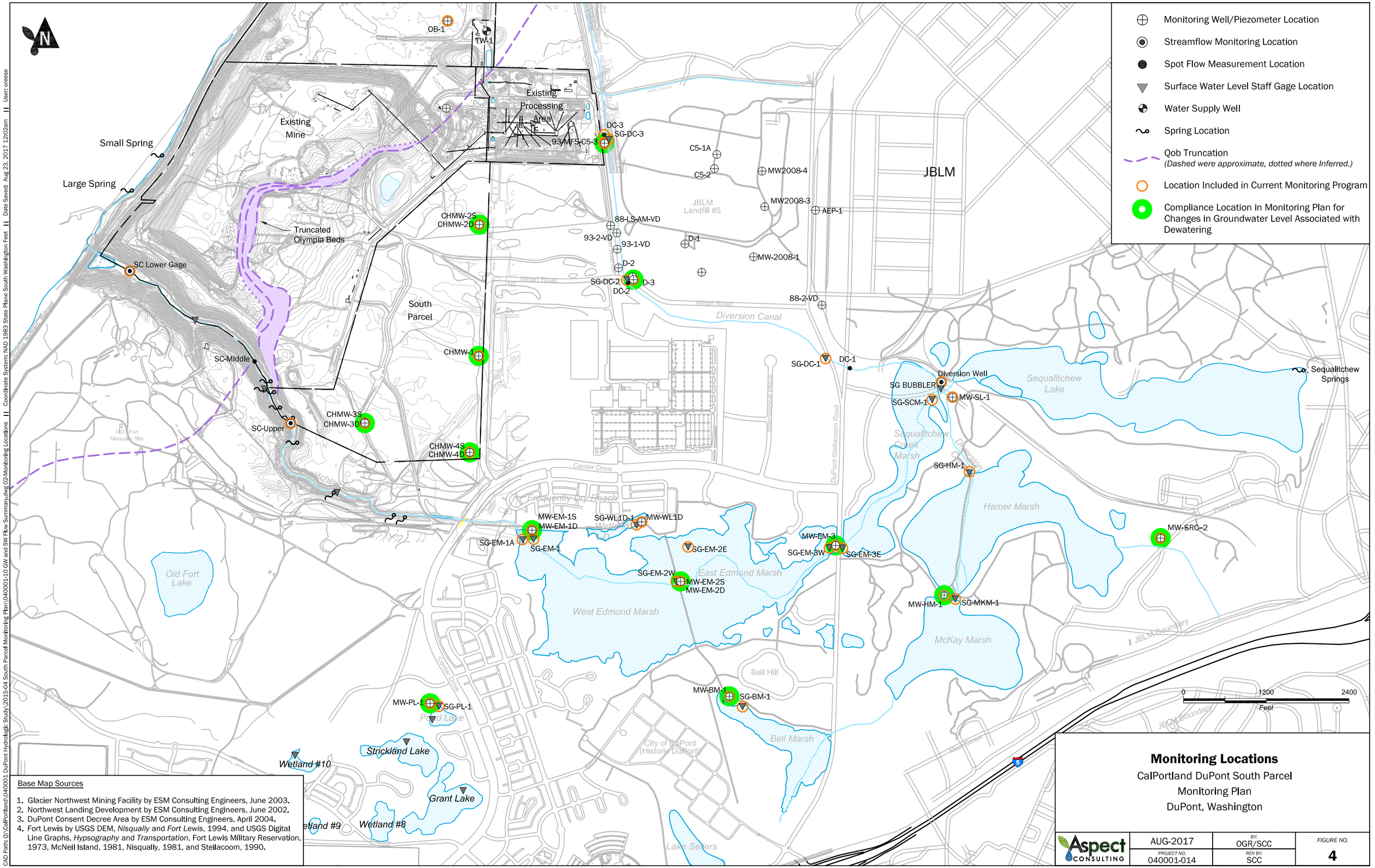

Base Map Sources

1. Glacier Northwest Mining Facility by ESM Consulting Engineers, June 2003.
2. Northwest Landing Development by ESM Consulting Engineers, June 2002.
3. DuPont Consent Decree Area by ESM Consulting Engineers, April 2004.
4. Fort Lewis by USGS DEM, *Nisqually* and *Fort Lewis*, 1994, and USGS Digital Line Graphs, *Hypsography* and *Transportation*, Fort Lewis Military Reservation, 1973, McNeil Island, 1981, Nisqually, 1981, and Steilacoom, 1990.

Monitoring Locations

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect Consulting	AUG-2017	BY: OGR/SCC	FIGURE NO. 4
	PROJECT NO. 040001-014	REV BY: SCC	

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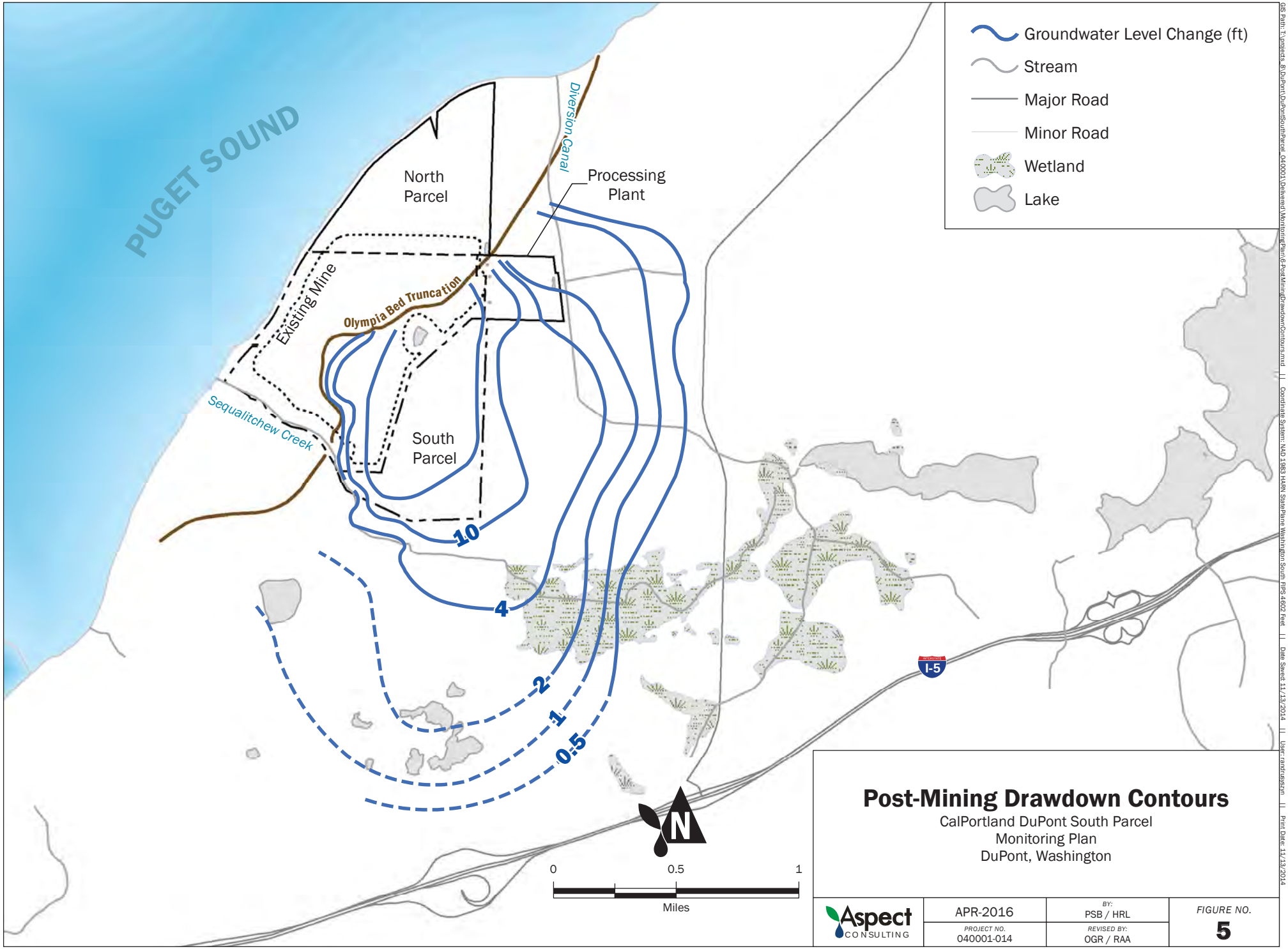

Post-Mining Drawdown Contours

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect CONSULTING	APR-2016	BY: PSB / HRL	FIGURE NO. 5
	PROJECT NO. 040001-014	REVISED BY: OGR / RAA	

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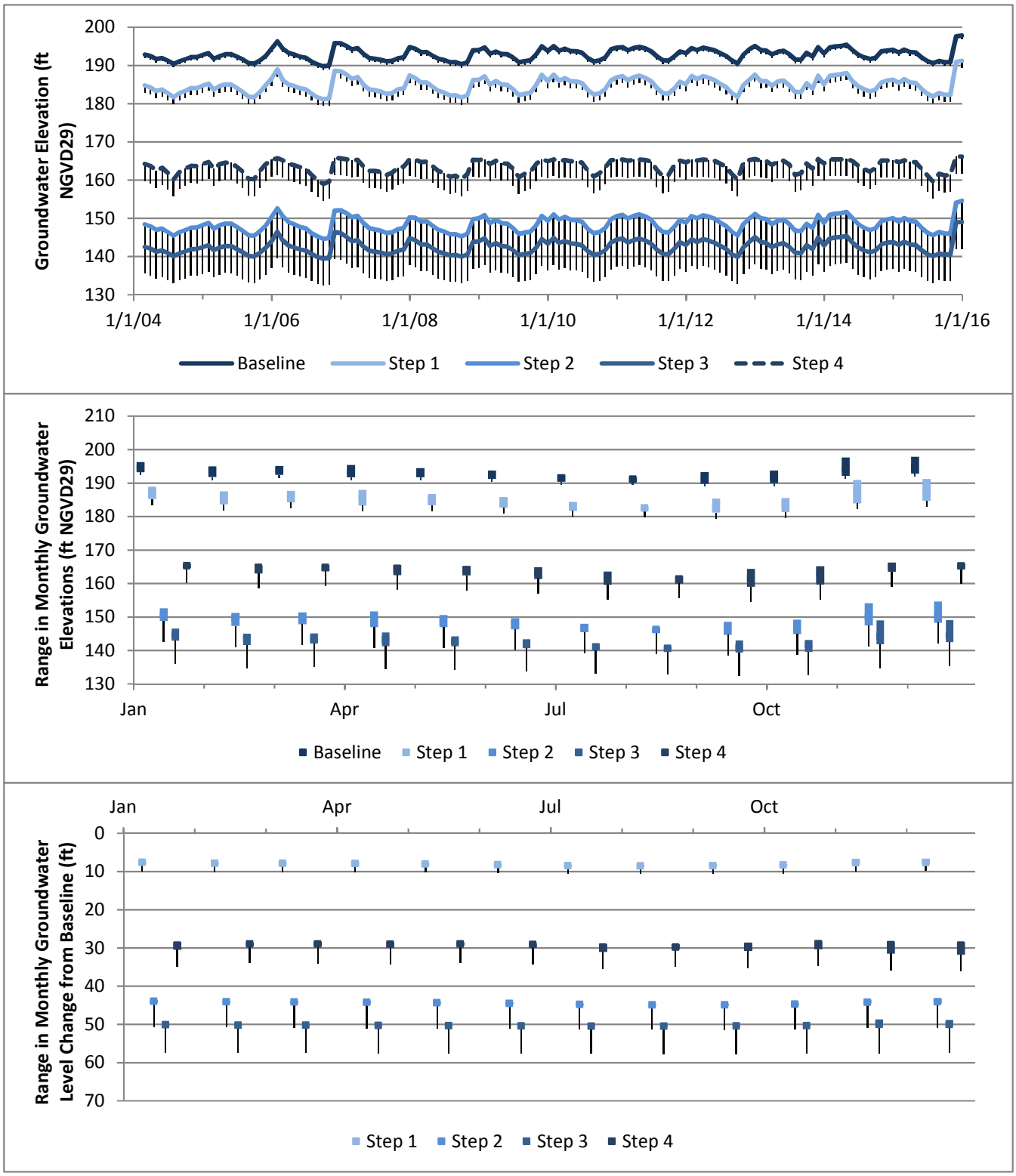
CHMW-2D



Aspect Consulting, LLC
03/20/2017
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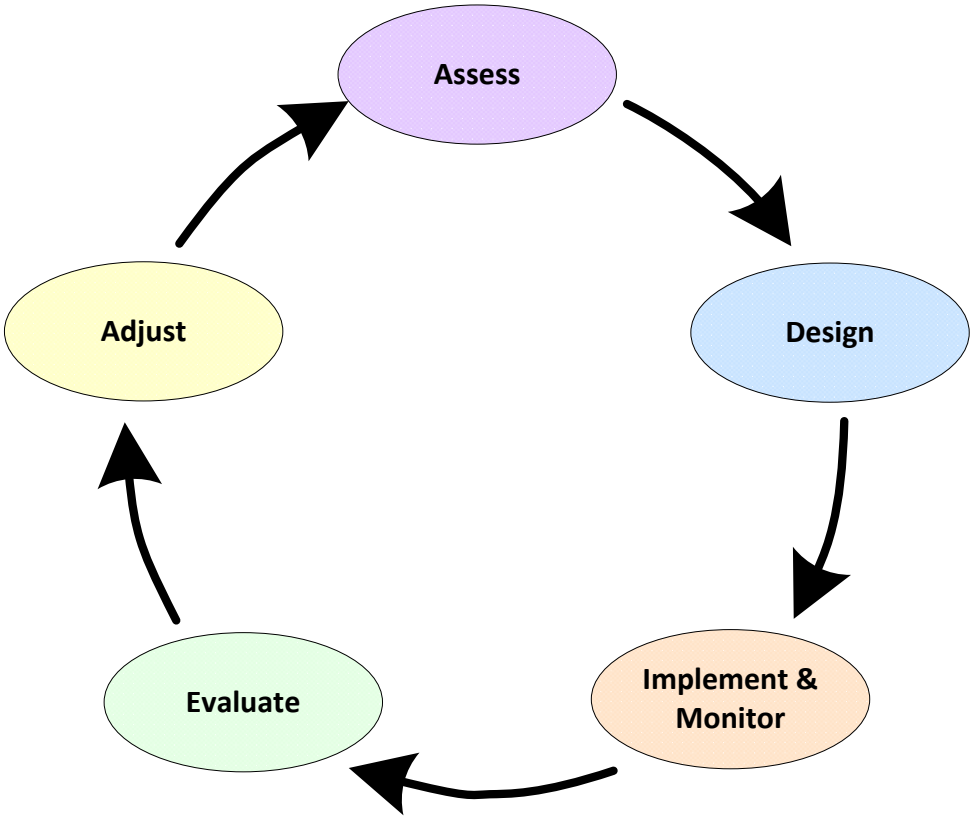
Figure 6
Predicted Changes and Ranges in Groundwater Levels



Adaptive Management Process

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, WA

Aspect CONSULTING	APR-2016	BY: OGR	FIGURE NO. 7
	PROJECT NO. 040001-014	REV BY: ---	

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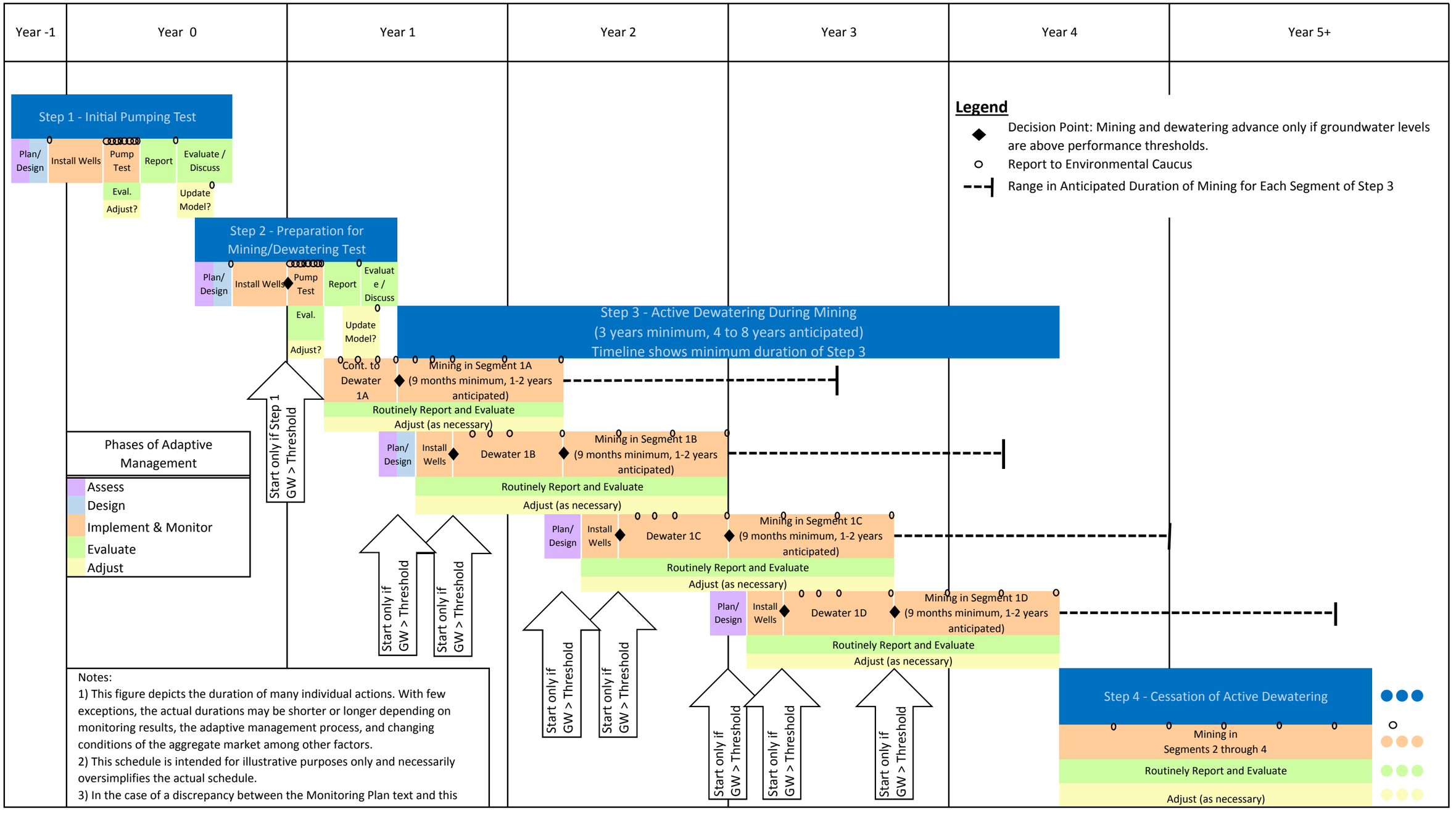
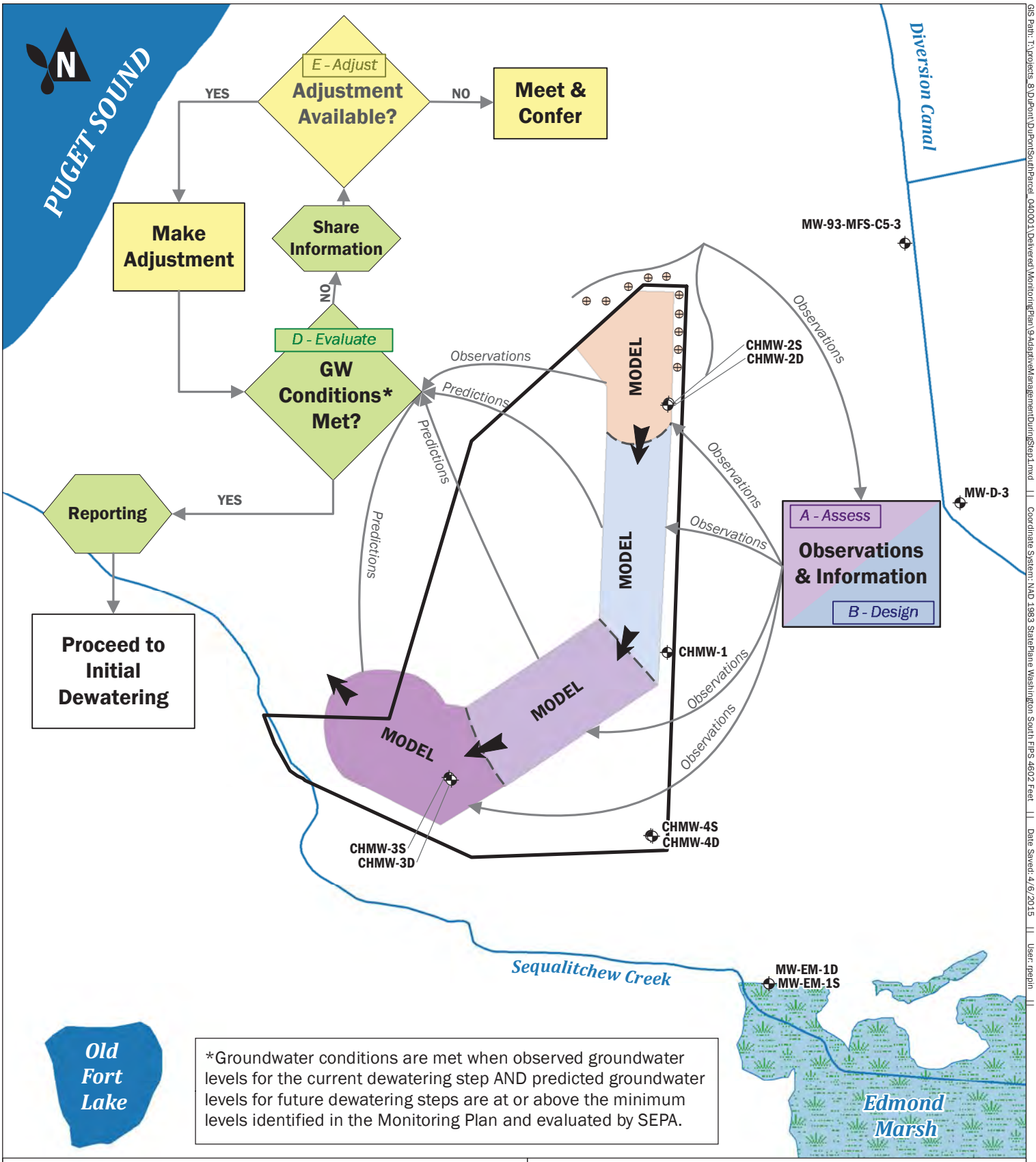


Figure 8
Timeline of Adaptive Management for South Parcel Mining



Adaptive Management Process During Step 1 - Initial Dewatering Test

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect CONSULTING	APR-2016	BY: OGR / RAP	FIGURE NO. 9
	PROJECT NO. 040001-014	REVISED BY: ---	

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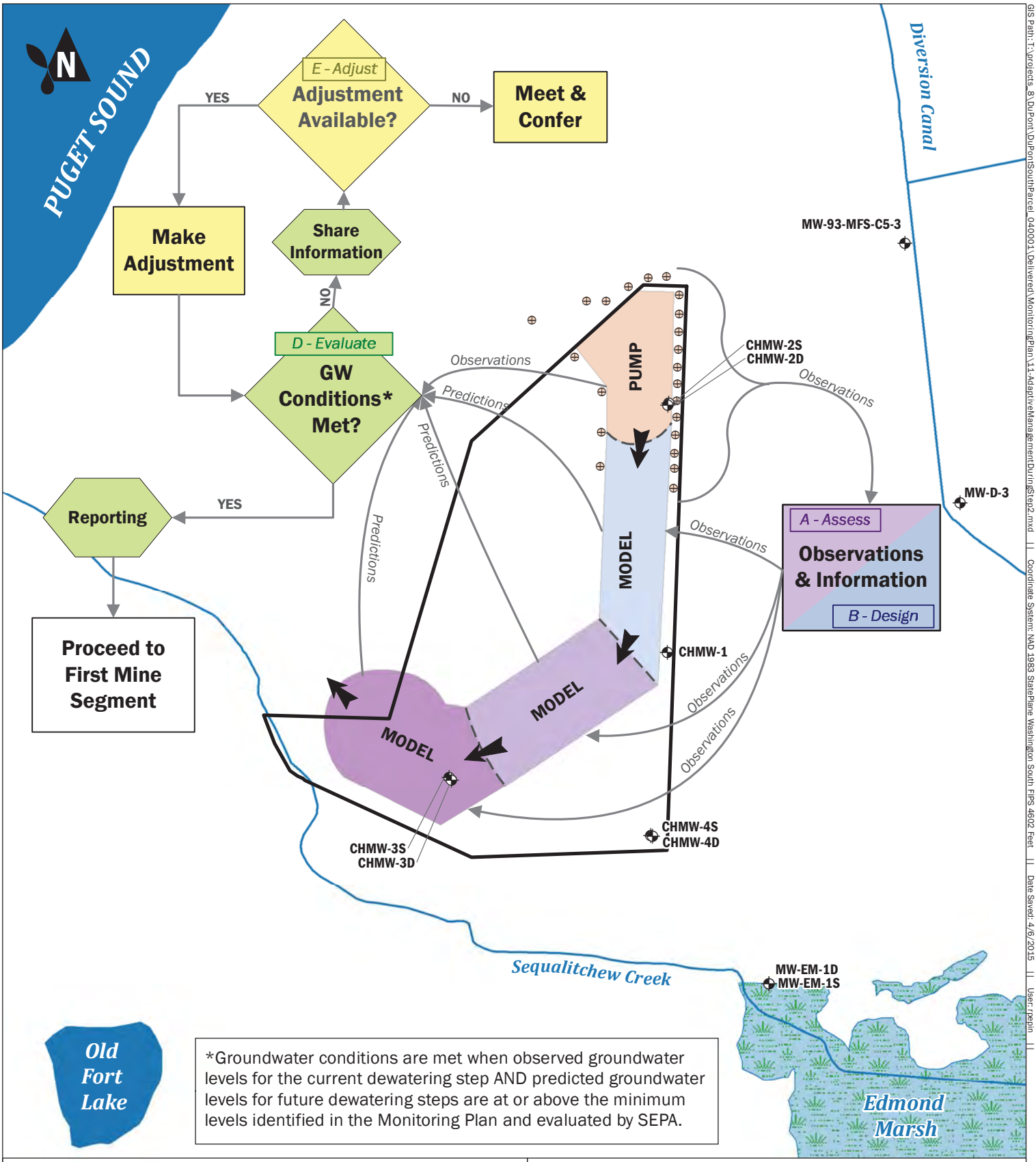

Adaptive Management Process During Step 2 - Preparation for Mining/ Dewatering Test

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect CONSULTING	APR-2016	BY: OGR / RAP	FIGURE NO. 10
	PROJECT NO. 040001-014	REVISED BY: ---	

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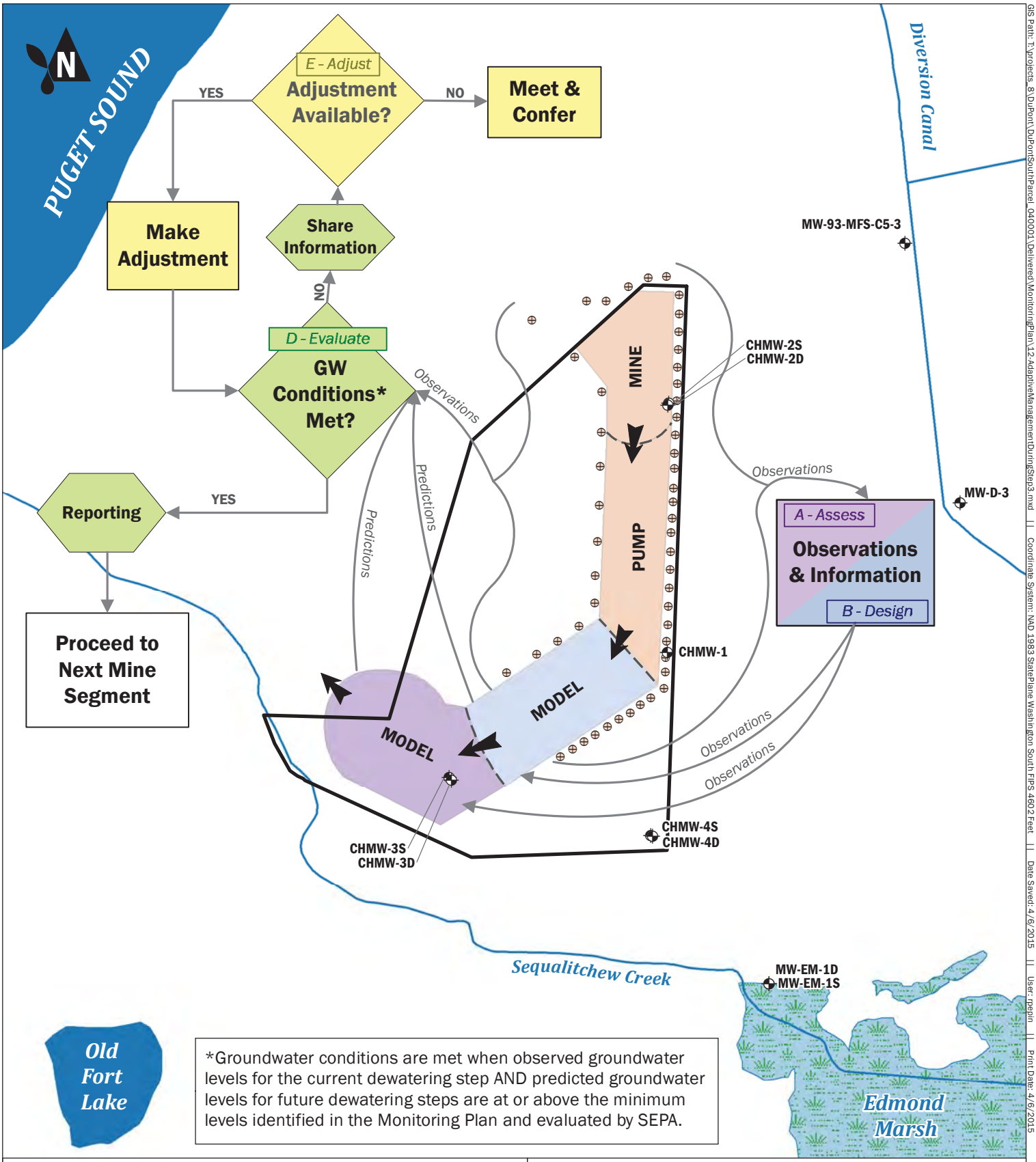

Adaptive Management Process During Step 3 - Active Dewatering and Mining

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect CONSULTING	APR-2016	BY: OGR / RAP	FIGURE NO. 11
	PROJECT NO. 040001-014	REVISED BY: ---	

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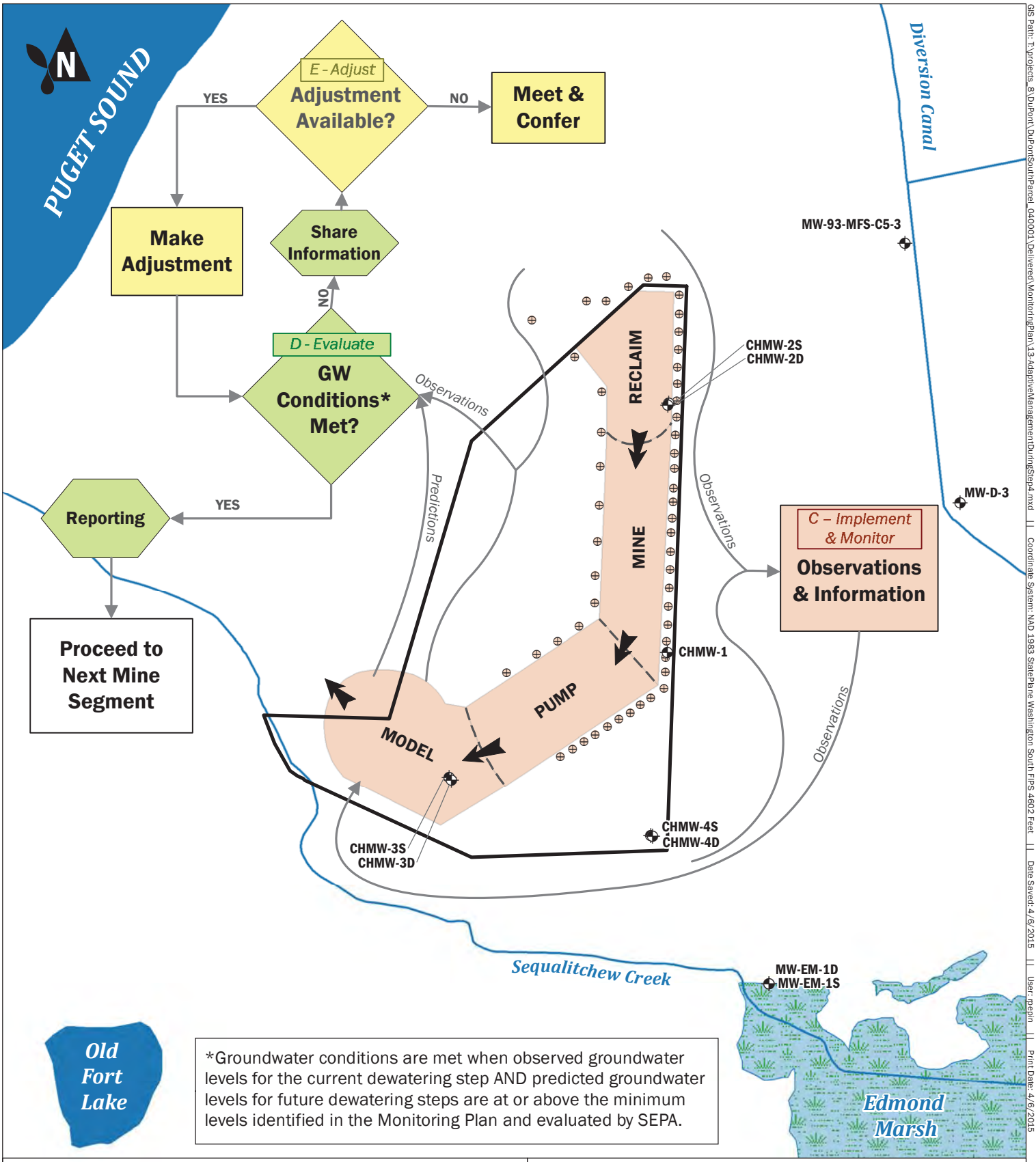


*Groundwater conditions are met when observed groundwater levels for the current dewatering step AND predicted groundwater levels for future dewatering steps are at or above the minimum levels identified in the Monitoring Plan and evaluated by SEPA.

Monitoring Well
Dewatering Well
Wetland
Lake

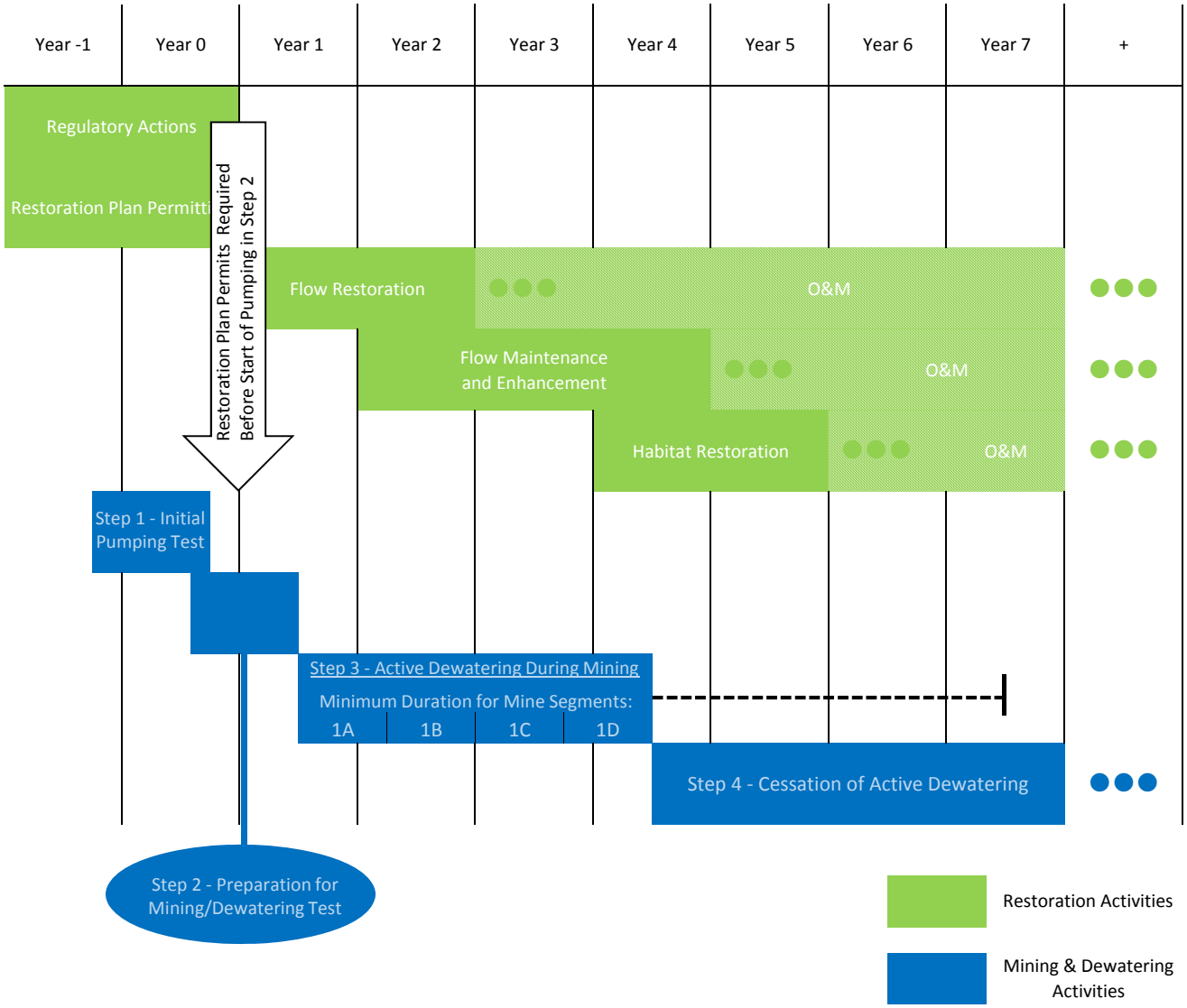
0 1,000 2,000
Feet

Adaptive Management Process During Step 4 - Cessation of Active Dewatering

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect CONSULTING	APR-2016	BY: OGR / RAP	FIGURE NO. 12
	PROJECT NO. 040001-014	REVISED BY: ---	

GIS Path: T:\projects_8\DuPont\DuPontSouthParcel_040001\Delivered\MonitoringPlan\13-AdaptiveManagementDuringStep4.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 4/6/2015 || User: rpeplin || Print Date: 4/6/2015

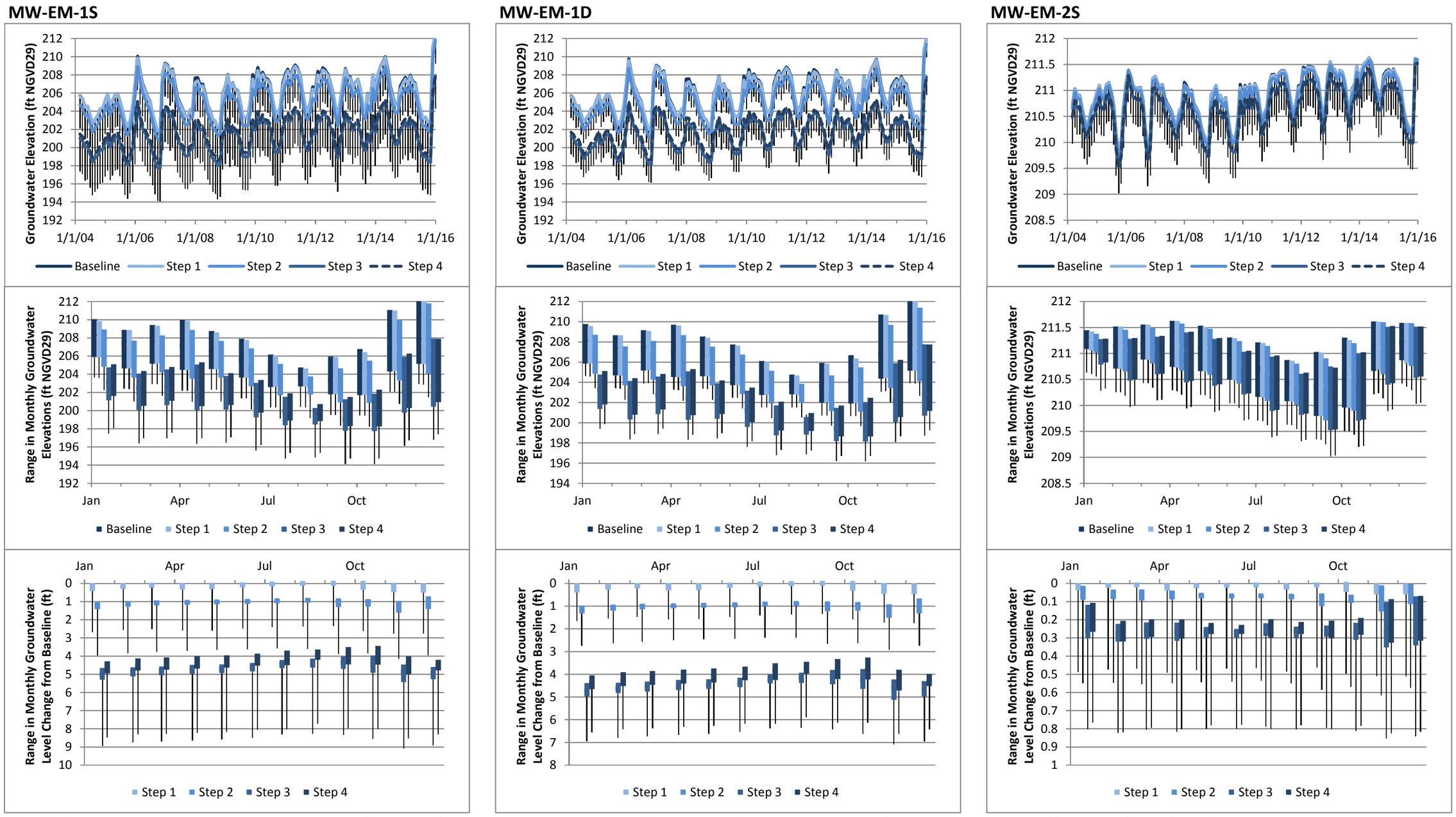


Notes:
1) Year 1 begins with the start of pumping in Step 2.
2) Mining timeline shown is based on the minimum duration of each mine segment in Step 3.
3) This figure depicts the duration of many individual actions. With few exceptions, the actual durations may be shorter or longer

Figure 13
Anticipated Timeline of Mining and Restoration Activities

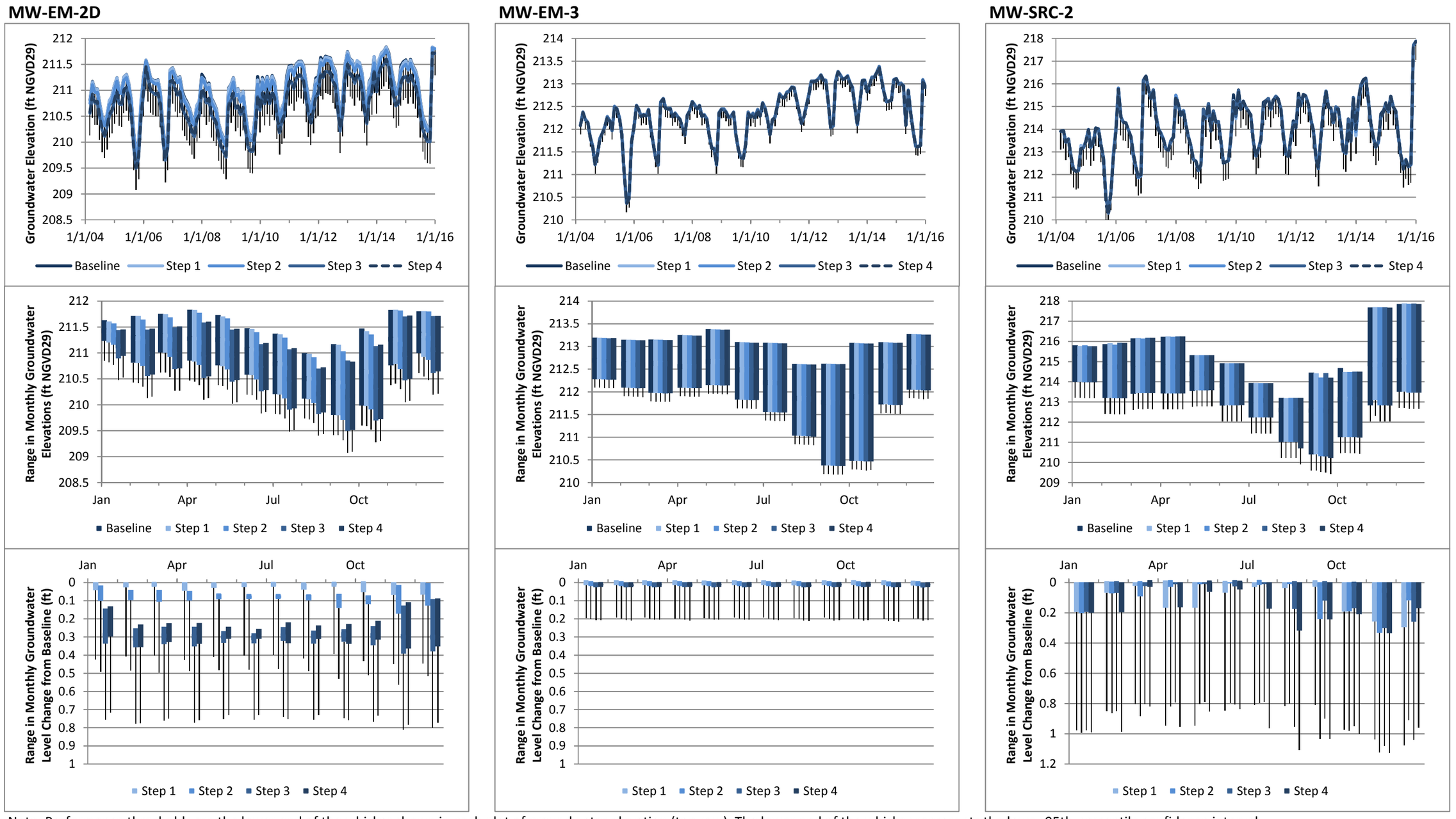
APPENDIX A

Performance Thresholds: Predicted Changes and Ranges in Groundwater Levels



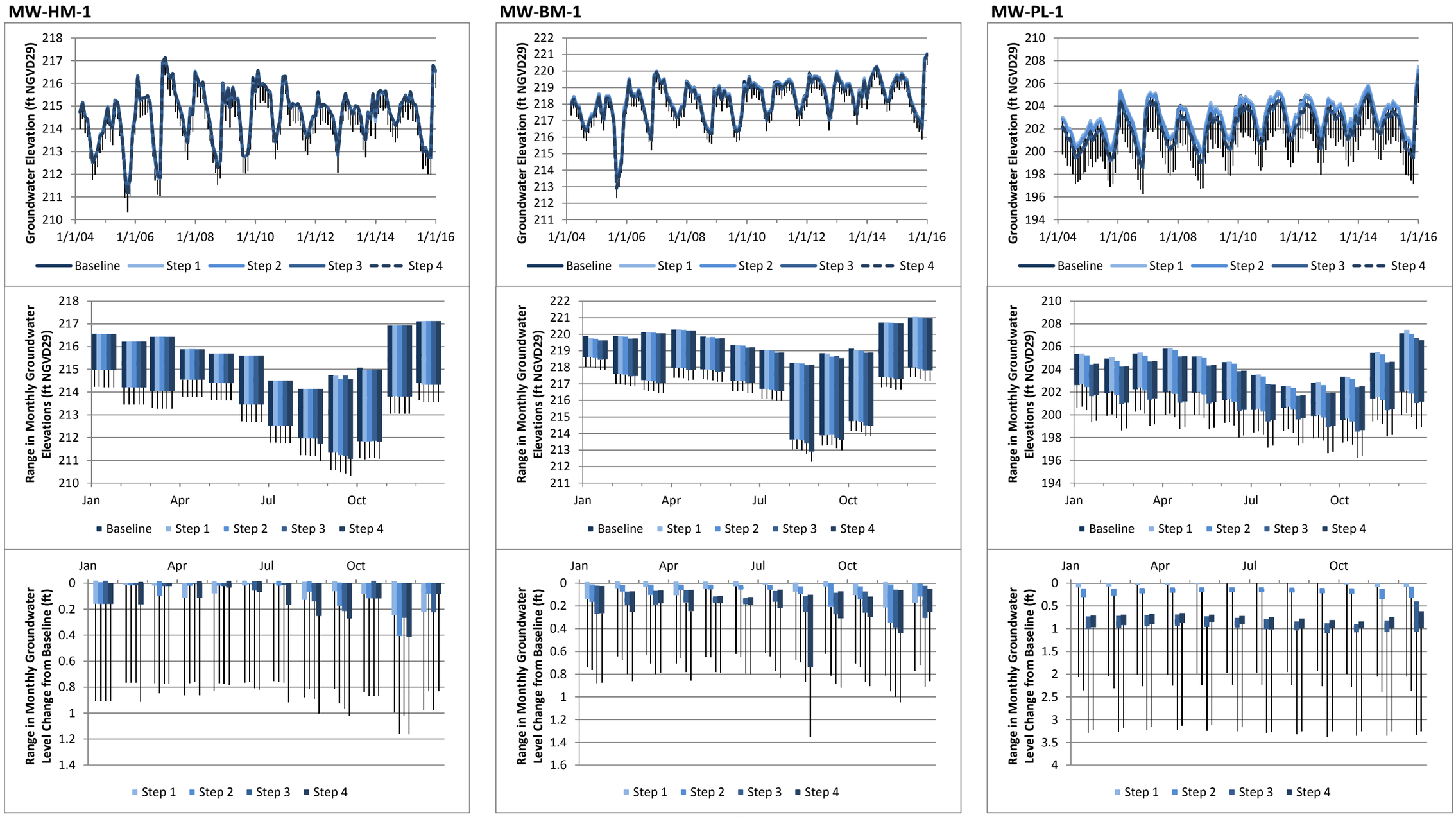
Note: Performance thresholds are the lower end of the whisker shown in each plot of groundwater elevation (top row). The lower end of the whisker represents the lower 95th-percentile confidence interval.

Figure A-1
Predicted Changes and Ranges in Groundwater Levels
Monitoring Plan



Note: Performance thresholds are the lower end of the whisker shown in each plot of groundwater elevation (top row). The lower end of the whisker represents the lower 95th-percentile confidence interval.

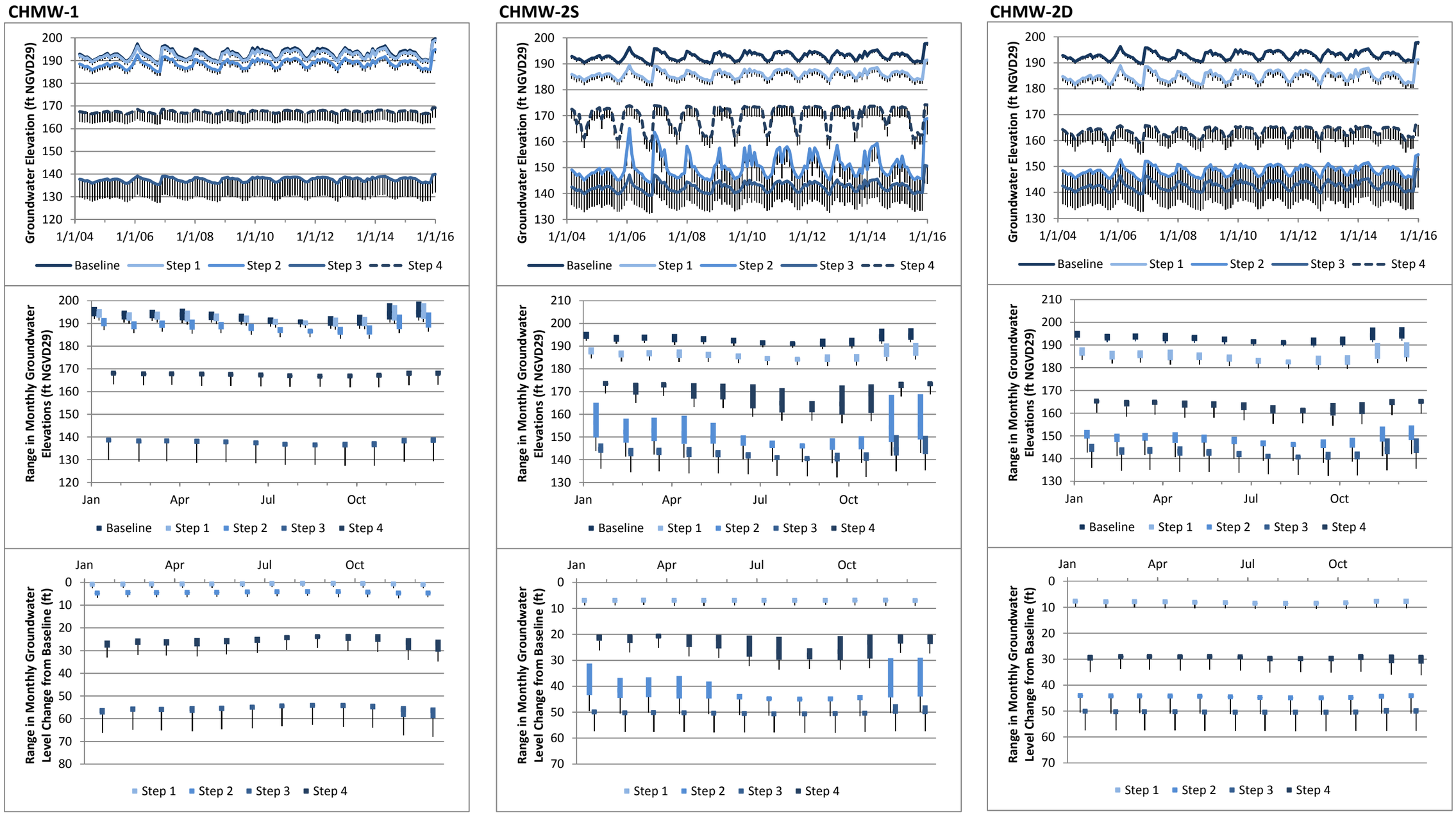
Figure A-1
Predicted Changes and Ranges in Groundwater Levels
Monitoring Plan



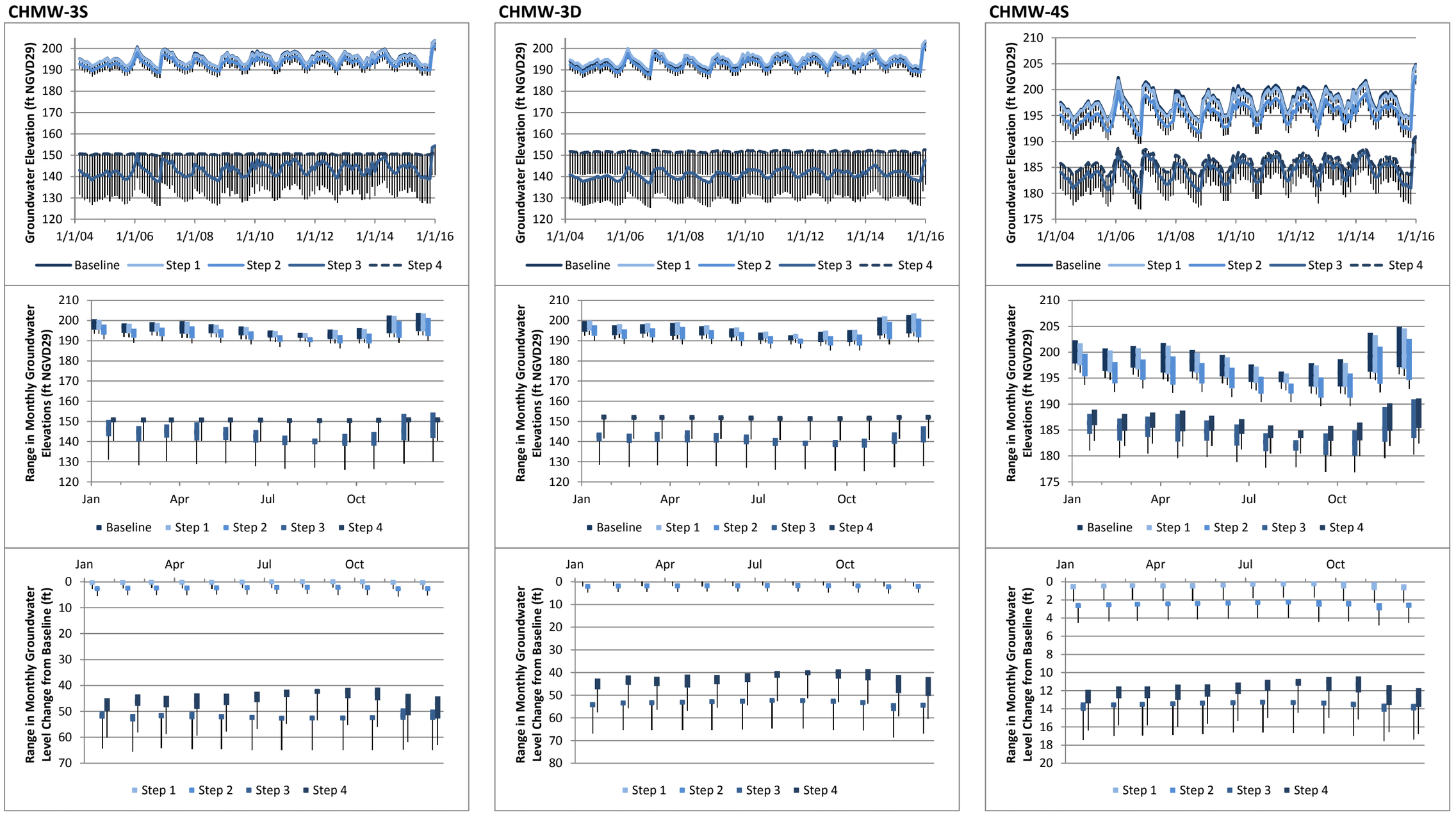
Note: Performance thresholds are the lower end of the whisker shown in each plot of groundwater elevation (top row). The lower end of the whisker represents the lower 95th-percentile confidence interval.

Figure A-1
Predicted Changes and Ranges in Groundwater Levels
Monitoring Plan

DRAFT



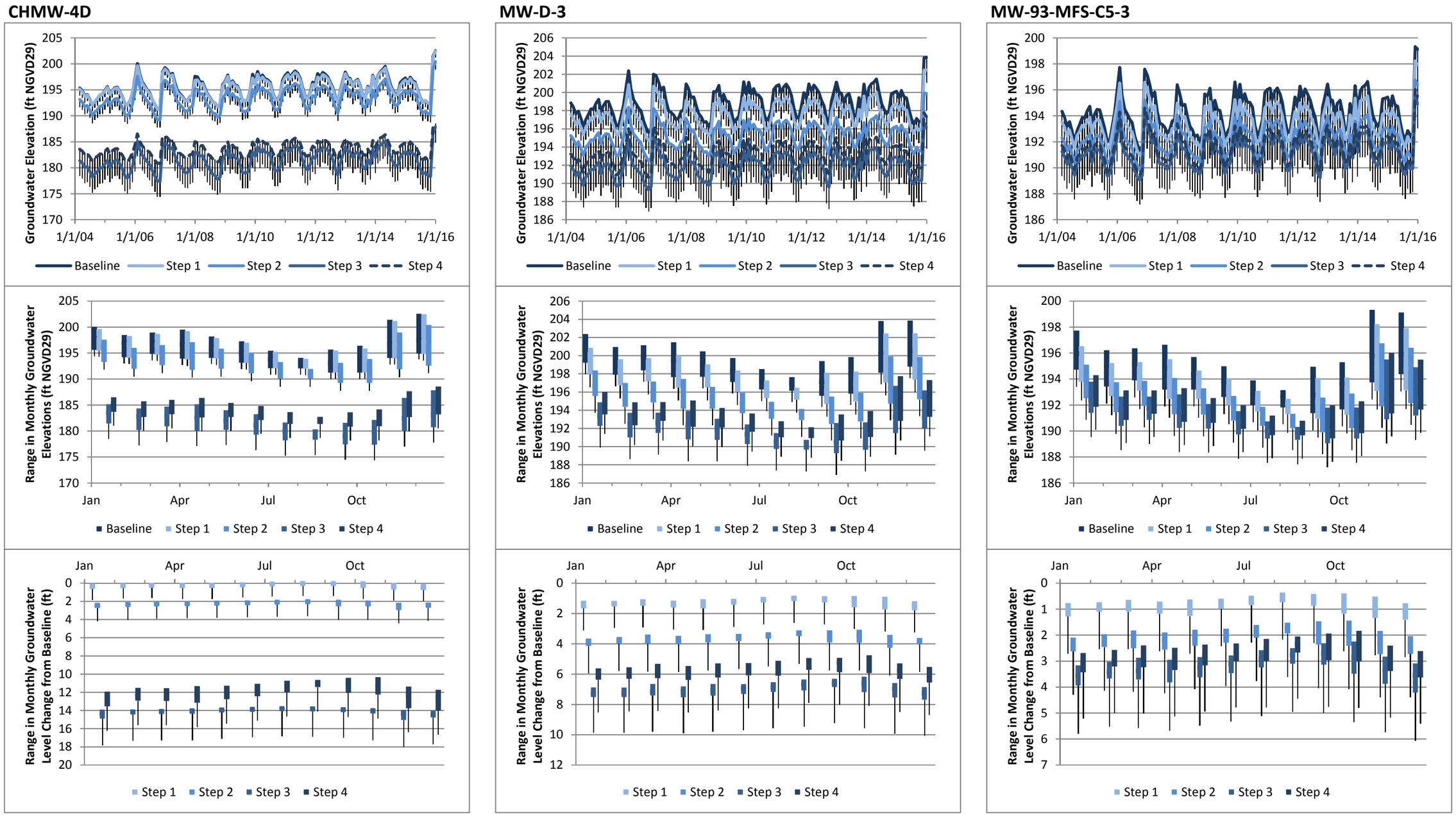
Note: Performance thresholds are the lower end of the whisker shown in each plot of groundwater elevation (top row). The lower end of the whisker represents the lower 95th-percentile confidence interval.



Note: Performance thresholds are the lower end of the whisker shown in each plot of groundwater elevation (top row). The lower end of the whisker represents the lower 95th-percentile confidence interval.

Figure A-1
Predicted Changes and Ranges in Groundwater Levels
Monitoring Plan

DRAFT



Note: Performance thresholds are the lower end of the whisker shown in each plot of groundwater elevation (top row). The lower end of the whisker represents the lower 95th-percentile confidence interval.

Figure A-1
Predicted Changes and Ranges in Groundwater Levels
Monitoring Plan

APPENDIX B

Sampling and Analysis Plan

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Sampling and Analysis Plan

A.1. Introduction

This document presents the Sampling and Analysis Plan (SAP) to collect the information necessary to support the adaptive management processes of the South Parcel Monitoring Plan and the Restoration Plan for the Sequalitchew Creek Watershed. This SAP is intended to direct collection, processing, and reporting of data by a single, reliable, and consistent source that will be used to inform both adaptive management plans.

A.2. Background

A.2.1. Baseline Monitoring Program

A baseline monitoring program of surface water and groundwater within the Sequalitchew Creek basin is currently conducted by CalPortland as a component of mine planning. The monitoring program generally consists of measuring water levels and flows on a monthly basis at multiple locations in Sequalitchew Creek and its related marshes. The hydrologic monitoring program has four basic elements:

- Groundwater elevation monitoring;
- Surface water elevation monitoring;
- Surface water streamflow monitoring; and
- Surface water quality monitoring (e.g., temperature, dissolved oxygen, and turbidity).

The monitoring program is summarized in Table 1, and monitoring locations are shown on Figure 1.

The baseline monitoring program began in 1999, then expanded significantly in 2003. Monitoring data has previously been presented in four reports (Aspect, 2004a, 2004b; Aspect and Anchor, 2007; and Appendix B of Anchor QEA and Aspect, 2010). The 2004 reports describe the surface water and groundwater systems of the Sequalitchew Creek basin and summarize the monitoring data collected through 2004. The 2007 report presents monitoring data collected in 2005 and 2006. The 2010 report provides summary hydrographs of streamflow and marsh levels, illustrating the data available at that time.

A.2.1.1. Groundwater Level Monitoring

In the baseline monitoring program, groundwater levels are monitored monthly at a network of 20 wells located throughout the watershed, including within the mine area, marshes, and upland areas:

- North Parcel mine area: OB-1
- South Parcel mine area: CHMW-1, CHMW-2S and -2D, CHMW-3S and -3D, and CHMW-4S and -4D
- Marshes and Lakes:
    - Edmond Marsh: MW-EM-1S and -1D, MW-EM-2S and -2D, and EM-3
    - Hamer and McKay Marshes: MW-HM-1
    - Sequalitchew Lake: MW-SL-1
    - Pond Lake: MW-PL-1
- Upland areas: D-3 (near Landfill #5) and SRC-MW-2 (east of Hamer Marsh)

Water levels are measured manually by measuring the depth to water from the top of the well casing. The top-of-casing elevation of each well has been surveyed relative to the National Geodetic Vertical Datum of 1929 (NGVD 29) to allow for calculation of groundwater elevations. Well logs for the existing monitoring wells are provided in Attachment A.

A.2.2. Surface Water Monitoring

A.2.2.1. Water Levels

The baseline monitoring program includes monthly measurement of surface water elevations at 15 locations in the Sequalitchew Creek watershed (Figure 1).

In many locations, staff gages are located close to monitoring wells to allow for coupled observations of surface water and groundwater levels. The following staff gages are included in the baseline monitoring program:

- Bell Marsh: SG-BM-1
- McKay Marsh: SG-MKM-1
- Hamer Marsh: SG-HM-1
- Sequalitchew Creek Marsh: SG-SCM-1 and SG-EM-3E
- East Edmond Marsh: SG-EM-3W and SG-EM-2E
- West Edmond Marsh: SG-EM-1/1A and SG-EM-2W
- Wetland 1D: SG-WL1D-1
- Pond Lake: SG-PL-1

- Diversion Canal: SG-DC-1, SG-DC-2, and SG-DC-3

The typical staff gage installed on this project is an enamel plate capable of measuring water levels in 0.01-foot increments over a 3.33-foot range. The staff gages at the west end of West Edmond Marsh (SG-EM-1/1A) are paired, with SG-EM-1 located near well MW- EM-1 and used to measure higher water levels in winter and SG-EM-1A located in a low spot behind the beaver dam at the outlet and used for measuring lower water levels in summer.

In addition, surface water levels are measured as a component of the three continuous flow monitoring stations described in Section A.2.2.3.

A.2.2.2. Water Quality

Beginning in 2009, surface water quality has been monitored monthly at three locations: the Diversion Weir, the outlet of Hamer Marsh, and the mid-ravine gage on Sequalitchew Creek. Monthly monitoring consists of field measurements of temperature, dissolved oxygen, specific conductance, oxidation reduction potential, and turbidity with a YSI Pro Plus and a Hach Turbidimeter. Several samples have been collected for laboratory analysis for select metals (iron, copper, and zinc) and total petroleum hydrocarbons.

A.2.2.3. Streamflow

The baseline streamflow monitoring program consists of continuous measurements at three stations, periodic measurements at three stations, and visual observations at five locations. The specific locations monitored are:

- Continuous streamflow monitoring at the Diversion Weir, and mid-ravine[1] and lower-ravine stations in Sequalitchew Creek.
- Periodic streamflow measurements at three locations in the Diversion Canal (SG-DC-1, SG-DC-2, SG-DC-3); and
- Visual estimates of flow at five locations:
    - Culvert from Hamer Marsh to Edmond Marsh,
    - Culvert from Sequalitchew Creek Marsh to Diversion Canal
    - Ditch at Plant Road flowing to Hamer Marsh,
    - Sequalitchew Creek at footbridge downstream of W. Edmond Marsh, and
    - Sequalitchew Creek under Center Drive.

Measurements of streamflow are made using the conventional current-meter method as described by the U.S. Geological Survey (USGS, 1982). Stream velocities are measured and discharges are calculated using a SonTek Flowtracker.

Discharge measurements are initially made at various stream stages to determine a relationship between stage and discharge. Discharge measurements are then made at

[1] The mid-ravine station was formerly known as the Upper gage or SC-Upper.

periodic intervals to verify the stage-discharge relationship or to define any change in the relationship caused by changes in channel geometry and/or channel roughness.

Rating curves, which relate water depth to flow in the channel, have been developed for each flow monitoring location based on a number of manual flow measurements collected over a range of different flows. These rating curves are used to convert observed water depths (stage) to flows.

Stream stage at each station is measured using a 4230 Bubble Flow Meter manufactured by Teledyne ISCO and powered by a 12-volt deep-cycle lead-acid battery. The meter uses an internal air compressor to force a metered amount of air through a bubble line submerged in the flow channel. The water level above the bubble line orifice is determined by measuring the pressure needed to force air bubbles out of the line. An internal data logger records the water level as bubbler pressure at 15-minute intervals. The water level is converted to a stage height by correlating the meter readings to manual measurements taken during monthly site visits from a staff gage that is installed at each station. The equipment for the stations is serviced once a month by replacing the batteries and downloading the data to a portable computer.

Flow over the Diversion Weir is monitored by continuously monitoring stage using an ISCO 4230 and calculating discharge with a standard weir equation for a fully contracted rectangular weir from the United States Bureau of Reclamation's (USBR) Water Measurement Manual (USBR, 2001). The weir equation is presented in Section A.5.4.1.

A.2.2.4. Habitat Monitoring

Wetland Habitat

Wetland monitoring conducted to date has been focused on documenting baseline (pre-project) conditions of three key variables in habitats: topography, hydrology, and vegetation. Major changes to the boundary of Edmond Marsh have been analyzed from high-resolution aerial photos, and compared to field-collected data. Twelve vegetation monitoring transects are located throughout the Sequalitchew Creek basin: in Edmond Marsh, Sequalitchew Creek Ravine, Wetland 1D, Pond Lake, and Brackish Marsh. Overall, patterns in species presence detected during the monitoring in the period from 2004–2015 have been documented by Anchor QEA (2016).

Stream Habitat

Anchor Environmental (Anchor; now Anchor QEA) has previously evaluated stream habitat in Sequalitchew Creek using toe-width and stage-discharge analysis methods as a component of the Fish Habitat Benefit Evaluation for Sequalitchew Creek (Anchor, 2004). Additional information on the methodology and background can be found in that document.

The **Toe-Width Method** applies information on active channel width to estimate the optimal flows (maximum habitat) for salmon spawning and rearing. Within Reach 2 and 3, transects were established in areas with fairly uniform depth over a gravel/cobble substrate (5 transects and 4 transects, respectively). Since Reach 1 was located in the estuary, no toe-width transects were established. Additional transects were established to represent riffle habitat in all three reaches.

The **Stage-Discharge Analysis** provides a more detailed evaluation of how habitat availability changes with incremental increases in flow by linking data on the physical relationship between water surface elevation (stage), velocity, and discharge with the biological habitat preferences of spawning and rearing salmon. Stage-discharge relationships in lower Sequalitchew Creek were developed at numerous transects that were selected to be representative of habitat conditions in the study area.

A.3. Roles and Responsibilities

The roles and responsibilities of all key members of the monitoring team are shown in Table 2 below. The monitoring team may be comprised of one or more qualified consulting firms, governmental agencies (e.g., USGS or Ecology), or nongovernmental organizations.

Table 2. Monitoring Team Roles and Responsibilities

Position	Roles and Responsibilities
Project Manager—Monitoring Team	Responsible for oversight of monitoring personnel, coordinating project tasks defined in the Consultant scope of work, tracking project progress and schedule relative to budget, and manage staff to complete project activities.
Principal-in-Charge—Monitoring Team	Responsible for oversight to project team to ensure that QC procedures are followed and project data quality objectives (DQOs) are being met. Oversight of development of project SAP, field audits, and project reports.
Data QC/Reporting Lead—Monitoring Team	Responsible for developing SAP, standard operating procedures (SOPs), and data QA/QC procedures for project. Responsible for managing project database, completing data QC on all project data, and reporting for individual events and the overall project.
Technology Lead—Hydrology/Water Quality	Responsible for the design of each monitoring station. Provide oversight for installation of each station's monitoring system. Provide oversight for monitoring station maintenance and lead equipment troubleshooting activities.
Data Collection Lead—Hydrology/Water Quality	Manages and oversees monitoring and maintenance activities that are completed in the field for hydrology and water quality data collection.
Data Collection Lead—Habitat	Manages and oversees habitat monitoring activities.

A.4. Monitoring Approach

The monitoring conducted under this SAP will collect data necessary to assess whether activities associated with the South Parcel expansion and restoration of Sequalitchew Creek are achieving the objectives of the South Parcel Monitoring Plan and the Restoration Plan for the Sequalitchew Creek Watershed. The monitoring approach is targeted at the specific performance and aspirational thresholds identified in those plans.

The monitoring program includes six components that will be implemented at key locations within the watershed: groundwater level, surface water level, stream flow, surface water quality, habitat, and precipitation monitoring. Each of these components are described below. A cross walk between specific SAP elements and the objectives of the Monitoring Plan and Restoration Plan is provided in Table 3.

In addition to the main monitoring activities, stand-alone special studies will be implemented to address specific concerns of the mine expansion and watershed restoration. These special studies will be developed further as mining and restoration planning progresses, but are described generally in Section A.8.

A.4.1. Groundwater levels

Groundwater levels will be monitored primarily for comparison with the performance thresholds of the South Parcel Monitoring Plan.

Groundwater level monitoring will use the existing network of monitoring wells (described in Section A.2.1 and shown in Figure 1) and new dewatering wells and monitoring wells that will be installed specifically for this project. Water level monitoring will include a combination of spot measurements in active dewatering wells and adjacent temporary monitoring wells, continuous monitoring at key monitoring wells adjacent to the active dewatering area and beneath West Edmond Marsh, and routine monthly or semimonthly monitoring at other wells in the network.

As described in the Monitoring Plan, active dewatering of the South Parcel will occur in three sequential steps, involving progressively more dewatering wells, from 10 wells during Step 1, up to 66 wells during Step 3. Water levels will be measured periodically in the active dewatering wells, in new observation wells located adjacent to the active dewatering wells, and in several long-term monitoring wells installed in the interior of the South Parcel. Water level monitoring at these wells will be used to assess performance of the dewatering operation and, once mining operations commence in the South Parcel, will indicate if the moisture content of the mined aggregate is at appropriately low levels for safe, efficient mining and processing.

Outside of the South Parcel, groundwater level monitoring will consist of a combination of continuous monitoring and monthly or semimonthly manual measurements. During all Dewatering Steps, water levels will be monitored continuously in key wells located along the eastern boundary of the South parcel and in the western portion of Edmond Marsh. Specifically, the following key wells will be monitored continuously: CHMW-1, CHMW-2S and -2D, CHMW-3S and -3D, CHMW-4S and -4D. MW-EM-1S and -1D and MW-EM-2S and -2D. Water levels at all other groundwater monitoring wells will be measured monthly, except during Dewatering Step 2, when twice monthly measurements will occur, and Dewatering Step 3 when twice monthly measurements will occur for 3 months once new dewatering wells start pumping.

Monitoring wells are generally one- or two-inch-diameter PVC casings protected with a locking steel surface monument. Well depths vary from 5 feet for shallow piezometers to 85 feet for wells penetrating the Vashon Outwash gravels. Monitoring well logs are provided in Attachment A.

Continuous groundwater level monitoring will be conducted using a submersible pressure transducer connected to an aboveground data logger housed in a weather-resistant enclosure. Instruments will measure and record water level at 15-minute intervals. Data loggers will be downloaded by field staff at least weekly during Dewatering Steps 1 through 3 and once each month during Step 4.

A.4.2. Surface water levels

Surface water level monitoring data will primarily be used to compare the effects of restoration efforts with the performance and aspirational thresholds specified in the Restoration Plan. Surface water monitoring will occur at 12 stations as shown on Figure 1 and listed in Table 3 (station IDs have a "SG" prefix).

Continuous surface water monitoring will occur at SG-EM-1/1A and SG-EM-2E. Continuous water level data will be useful for assessing the water level response to precipitation. Water level will be measured manually once per month at the other stations; except during Dewatering Step 2, when twice-monthly measurements will occur. More frequent spot measurements will be made during specific restoration activities, such as the installation and adjustment of flexible levelers at beaver dams. New staff gage locations may be installed and added to the monitoring program as necessary to support adaptive management of the flexible levelers.

Surface water level monitoring at the seven locations in Sequalitchew Marsh, East Edmond Marsh, and West Edmond Marsh will provide feedback for efforts to increase westward flows in Sequalitchew Creek. Surface water level monitoring at SG-HM-1 in Hamer Marsh, in concert with groundwater level measurements at MW-HM-1 and MW-EM-3, will assess the increase in subsurface flow from Hamer Marsh to East Edmond Marsh following installation of the weir at Hamer Marsh outlet.

All surface water level monitoring stations are currently equipped with staff gages; either Stevens Style A or C porcelain-enameled iron plate. Style A gages are 3.33 feet long and 4 inches wide with graduated marks every 0.02 feet. Style C gages are also 3.33 feet long and are 2.5 inches wide with graduated marks every 0.01 foot. Water levels are measured to the nearest 0.01 foot. Water level is converted to surface water elevation by subtracting the staff gage height from the surveyed top-of-staff gage elevation and then adding the measured staff gage water level. At SG-EM-1 and SG-EM-2W, continuous water level monitoring will be conducted using a pressure transducer housed in a PVC stilling well that is mounted adjacent to the staff gage. The pressure transducer will be connected to the data logger used for continuous groundwater monitoring at the adjacent groundwater monitoring wells (MW-EM-1D for SG-EM-1/1A and MW-EM-2D for SG-EM-2W).

A.4.3. Streamflow

Streamflow monitoring will include:

- Continuous streamflow monitoring at five locations: the three existing streamflow monitoring stations (i.e., the Diversion Weir, and mid-ravine and lower stations in Sequalitchew Creek) and two new gaging stations on Sequalitchew Creek at the Lake Outlet and at Center Drive.

- Visual observations at the culvert from Hamer Marsh to Edmond Marsh.

At each continuous gaging station, water level will be measured and recorded every 15 minutes using a pressure transducer housed in a PVC stilling well and connected to a data logger that is housed in a weatherproof enclosure. Each continuous stream flow gaging station will include a Stevens Style A or C porcelain-enameled iron-plate staff gage, as described previous for the water level monitoring sites. Water level measured by the pressure transducer will be calibrated to the staff gage at the site. Field staff will service and download the data loggers at least monthly.

At the Diversion Weir, flow will be calculated using a standard discharge equation for a fully contracted rectangular weir as described above in Section A.5.4.1. At the other four gaging stations, stage-discharge or rating curves will need to be developed and maintained to calculate flow. Rating curves will be developed and maintained consistent with industry standard practices, as is currently done.

Flow through the culvert from Hamer Marsh to Edmond Marsh will be visually estimated monthly. Additional locations for visual flow estimates may be added at any time to respond to conditions observed in the field or adaptive management needs.

Following installation of the weir at the outlet of Hamer Marsh, outflow from Hamer Marsh to the Diversion Canal will be determined using the appropriate weir equation, based on water level observations at SG-HM-1, whose staff gage elevation relative the top of the weir will be established.

Continuous flow data from the Diversion Weir will be used to assess achievement of the Restoration Plan performance threshold to reduce flow to the Diversion Canal.

Continuous flow data from the Sequalitchew Lake Outlet and Center Drive gages will be used to assess achievement of the performance standard to match flows at those two locations.

Flow data at Center Drive, Upper Sequalitchew Creek, and Lower Sequalitchew Creek gages will be used to assess achievement of the performance standard to eliminate flow losses in the ravine.

Spot flow measurements at the Hamer Marsh Weir, at the culvert between Hamer Marsh and East Edmond Marsh, and in the ditch under Plant Road to Hamer Marsh, in concert with surface and shallow groundwater monitoring in and around Hamer Marsh, will be used to assess efforts to increase surface and groundwater flow from Hamer Marsh into East Edmond Marsh.

Going forward, the sampling program will no longer collect spot flow measurements in the Diversion Canal, since those data are not relevant to the objectives of the South Parcel Monitoring Plan or the Restoration Plan.

A.4.4. Surface Water Quality

The evaluation of habitat suitability will include monitoring water quality conditions in the watershed restoration area. In particular, stream temperature is predicted to increase in summer as a result of the restoration and mining projects for two reasons: 1) water

temperatures in Sequalitchew Lake are warmer than the groundwater discharge that currently provides the flow in Sequalitchew Creek during summer, and 2) dewatering for mining will reduce the groundwater discharge. Prior monitoring indicates that Sequalitchew Lake temperatures can reach up to 21°C in summer, whereas Sequalitchew Creek is currently 12 to 13°C. This condition is largely natural resulting from solar radiation on the lake surface. However, it also represents the primary tradeoff of restoration—greatly increased flow and reconnection to the natural water source in exchange for higher temperatures in summer.

The water quality monitoring program has been designed to monitor for unintended consequences, primarily focused on temperature, resulting from the restoration and mining projects. Stream temperatures will be monitored continuously at the five locations in the Sequalitchew Creek watershed where flow is measured (Sequalitchew Lake Outlet, Diversion Weir, Center Drive, and mid-ravine and lower ravine Sequalitchew Creek stations), as well as at the continuous water level monitoring stations in East Edmond Marsh (SG-EM-1 and SG-EM-2). The pressure transducers used to monitor water levels will be equipped with temperature sensors and will record water temperature every 15 minutes. The monitoring data will allow for developing temperature profiles along Sequalitchew Creek from headwaters to near the mouth.

These monitoring data will inform the adaptive management components of the Restoration Plan. The Restoration Plan includes several restoration elements that either include specific components that would reduce temperatures, or include flexible elements that could be implemented adaptively in response to monitoring data that indicate unanticipated effects on stream temperature. Specifically, the following elements of the Restoration Plan have components related to temperature, beyond those aimed at increasing flow through the system:

> G – Losing Reach—restoration of riparian vegetation in the losing reach will benefit stream temperature through shading.
>
> J – Ravine Habitat—this element is intended to adapt to habitat conditions that emerge once flow is restored in the ravine. Envisioned as being used to enhance stream structure through large woody debris placement, it could also be used to address temperature issues by creating pools as refugia or shading through riparian plantings.

In addition to temperature, water quality monitoring will include periodic *in-situ* monitoring of temperature, dissolved oxygen, and turbidity at select surface water level monitoring locations.

Periodic *in-situ* water quality measurements of temperature, dissolved oxygen, and turbidity will be collected using portable water quality meters. Measurements will occur monthly, except during Dewatering Step 2, when measurements will be taken twice each month. These water quality data, used in conjunction with measurements of physical habitat characteristics, will inform the assessment of habitat conditions relative to performance thresholds in the Restoration Plan.

A special study of Hamer Marsh water quality will be developed and implemented separately as described in Section A.8.

A.4.5. Habitat

A.4.5.1. Wetland Habitat

The most important effect of the combined mining and restoration projects would be the restoration of a surface water and wetland community connection between the ravine and Edmond Marsh. Data collection discussed in this section is focused on detecting changes to vegetation and habitat structure. This will be used in conjunction with the collection of hydrology data (see section A.5.2) and topography to understand the effects of the project. Hydrology (water surface elevation) data will be used to further understand habitat changes:

- Changes in water surface elevations, particularly in East Edmond Marsh;
- Changes in the magnitude of seasonal fluctuation in water surface elevations;
- Changes in the location and amount of open-water habitat, specifically any loss of open-water habitat in East Edmond Marsh, or greater persistence (later in the growing season) of open water habitats in West Edmond Marsh; and
- The establishment of a surface water and wetland community connection between the ravine and Edmond Marsh.

The baseline wetland habitat monitoring approach (see Section A.2.2.4) will continue to be used to identify patterns in plant species presence, hydrology, and topography under changing conditions along these established transects for comparison and analysis with post-project conditions. New transects will be established between Edmond Marsh and Lower Sequalitchew Creek. Baseline data was not collected in this reach due to the lack of flow and wetland or riparian vegetation during the baseline period.

A.4.5.2. Stream Habitat

Stream habitat will be monitored by measuring physical habitat characteristics at consistent locations over time. Habitat monitoring stations will be established as cross sections of Sequalitchew Creek spaced 100 feet apart for 1,500 feet upstream of the BNSF culvert, then 200 feet apart upstream to the east end of Edmond Marsh. This will provide additional resolution in the area likely to be used for spawning by Chum.

At each section, the following physical parameters will be monitored: flow depth, velocity, substrate size and cover. Cross sections will be monitored in years 0, 1, 2, 3, 5, and 10 commencing prior to construction of the first Restoration Plan element.

Observations of fish presence and active erosion will be noted during the cross-section surveys. Surveys of large woody material will be conducted in years 5 and 10.

A.4.6. Precipitation

Precipitation will be continuously monitored with a tipping bucket rain gage to be located on or near the South Parcel (e.g., City Hall, Pioneer Middle School, or Chloe Clark Elementary). An on-site, program-operated rain gage will likely provide a more complete data set that is of known quality and will better represent precipitation occurring within the watershed than would data from the McMillin Reservoir rain gage, which has been used for prior monitoring efforts.

A continuous precipitation record will provide a context for evaluating short-term changes in surface water and shallow groundwater levels, stream flows, and water quality conditions monitored within the watershed in response to storm events. Observed seasonal precipitation patterns will be used in the analysis of seasonal groundwater and surface water levels, stream flows, and water quality conditions.

The rain gage will be installed at the top of a 1.5-inch-diameter steel pole, approximately 10 feet above the ground surface. The rain gage will be wired to a data logger that will record and totalize rainfall on a 15-minute interval. The data logger will be housed in a durable, weatherproof steel enclosure.

The rain gage will be maintained per manufacturer's recommendations (see Section A.5.7 for methods). The rain gage will be capable of measuring only liquid precipitation (i.e., rainfall or melted snow); it will not be a heated rain gage capable of melting snow. Alternate rain data from the McMillin Reservoir rain gage or PRISM estimates of gridded precipitation for the project area will be used should the project rain gage malfunction.

A.5. Monitoring Procedures

This section provides specific procedural guidelines regarding routine field measurement and maintenance activities pursuant to the monitoring objectives detailed in the previous section.

Campbell Scientific (CSI) pressure transducers and data loggers will be employed at groundwater, surface water, streamflow monitoring stations, which continually measure level and water temperature. A project rain gage will be installed at one of the central monitoring stations, and be recorded by the station data logger. Equipment specifications and installation guidelines for continual monitoring stations includes the following:

- Parameter data (e.g., level, temperature, precipitation) will be recorded at a minimum of 15-minute intervals.
- Transducers selected for each station will be designed with a PSI range and cable length that is appropriate for the range of water levels expected in the observation well or surface water environment.
- Transducer sensor diaphragms will be vented to the atmosphere; eliminating corrections regarding barometric pressure compensation.
- Groundwater pressure transducers will be suspended from a fixed reference point in each monitoring well, at a point below the lowest expected water level. Suspending

the transducer prevents corrosion/interference of benthic sediment, or level discrepancies/drift due to settling.

- Surface water pressure transducers will be installed at a fixed point within a PVC stilling well, adjacent to the station staff plate.
- All level and flow rate measurements will be reported in decimal-feet and cubic feet per second (cfs), respectively.

Water levels measurements at stations recording continuous data will be maintained within a 0.02-foot tolerance. If the difference between the level measured during site inspections and the data logger recorded level is greater than ± 0.02 feet, field personnel will calibrate the data logger recorded level during routine site inspections. Differences in level, as well as calibration points, will be recorded on field sheets. Level drift observed from either the pressure transducer, or movement of the suspension cable, will be corrected by linear interpolation within the project dataset.

A.5.1. Routine Station Inspections

Routine site inspections will occur at least monthly while the project is actively collecting water quality, level, and/or flow data. Field staff will complete a field data collection form, or electronic equivalent, when conducting station inspections (see example in Attachment B). During monthly inspections, all equipment will be maintained per manufacturer recommendation, and include the following tasks:

- Download data logger module records;
- Maintain station grounds for clear and safe access;
- Clean and maintain enclosures, sensors, and monitoring equipment;
- Change/charge station batteries; and
- Calibrate/verify the accuracy, precision, and operation of sampling and monitoring equipment.

All observed and recorded field measurements, as detailed below, will be updated within the project database following routine inspection activities.

A.5.2. Groundwater levels

Groundwater levels are measured in monitoring well stations using a 150- or 300-foot electronic water level indicator. Depth to water is measured from a black mark on the top of the well casing and recorded to the nearest 0.01 foot. The depth to water is converted to a groundwater elevation by subtracting the depth to water from the surveyed top of casing elevations. Groundwater level measurements will be conducted and recorded on field sheets, or electronic equivalents, during each routine site inspection.

The well casings are accessed by unlocking and removing the lids on the steel stick-up-style monuments protecting each well. MW-C5-3 is maintained by JBLM. A key to unlock MW-C5-3 is obtained from JBLM during each site visit.

A.5.3. Surface water levels

Surface water levels are visually observed/measured during routine site inspections from staff plate gages; measured to the nearest 0.01 foot. Water levels will be converted to surface water elevation by subtracting the staff gage height from the surveyed top-of-staff gage elevation and then adding the measured staff gage water level.

A.5.4. Streamflow

Streamflow monitoring for this project will be performed by continuously observing the water level in the stream and calculating flow using one of two methods: a standardized weir-discharge equation or a stage-discharge rating curve.

Stream water levels will be visually observed/measured during routine site inspections from staff plate gages. CSI pressure transducers at continuous-record streamflow stations will be calibrated to the correspond station staff-gage level. Spot level measurements and observations at all other stations will be recorded during routine inspections. All level measurements will be used to calculate and update discharge flow volumes from each station.

A.5.4.1. Weir-Discharge Equations

Streamflow at the Diversion Weir is calculated using a standard discharge equation for a fully contracted rectangular weir from the USBR's Water Measurement Manual (USBR, 2001). The equation relates discharge (Q) to the length of the weir (l) and depth (d) of water over the weir as follows:

$$Q = 3.33*(l - 0.2*d)*d^{(3/2)}$$

It is imperative to maintain flow through weirs free from debris and obstructions, to ensure accurate level/flow measurements. Weir discharge equations will be incorporated into the project database, to ensure precision when field personnel transcribe field observations and measurements.

A.5.4.2. Stage-Discharge Rating Curve

Open-channel streamflow monitoring stations require the development of flow rating curves, which relate observed water depths (i.e., stage) to flow volumes. Rating curves will be developed for each flow monitoring location based on manual flow measurements collected over a range of different flows.

Measurements of streamflow (in cubic feet per second [cfs]) will be made using the conventional current-meter method as described by the USGS (1982). Stream velocities will be measured and discharges are calculated using a SonTek Flowtracker, or other similar velocity meter.

In accordance with the USGS current-meter method, observations of width, depth, and velocity will be made at approximately 10 to 15 intervals in a cross section by wading the stream. The average velocity of each subsection will be taken at 0.6 of the depth below the water surface. That velocity represents the average velocity for that stream subsection, whose cross-section area will be calculated from the corresponding width and

depth measurements. A streamflow measurement is the sum of the flow in each subsection.

The recorded discharge measurements are plotted against corresponding stage heights. The stage-discharge rating (i.e., regression equation) is determined by plotting a best-fit line through a series of stage-discharge points.

Rating curves will be developed at streamflow monitoring stations during a minimum of three (3) different flow event regimes, including flows covering the low-, mid-, and high ranges of the depths expected in each channel. To measure flows at these ranges, field personnel will collect flow measurements during various intensity storm events, as well as baseflow conditions. For existing stations, the rating curves developed during baseline monitoring will be used initially.

Rating curves are evaluated by comparing sets of flow event measurements to determine if the average rating curve for each event graphs similarly on a stage-discharge plot. A change in curve shape or shift in location indicates a change in channel geomorphology and a new rating curve is developed and updated, as necessary. Manual streamflow measurements are made at periodic intervals to verify the rating curve and evaluate if there has been any change in the stage-discharge relationship caused by changes in channel geometry and/or channel roughness. Rating curves were previously developed and reported for the mid-ravine and lower Sequalitchew Creek stations (Aspect and Anchor, 2007), and have continued to evolve since. The rating curves from these stations will be evaluated against new flow-discharge measurements, to ensure updated and accurate rating curves are used.

A.5.5. Surface water quality

Surface water quality parameters, including temperature, dissolved oxygen, pH, and turbidity will be monitored at all surface water stations. Water quality parameters are measured with a YSI Pro Plus multiparameter meter and a Hach Turbidimeter or equivalent instruments.

Surface water temperature will be continually logged by integrated CSI pressure transducer temperature sensors or equivalent equipment (e.g., Onset Hobo/Tidbit© temperature loggers). Temperature sensors will have a minimum accuracy/precision range of +/- 0.2°C. Temperature sensors will be calibrated and maintained in accordance with Ecology's (2015) Standard Operating Procedure (SOP) for Continuous Temperature Monitoring of Fresh Water Rivers and Streams (EAP080). Deployment techniques for temperature sensors/loggers will follow guidance and from Ecology's SOP; however, may vary slightly based on alternative equipment specifications.

Table 4 summarizes the water quality parameters and standard methods that will be employed for the surface water quality monitoring objectives of this project.

Table 4. Water Quality Grab Sample Parameters and Methods

Sample Type	Field Collection Containers	Parameter	Holding Time	Method	Lab Sample Container	Preservative
Continuous	*In-situ* stream or surface water station	Temperature	N/A	Continually logged via CSI pressure transducer, or equivalent	*In situ* (n/a)	*In situ* (n/a)
Grab	1-liter poly	pH	15 minutes	EPA 150.1 via YSI	*In situ* (n/a)	*In situ* (n/a)
		Dissolved Oxygen	15 minutes	EPA 150.2 via YSI	*In situ* (n/a)	*In situ* (n/a)
		Turbidity	15 minutes	EPA 180.1 via YSI	*In situ* (n/a)	*In situ* (n/a)

Manual grab samples will be collected by directly filling sample bottles from the monitoring discharge point, using a “clean hands” approach. The principle of the “clean hands” technique is that field personnel wear appropriate noncontaminating, disposable, powderless gloves during the entire grab sample collection procedure; changing gloves frequently with each change in task.

In-situ measurements with the YSI multiparameter meter may be conducted by directly submerging the sensors into surface waters, so long as there is no interference from bottom sediments or debris.

A.5.5.1. Equipment maintenance

Monitoring equipment will be inspected and serviced as recommended by the manufacturer, or at least once preceding the deployment of temporary monitoring station setups. Generally, equipment maintenance includes: inspection, testing, calibration, and replacement of worn or missing components. Table 5 summarizes the water quality field equipment specifications for this project, including: parameters, decontamination, and calibration procedures.

Table 5. Field Monitoring Equipment Decontamination and Calibration Procedures

Equipment	Parameters	Decontamination Procedure	Calibration Procedures
YSI water quality multimeter, or equivalent	pH; dissolved oxygen	Rinse sensors thoroughly with DI water as needed Store sensors in KCl solution between uses.	Perform the following prior to each site inspection: • Three-point calibration of pH (4,7,10) • Dissolved oxygen using barometric pressure and/or saturation method
HACH Turbidimeter, or equivalent	Turbidity	Rinse sample vials thoroughly with DI water as needed.	Perform reference calibration before every sample period, in accordance with manufacturer specifications.
Continually logged via CSI pressure transducer, or equivalent	Temperature	Gently clean temperature loggers with a soft cloth or soft-bristled brush to remove any biofouling or sediment.	Record ten reference *in-situ* measurements using NIST field thermometer. Compare the mean absolute value of the NIST thermometer measurements against the continuous temperature logger for the same time period; ensure the mean difference isn't greater than 0.2°C.

A.5.5.2. Qualitative Observations

In addition to the quantitative observations of water quality described above, surface water stations will be qualitatively inspected for the following, where applicable:

- Channel conditions, including the presence/absence of beaver dams, downed trees, streambed composition, vegetation, and particularly fast or slow flow velocities.
- Water color, floating oil and grease, floating debris/scum, and materials that may be toxic or harmful to human or other life.

A.5.6. Habitat

Habitat data are collected for two purposes: 1) stream cross sections are measured for comparison with the performance and aspirational thresholds of Goal 2 of the Restoration Plan, and 2) wetland and additional stream habitat measurements are collected to understand the linkages between stream restoration activities and effects on habitat. The wetland and additional stream habitat measurements could inform decisions to employ additional adaptive management strategies or modify existing strategies to limit impacts and/or increase benefits. The supplemental data would not be applicable to the evaluation of performance or aspirational thresholds.

A.5.6.1. Wetland Habitat

Wetland habitat will be measured using established transects with surveyed topography that has been related to surface water monitoring stations. The protocols for point intercept methods for determination of the vegetation community will generally follow Heady et al., 1959. Vegetation data will be collected annually at the end of the growing season (September or October, typically). A tape measure will be strung between fixed points (T-stakes or rebar, typically) and all vegetation species present at each given interval (1-foot or 2-foot, depending on transect length) will be recorded along with the distance from the start of the transect for correlation to surveyed ground surface elevation and surface water elevation data collected throughout the growing season.

A.5.6.2. Stream Habitat

Habitat monitoring stations will be established as cross sections and marked with driven rebar, or similar, in the field. Stations will be spaced 100 feet apart for 1,500 feet upstream of the BNSF culvert, and will be spaced 200 feet apart upstream to the east end of Edmond Marsh. At each section, the following data will be collected, at the frequency indicated in Table 6.

Table 6. Stream Habitat Monitoring Parameters and Methods

Parameter	Method	Precision/ units	Frequency
Depth	Measured every 2 feet within the wetted width of the section using a stadia rod.	0.1 foot	Years 0,1,2,3,5,10
Velocity	Measured at least every 2 feet within the wetted width of the section with a minimum of five measurements using a current velocity meter (Swoffer 2100 or similar).	0.1 feet per second (fps) for velocities between 0.5 and 25 fps	Years 0,1,2,3,5,10
Substrate size	D50 of randomly chosen substrate at least every 2 feet within the wetted width of the section with a minimum of 10 measurements.	1 mm	Years 0,1,2,3,5,10
Cover	Densiometer	Intersects	Years 0,1,2,3,5,10

Additional observations will be collected along the creek and referenced by distance upstream from the BNSF culvert (by station), as shown in Table 7.

Table 7. Additional Habitat Observations

Parameter	Method	Precision/ units	Frequency
Large Woody Material	Repeat existing survey based on methodology by Fox and Boulton (2007).	Count	Years 5, 10
Fish Presence	Visual identification	Species/ size (approx.)/ behavior	0,1,2,3,5,10
Active erosion	Visual identification	Photo documentation with scale	0,1,2,3,5,10

All data, except large woody material, will be collected once per indicated year in November or December when flows are between 100 and 200 percent of mean monthly average flow (or as predicted during years 1 and 2). Data on large woody material can be collected at any time of year.

All data will be presented in an annual monitoring report, including summarization and analysis of the data in terms of the quantity of usable and optimal habitat for Chum spawning and salmonid rearing. Trends over monitoring years will be included along with adaptive management considerations regarding the project performance or this sampling methodology.

A.5.7. Precipitation

For this project, a Hydrological Services Model TB3, or similar, tipping bucket rain gage will be installed at the designated site on the South Parcel. This instrument measures rainfall at 0.01-inch increments. The rain gauge will be connected to a CSI data logger, recording rainfall data at 15-minute intervals. The rain gage will be downloaded at least once each month. Field staff will inspect the rain gage monthly and service as needed. Rain gage calibration checks will occur using the method and at the frequency recommended by the manufacturer.

A.6. Quality Control

This section presents the quality control (QC) requirements for field and laboratory activities associated with this project.

A.6.1. Field

Field measurement equipment, dataloggers, and pressure transducers will be maintained and calibrated every month, at a minimum, to help ensure proper monitoring station operation. Preventative maintenance of the pressure transducers and water quality multimeters will be performed as specified by the manufacturer. The pressure transducers and sensors will be calibrated to the manufacturer's recommendations.

Original field records will be maintained in designated binders for all monitoring and field-related activities using project-specific forms, and guided by the procedures outlined in this SAP. Field documentation will include monthly inspection field sheets, maintenance/calibration logs, COC forms, and other required documentation. All entries in field notebooks will be written in pencil or waterproof ink. When errors are made,

project staff cross-out the error and enter the correct information. All corrections will be initialed and dated. Electronic equivalents of field forms may be used.

Field personnel will employ the following additional field-sample collection QC procedures, as needed:

- Collect grab water quality samples in certified contaminant-free or properly decontaminated containers.
- Use "clean hands/dirty hands" sampling techniques (that is, one team member performs "dirty tasks," while the other member performs "clean tasks," such as handling sample collection bottles).
- Hold samples on ice in coolers during retrieval and delivery to analytical laboratory.
- Deliver samples to analytical laboratory with proper chain of custody, and within holding times.

A.6.2. Laboratory

An accredited laboratory will be contracted to complete additional analyses, as needed, by the inclusion of special studies. Analytical test methods will be standardized and in accordance with procedures approved under 40 Code of Federal Regulations (CFR) §136. The minimum laboratory QA/QC requirements shall also include, but may not necessarily be limited to the following:

- Calibration of analytical laboratory instruments within acceptable limits.
- Periodic inspection, maintenance/servicing, and analysis of quality indicator samples, as necessary, to determine the accuracy and precision of procedures, instruments, and operators.
- Statistical procedures, such as control charts to monitor the precision and accuracy of the analytical data and to establish acceptance ranges and control limits. These data shall be maintained with project records and available upon request or during an audit.
- A continuous review of results to identify and correct problems originating with the instrument, the methodology or the analyst.
- Thorough documentation of the performance of systems, procedures, and operators.
- Certify that electronic data deliverables will exactly match all hard copy data.
- Provide notification of all nonconforming events and conditions, including missed holding times and delays in turnaround time, potentially impacting sample analysis.

A summary of laboratory QA/QC procedures will be requested in the final analytical report deliverables.

A.7. Data Management

This section describes the data management procedures to be used for ensuring access to consistently reliable data. The data management procedure includes 1) recording measurements in the field, 2) downloading data from storage devices in the field, and 3) transferring these data into project databases. There are two separate databases, one for hydrologic data and managed by the hydrology/water quality consultant, and a second for storing vegetation information from the wetland transects and quadrats in the marshes and creek, managed by the habitat consultant. This section defines the structure, inputs, outputs, and quality assurance(QA) and quality control (QC) procedures for the hydrologic database. These data management procedures closely follow those used for current and prior monitoring activities.

A.7.1. Hydrologic Data Collection

Field measurements/observations will be recorded in the field notebook. The field notebook will include the following data sheets: field visit data sheets, field equipment calibration sheets, and the equipment maintenance activity log. Custom field data sheets will be developed for the actual equipment installed. Examples of field data sheets are in Attachment B. Electronic equivalents of field forms may be developed and used.

The Data Collection Lead is responsible for updating and storing the field notebook. The field notebook will be photocopied monthly, and the copy stored at the Consultant's offices. Data loggers will be downloaded onto a project-designated field computer using applicable software and returned to the Consultant's office for transfer to the project database, as described below. Information from field notebook is transcribed into the project database manually. The project data files and database are stored on the Consultant's server, which is to be backed up for disaster recovery purposes at least once per week.

A.7.2. Hydrologic Database Structure

Hydrologic data are stored in an existing central Microsoft Access database created for the ongoing monitoring activities, and a set of specially formatted spreadsheets for ISCO datalogger data. The database will be used to assist with the analysis of groundwater and surface water conditions, and both consolidation and dissemination of information to other parties. The database provides a central storage area for ongoing data collected by Aspect Consulting, LLC and previous data sources, and allows data to be viewed in a uniform manner.

This database is structured such that, whenever possible, user input is validated using predefined formats and common terms making data input fast and simple, while ensuring that data can be accessed reliably through predefined queries. The data management tools in the database include:

- Task/field event setup for verifying completeness of data;
- Manual data entry;
- Querying and reporting tools; and

- Output of graphs and tabulated data.

Additional features designed to protect the integrity of the data and ensure smooth operation of the database include compact on close, tag data additions and modifications with date/time stamp and user id, and "*edit guard*" function that avoids inadvertent editing errors.

Due to the volume of ISCO bubbler data collected since 2004, it is currently managed as a set of Excel spreadsheets that combine to allow storage, correction, and graphing of the raw 15-minute stage data into final analysis and figures.

A.7.3. Database Inputs

Existing hydrologic data currently reside in the database. Data from planned monitoring described in this SAP will be routinely entered into the database as described below.

A.7.3.1. Existing Data

The following types of data were previously input for existing monitoring points:

- Survey coordinates and elevation data for staff gages and well top-of-casing elevations;
- Staff gage and well water level data;
- 15-minute continuous-record stream stage data;
- Stream stage-discharge rating equations for SC-Upper and SC-Lower;
- Standard weir equation for the Diversion Weir; and
- Spot flow measurements.

Existing water quality data is stored in an EQUIS database.

A.7.3.2. New Data

Data inputs from planned data collection include:

- Survey coordinates and elevation data for new staff gages (e.g., at SC-Center Drive gaging station and Sequalitchew Lake Outlet gaging station);
- New surface water staff gage measurements;
- Depth to groundwater measurements from wells;
- Monthly 15-minute stage-height data files for continuous flow and surface water monitoring stations;
- Monthly 15-minute groundwater level data files for continuous groundwater level monitoring stations;
- Monthly 15-minute precipitation data files from on-site rain gage;
- Water quality data;
- New manual streamflow flow measurements; and

- New stream stage-discharge rating equations, as necessary.

Staff gage, depth-to-groundwater, and spot water quality measurements are manually entered directly into the database using the manual data entry form following each field visit. The form includes fields for all monitoring data to help verify completeness.

Continuous stage height, groundwater level, temperature, and precipitation data files are loaded into the database and verified against manual measurements. Manual streamflow measurements and staff gage readings for the Sequalitchew Lake Outlet, SC-Center Drive, SC-Upper, and SC-Lower gaging stations are also entered into MS Excel to evaluate the appropriateness of the current rating curves for each station. When a new rating equation is necessary, it is entered manually into the database and applied to a specific date range for the station.

A.7.3.3. Back-up Precipitation Data

In the event the project rain gage malfunctions, precipitation data from the McMillin Reservoir weather station will be used to fill data gaps, as available. The McMillin Reservoir weather station is located about 20 miles northeast of the project area. This gage was selected as the most appropriate source of back-up precipitation data because it is the closest station with a lengthy period of record, and it receives similar monthly and annual precipitation amounts (Aspect, 2004a).

The precipitation data from McMillin Reservoir are collected as a part of the National Weather Service's (NWC) Cooperative Observer Program (COOP). Electronic files of daily precipitation can be downloaded from the COOP website and imported directly into the database using automated data import routines.

A.7.4. Database Outputs

Figures and tabulated data outputs are generated by an either automated output from the database, or generated via spreadsheet through Tableau. When new figures or tables are desired, water levels and flows are recalculated and printed from their appropriate software.

Water level elevations are calculated in the database, based on the supplied reference elevations for each point. The surveyed elevation of staff gages and monitoring wells is input in the database with a timestamp of when it was measured. Old water levels can be recalculated, based on resurveyed reference elevations when new ones become available.

Raw stage data from the continuous record stream gages is processed with the supplied stage-discharge ratings. Each station has a list of correlations that are applied over a specified time frame—typically for a given year or set of years. From the processed stage data, streamflow in either hourly or 15-minute data intervals is then averaged to mean daily flow for use in graphs and tables.

Precipitation data from the site rain gage is processed to calculate daily, monthly, and annual precipitation totals. Precipitation data at the appropriate time scale is exported to Excel for display on graphs and tables. The data export includes qualifiers indicating the quantity of missing data, if any.

Water quality data are stored and processed in the database. Continuous temperature data will be aggregated to calculate daily and monthly minimum and maximum temperatures as well as the 7-day average of daily maximum temperatures (7-DADMax), which has regulatory significance. Periodic water quality observations will also be output from the database.

A standard monthly report will be developed to assist with routine sharing of information during the mining and restoration projects. The report format will present a summary of observations for the prior month, and compare the observations with relevant performance and aspirational thresholds to determine if the adaptive management processes have been triggered.

A.7.5. QA/QC Protocol

QA/QC protocol for this project fall into three categories, based on which step of data collection and entry is taking place. Data QA/QC occurs during data collection in the field, data entry, and data reporting.

Key components of each QA/QC procedure are summarized below.

A.7.5.1. Data Collection

- The task/field event setup feature identifies all current monitoring points, and organizes them in the order that the data is typically collected on preprinted field forms. This feature helps ensure the completeness of data, especially in the event of field staff turnover.
- While measurements are being collected, the field staff quickly references the previous event's field form to verify the current measurement seems reasonable, and remeasures if necessary.

A.7.5.2. Data Entry

Manual data entry utilizes real-time data verification against defined valid values, acceptable data ranges, expected parameters, and standard data formats. Entries that fall outside these defined parameters will return an error message and reject the data.

A.7.5.3. Data Reporting

After each data entry event, data is reviewed in tabulated and graphical formats. This allows the user to readily identify data outliers and missing values. Data tables and figures will be inspected each month as a final step to verify the completeness and quality of monitoring data.

A.7.6. Data Archival (EIM)

To provide long-term data preservation by a neutral party, data collected under this SAP will be uploaded annually to Ecology's Environmental Information Management (EIM) database: http://www.ecy.wa.gov/eim/. Alternately, data collected by a governmental party with a similar, publicly accessible database (e.g., USGS's Nationwide Water Information System) may be stored in that database.

A.8. Special Studies

This SAP describes the routine monitoring approaches and methods for use in implementing the mining and restoration plans. Those plans also identify several special studies—notably the 60-day pumping test proposed as Step 1 of dewatering, and a study of water quality in Hamer Marsh to determine if it is adequate for improving the connection to Sequalitchew Creek. Specific plans will be developed for these studies, and others that may arise during implementation and adaptive management of the projects.

A.9. References

Anchor Environmental (Anchor), 2004, Fish Habitat Benefit Evaluation for Sequalitchew Creek, Pioneer Aggregates North Sequalitchew Creek Project, July 2004.

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V:\040001 DuPont South Parcel\Monitoring Plan\Final\Appendices\Sampling and Analysis Plan\Sampling and Analysis Plan_10042017.docx

TABLES

Table 1 - Summary of Baseline Monitoirng Program

Project No.: 040001-014-03, DuPont, Washington

Station ID	Summary of Monitoring					Description
	Surface Water	Streamflow	Water Quality	Groundwater Elevation		
				Shallow	Deep	
MW-BM-1				X		Bell Marsh - Monitoring Well
SG-BM-1	X					Bell Marsh - Stage Gage
SG-MKM-1	X					McKay Marsh - Stage Gage
MW-HM-1				X		Hamer Marsh - Monitoring Well
MW-SRC-2				X		Hamer Marsh - Monitoring Well
SG-HM-1	X		X			Hamer Marsh - Stage Gage
G-Diversion Weir	X	X	X			Diversion Canal - Continuous Stage Gage and Discharge Transect
SG-DC-1	X	X				Diversion Canal - Stage Gage and Discharge Transect
SG-DC-2	X	X				Diversion Canal - Stage Gage and Discharge Transect
SG-DC-3	X	X				Diversion Canal - Stage Gage and Discharge Transect
MW-D-3				X		Diversion Canal - Monitoring Well
IW-93-MFS-C5-3				X		Diversion Canal - Monitoring Well
MW-SL-1				X		Sequalitchew Lake Outlet - Monitoring Well
SG-SCM-1	X					Sequalitchew Creek Marsh - Stage Gage
SG-EM-3E	X					Edmond Marsh - Stage Gage
SG-EM-3W	X					Edmond Marsh - Stage Gage
MW-EM-3				X		Edmond Marsh - Monitoring Well
SG-EM-2E Island	X					Edmond Marsh - Stage Gage
G-EM-2W Culvert	X					Edmond Marsh - Stage Gage
MW-EM-2(D)					X	Edmond Marsh - Monitoring Well
MW-EM-2(S)				X		Edmond Marsh - Monitoring Well
SG-WL1D-1	X					Edmond Marsh - Stage Gage
MW-WL1D-1				X		Edmond Marsh - Monitoring Well
SG-EM-1	X					Edmond Marsh - Stage Gage
SG-EM-1A	X					Edmond Marsh - Stage Gage
MW-EM-1(D)					X	Edmond Marsh - Monitoring Well
MW-EM-1(S)				X		Edmond Marsh - Monitoring Well
MW-PL-1				X		Pond Lake - Monitoring Well
SG-PL-1	X					Pond Lake - Stage Gage
CHMW-1				X		Mine Area - Monitoring Well
CHMW-2-D					X	Mine Area - Monitoring Well
CHMW-2-S				X		Mine Area - Monitoring Well
CHMW-3-D					X	Mine Area - Monitoring Well
CHMW-3-S				X		Mine Area - Monitoring Well
CHMW-4-D					X	Mine Area - Monitoring Well
CHMW-4-S				X		Mine Area - Monitoring Well
OB-1				X		Mine Area - Monitoring Well
SG-SC-Lower		X				Sequalitchew Creek - Continous Stage Gage and Discharge Transect
SG-SC-Upper		X	X			Sequalitchew Creek - Continous Stage Gage and Discharge Transect

Table 3 - Relationship of Proposed Monitoring to Adaptive Management Thresholds

DRAFT

Project No. 040001-014-03, DuPont, Washington

Plan Objectives			Sampling and Analysis Plan Elements[1]				
			Precipitation	Groundwater Level			
			on-site rain gage	Dewatering Wells	Key Wells: CHMW-1, CHMW-2S&D, CHMW-3S&D, CHMW-4S&D, MW-EM-1S&D, MW-EM-2S&D	MW-BM-1, MW-HM-1, MW-D-3, MW-93-MFS-C5-3, MW-SRC-2, MW-SL-1, MW-EM-3, MW-WLD-1, MW-PL-1	Two new monitoring wells in mine interior
South Parcel Monitoring Plan Objectives	Step 1 - Initial Pumping Test	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	continuous		continuous	monthly	
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.	continuous	continuous			
	Step 2 - Prep for Mining/ Dewatering Test	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	continuous		continuous	twice monthly	
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.	continuous	continuous			as needed
	Step 3 - Active Dewatering During Mining	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	continuous		continuous	twice monthly for 3 months after new dewatering wells are brought on line, then monthly	
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.	continuous	as needed			as needed
	Step 4 - Cessation of Active Dewatering	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	continuous		continuous	monthly	
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.	continuous	as needed			as needed
Sequalitchew Creek Restoration Plan Objectives	After Elements B, C, and D,	Achieve year-round surface water flow in Sequalitchew Creek from Sequalitchew Lake to the mouth, as climate conditions allow.	continuous				
		Minimize the flow lost to the Diversion Canal.	continuous				
	After B, C, D, and G	Increase access to suitable spawning and rearing habitat in Sequalitchew Creek	continuous				

Notes:

1) additional monitoring locations may be added through adaptive management

* Continue routine monitoring of flow and surface water stations to aid in interpretation of groundwater measurements. Flow and surface water stations do not have Monitoring Plan performance thresholds.

Table 3 - Relationship of Proposed Monitoring to Adaptive Management Thresholds

Project No. 040001-014-03, DuPont, Washington

Plan Objectives			Sampling and Analysis Plan Elements*					
			Flow			Surface Water Level		
			Sequalitchew Lake Outlet	Diversion Weir	Sequalitchew Creek gages (Center Drive, mid-ravine, and SC-Lower)	West Edmond (SG-EM-1/1A and SG-EM-2W)	East Edmond and Sequalitchew Creek Marshes (SG-SCM-1, SG-EM-3E, SG-EM-3W, SG-EM-2E)	Hamer, McKay, and Bell Marshes (SG-HM-1, SG-MKM-1, SG-BM-1)
South Parcel Monitoring Plan Objectives	Step 1 - Initial Pumping Test	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	* continue routine monitoring			* continue routine monitoring		
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.						
	Step 2 - Prep for Mining/ Dewatering Test	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	* continue routine monitoring			* continue routine monitoring, but at twice monthly frequency		
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.						
	Step 3 - Active Dewatering During Mining	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	* continue routine monitoring			* continue routine monitoring, but at twice monthly for first three months after new dewatering wells are brought on line, then monthly		
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.						
	Step 4 - Cessation of Active Dewatering	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.	* continue routine monitoring			* continue routine monitoring		
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.						
Sequalitchew Creek Restoration Plan Objectives	After Elements B, C, and D,	Achieve year-round surface water flow in Sequalitchew Creek from Sequalitchew Lake to the mouth, as climate conditions allow.	continuous		continuous	continuous	monthly	monthly
		Minimize the flow lost to the Diversion Canal.		continuous				
	After B, C, D, and G	Increase access to suitable spawning and rearing habitat in Sequalitchew Creek			continuous	continuous	monthly	

Notes:

1) additional monitoring locations may be added through adaptive management

* Continue routine monitoring of flow and surface water stations to aid in interpretation of groundwater measurements. Flow and surface water stations do not have Monitoring Plan performance thresholds.

Table 3 - Relationship of Proposed Monitoring to Adaptive Management Thresholds

Project No. 040001-014-03, DuPont, Washington

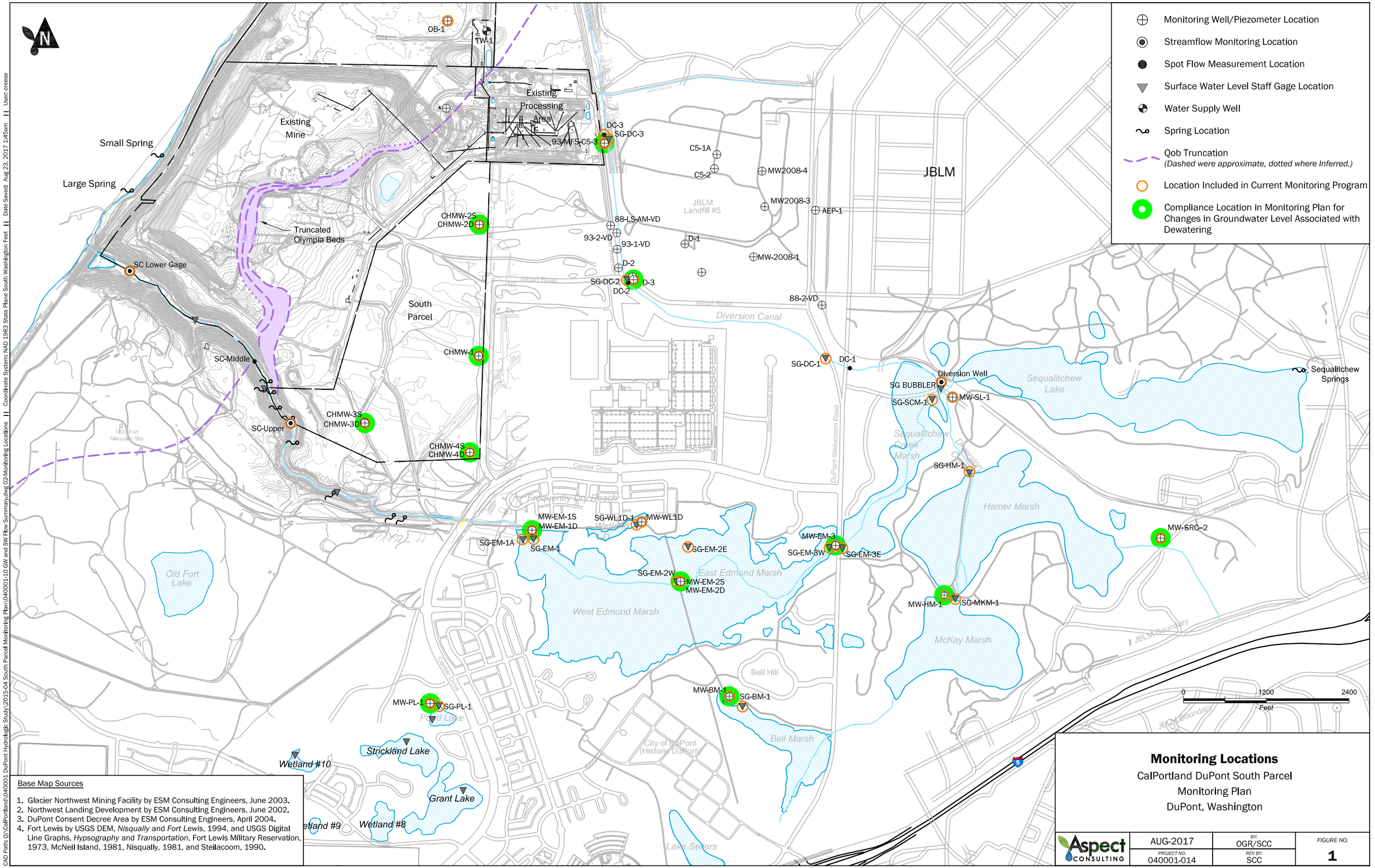
Plan Objectives			Sampling and Analysis Plan Elements*				
			Water Quality		Habitat		
			Temperature at SG-EM-1, SG-EM-2W, Diversion Weir, Sequalitchew Lake Outlet, SC-Center Drive, mid-ravine, SC-Lower	Water quality sampling for DO, turbidity, pH, Temperature at select surface water stations	Cross-section physical characteristics (depth, velocity, substrate,and cover)	Visual Observations (fish presence, active erosion)	Large Woody Material
South Parcel Monitoring Plan Objectives	Step 1 - Initial Pumping Test	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.					
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.					
	Step 2 - Prep for Mining/ Dewatering Test	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.					
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.					
	Step 3 - Active Dewatering During Mining	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.					
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.					
	Step 4 - Cessation of Active Dewatering	Groundwater levels at monitoring wells near Edmond Marsh and Sequalitchew Creek are at or above predicted, approved-upon levels.					
		Moisture content of mined aggregate is at appropriately low levels for safe and efficient mining and processing.					
Sequalitchew Creek Restoration Plan Objectives	After Elements B, C, and D,	Achieve year-round surface water flow in Sequalitchew Creek from Sequalitchew Lake to the mouth, as climate conditions allow.					
		Minimize the flow lost to the Diversion Canal.					
	After B, C, D, and G	Increase access to suitable spawning and rearing habitat in Sequalitchew Creek	continuous	monthly	Years 0, 1, 2, 3, 5 and 10		Years 5 and 10

Notes:

1) additional monitoring locations may be added through adaptive management

* Continue routine monitoring of flow and surface water stations to aid in interpretation of groundwater measurements. Flow and surface water stations do not have Monitoring Plan performance thresholds.

FIGURE



Base Map Sources

1. Glacier Northwest Mining Facility by ESM Consulting Engineers, June 2003.
2. Northwest Landing Development by ESM Consulting Engineers, June 2002.
3. DuPont Consent Decree Area by ESM Consulting Engineers, April 2004.
4. Fort Lewis by USGS DEM, *Nisqually* and *Fort Lewis*, 1994, and USGS Digital Line Graphs, *Hypsography* and *Transportation*, Fort Lewis Military Reservation, 1973, McNeil Island, 1981, Nisqually, 1981, and Steilacoom, 1990.

Monitoring Locations

CalPortland DuPont South Parcel
Monitoring Plan
DuPont, Washington

Aspect Consulting	AUG-2017	BY: OGR/SCC	FIGURE NO. 1
	PROJECT NO. 040001-014	REV BY: SCC	

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2015-04 South Parcel Monitoring Plan\040001-10 GW and SW Flow Summary.dwg 02-Monitoring Locations || Coordinate System: NAD 1983 State Plane South Washington Feet || Date Saved: Aug 23, 2017 1:45am || User: oreese

APPENDIX A

Boring Logs

14P1

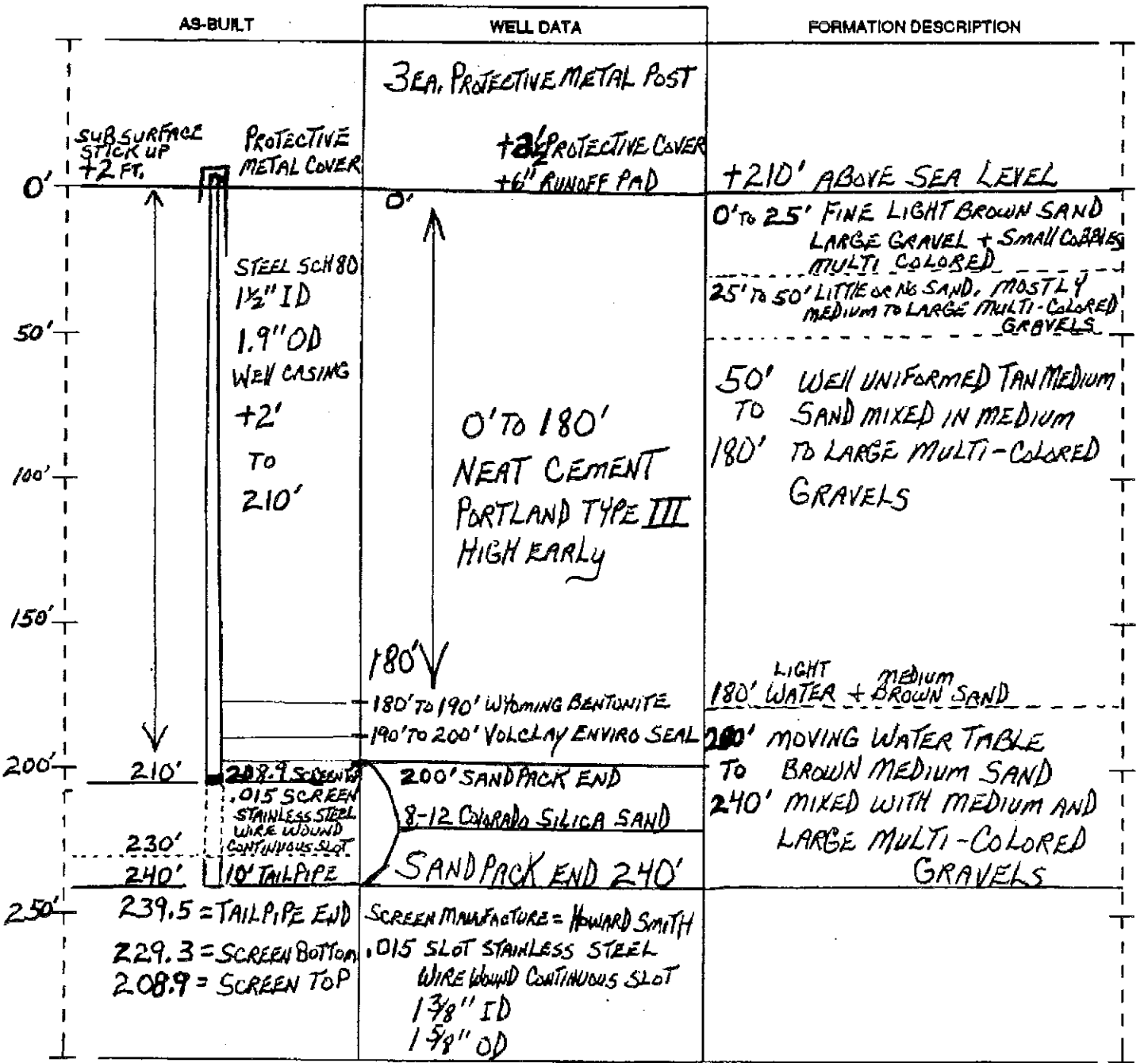
21 FEB 9

RESOURCE PROTECTION WELL REPORT

START CARD NO. 063977

PROJECT NAME: LONESTAR NW OBSERVATION WELL
WELL IDENTIFICATION NO. LONE STAR OB-1
DRILLING METHOD: REVERSE CIRCULATION ROTARY
DRILLER: DOUGLAS GRABOWSKI
FIRM: BECKER DRILLS INC.
SIGNATURE: William J. Flickey
CONSULTING FIRM: HART CROWSER
REPRESENTATIVE: TOM NOYES

COUNTY: PIERCE
LOCATION: SE¼ SW¼ Sec 14 Twn 19N R 1E
STREET ADDRESS OF WELL: NORTHWEST LANDING ANNEX DUPONT STEILACOOM ROAD DUPONT WASHINGTON
WATER LEVEL ELEVATION: 200 FT. STATIC
GROUND SURFACE ELEVATION: +210
INSTALLED: FEBRUARY 15, 1991
DEVELOPED:



SCALE: 1" = 50 FEET

PAGE 1 OF 1

ECY 050-12 (Rev. 11/89)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report

CH2MHILL

Well Number: CHMW-1

Sheet: 1 of 1

Client: Glacier NW
Project: N Sequalitchew Creek Aquifer Tests
Location: DuPont, Washington
Project Number: 151973.A2.AT

Driller: Hokkaido Drilling (Bill & Steve)
Drilling Method: Speedstar 15 Truck-Mounted Air Rotary
Sampling Method: Sand pump (water added)
Logged by: driller
Start/Finish Date: 9/23/99 - 9/24/99

Depth (ft)	Sample Info: Sample #	Sample Info: STP (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
-5					5		
					217		Monument (not shown)-- Lockable 6" steel protective casing in concrete.
0				Ground Surface			
				Topsoil	2		
5				Sand and gravel with silt, dry, brown	210		
10							Casing - 2" sch 40 PVC pipe
15							
20					22		
				Brown silty gravel	190		
25					26		
				Brown gravel, like till	186		
30					33		
				Brown silt	179		
35				Light brown gravel, productive water-bearing zone			
40							
45							
50							
55					57		
				Dark brown gravel and sand. Note no "soupy sand" like in CHTW-1.	155		
60							Casing Seal - Hydrated medium bent
65							
70							
75					76		Filter pack - 10-20 CSSI sand
				Dark brown sand and gravel	136		Screen - 2" sch 40 PVC, 0.020-in slot
80					82		
				Gray-blue silty sand, sand and gravel.	130		
85					85		6" end cap
					127		

CH2MHILL

Well Number: CHMW-2(S)

Sheet: 1 of 1

Client: Glacier NW
Project: N Sequalitchew Creek Aquifer Tests
Location: DuPont, Washington
Project Number: 151973.A2.AT

Driller: Hokkaido Drilling (Daryl & Tom)
Drilling Method: Star 71 cable tool, 8" steel casing
Sampling Method: Sand pump (water added)
Logged by: driller
Start/Finish Date: 11/17/99 - 11/19/99

Depth (ft)	Sample Info: Sample #	Sample Info: STP (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
-5					5 212		Monument (not shown)-- Lockable 6" steel protection casing in concrete.
0				Ground Surface Topsoil and gravel	3		
5				Brown silty sand and gravel	204		
10							Casing - 2" sch. 40 PVC pipe
15							Casing seal - Hydrated medium bentc
20					21		
25				Larger gravel and sand, slightly silty, very hard	186 26		
30				Brown silty sand, gravel Sandier with gravel	181		Sandy filterpack - 10-20 CSSI sand
35					36		
40				Clean sand and gravel, water	171		Screen - 2 centralizers, 2" sch 40 PV(0.020-inch slot width
45					43		6" end cap
50				End of Log	164		

CH2MHILL

Well Number: CHMW-2(D)

Sheet: 1 of 1

Client: Glacier NW
Project: N Sequalitchew Creek Aquifer Tests
Location: DuPont, Washington
Project Number: 151973.A2.AT

Driller: Hokkaido Drilling (Steve & Tom)
Drilling Method: Speedstar 15 & Star 71 Cable Tool
Sampling Method: Sand pump (water added)
Logged by: Driller
Start/Finish Date: 11/12/99 - 11/18/99

Depth (ft)	Sample Info: Sample #	Sample Info: STP (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
-5					5 212		Monument (not shown): Lockable 6' steel protection casing in concrete
0				Ground Surface			
				Topsoil	4		
5				Brown silty gravel	203 9		
10				Brown gravel	198		Casing--2" sch 40 PVC pipe
15				Brown silty gravel, moist	15 192		
20					24		
25				Hard till, brown	[illegible]		
				Loose sand and gravel, water	181		
30							Casing Seal--Hydrated medium bentc
35				Brown till	35 172		
40							
45					48		
50				Loose sand and gravel, water	159		
55					58		
60				Brown silt bound sand and gravel, tight	149		
65					66		Screen - 2" sch 40 PVC, 0.020-in slot with centralizer
				no record	141		
70					73		6" end cap
75				End of Log	134		

CH2MHILL

Well Number: CHMW-3(D)

Sheet: 1 of 1

Client: Glacier NW
Project: N Sequalitchew Creek Aquifer Tests
Location: DuPont, Washington
Project Number: 151973.A2.AT

Driller: Hokkaido Drilling (Steve)
Drilling Method: Speedstar 15 Air Rotary Drill Rig
Sampling Method: Sand pump (water added)
Logged by: driller
Start/Finish Date: 11/4/99 - 11/5/99

Depth (ft)	Sample Info: Sample #	Sample Info: STP (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
-5					5		Monument (not shown): Lockable 6" steel protective casing in concrete
					221		
0				Ground Surface			
				Brown topsoil	2		
5				Loose brown gravel	214		
10							Casing - 2" sch 40 PVC pipe
15					16		
				Brown silty sand and gravel	200		
20							
25					26		
				Brown silty sand and gravel (moist)	190		Casing seal - hydrated medium bento
30					31		
				Brown sand and gravel, dirty, water	185		
35							
40					41		
				Brown till	175		
45							
					48		
50				Sand and gravel, water	168		
					54		
55				Brown till	162		
				Silt, sand and gravel, brown, wet			
60							
					64		
65				Clean sand and gravel	152		
70							
							Filter pack - 10-20 CSSI sand
75							Screen - 2" sch 40 PVC, 0.020-in slot
80							
					85		6" end cap
85				End of Log	131		
90							

CH2MHILL

Well Number: CHMW-3(S)

Sheet: 1 of 1

Client: Glacier NW
Project: N Sequalitchew Creek Aquifer Tests
Location: DuPont, Washington
Project Number: 151973.A2.AT

Driller: Hokkaido Drilling (Steve)
Drilling Method: Speedstar 15 Air Rotary Drill Rig
Sampling Method: Sand pump (water added)
Logged by: driller
Start/Finish Date: 11/5/99

Depth (ft)	Sample Info: Sample #	Sample Info: STP (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
-5					5 221		Monument (not shown): Lockable 6" steel protection casing in concrete
0				Ground Surface Brown topsoil	2		
				Loose gravel	214		
5							Casing - 2" sch 40 PVC pipe
10							
15					16		Casing seal - Hydrated medium bentc
				Silty brown sand and gravel	200		
20							
25					26		
				Moist silty brown sand and gravel	190		Filter pack - 10-30 CSSI sand
30					31		Screen - 2" sch 40 PVC, 0.020-in slot
				Clean sand and gravel, water	185		
35							
40					40		6" end cap
				End of Log	176		
45							

CH2MHILL

Well Number: CHMW-4(S)

Sheet: 1 of 1

Client: Glacier NW
Project: N Sequalitchew Creek Aquifer Tests
Location: DuPont, Washington
Project Number: 151973.A2.AT

Driller: Hokkaido Drilling (Steve)
Drilling Method: air rotary
Sampling Method: Sand pump (water added)
Logged by: driller
Start/Finish Date: 11/23/99

Depth (ft)	Sample Info: Sample #	Sample Info: STP (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
-5					5 219		Monument (not shown): Lockable 6" steel protective casing
0				Ground Surface Topsoil with large gravel	3		
5				Brown silty sand and gravel	211		
10					11		Casing - 2" sch 40 pvc pipe w/ j-plug
				Brown silty sand and large boulders	203		
15					15		Casing seal - hydrated medium bento
				Sand and gravel with water	199 17		
				Brown silt with gravel	197		
20							
25							Filterpack - 10-20 CSSI sand
							Screen - 2" sch 40 pvc, 0.020-in slot v
30							
35							
					37		6" end cap
				End of Log	177		
40							

CH2MHILL

Well Number: CHMW-4(D)

Sheet: 1 of 1

Client: Glacier NW
Project: N Sequalitchew Creek Aquifer Tests
Location: DuPont, Washington
Project Number: 151973.A2.AT

Driller: Hokkaido Drilling (Steve)
Drilling Method: air rotary
Sampling Method: Sand pump (water added)
Logged by: diller
Start/Finish Date: 11/11/99

Depth (ft)	Sample info: Sample #	Sample info: STP (6"-6"-6")	Soil Log	Soil Description	Depth / Elev	Well Drawing	Well Construction Notes
-5					5 / 219		
0				Ground Surface			
				Topsoil	2		
5				Brown gravel	212		Monument: Lockable 6" steel protective casing in concrete
10							
15					15		
				Brown till	199		
20							
25							Casing - 2" sch 40 PVC pipe
30							
					34		
35				Sand, gravel, making water	180		Casing seal - hydrated medium bento
40							
45							
					48		
50				Brown till	166		
					53		
55				Sand, gravel, making water	161		
60							
65					66		
				Brownish orange silty gravel	148		
70				Sand, gravel, water			
75							Filter pack - 10-20 CSSI sand
							Screen - 2" sch 40 PVC, 0.020-in slot
80							
					85		6" end cap
85					129		

CH2MHILL

PROJECT NUMBER : 151973.A1.AT

WELL NUMBER : CHMW-1

WELL CONSTRUCTION/BORING LOG

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' S. OF CHTW-1**

WATER LEVELS : **21'6 3/4" ATD**

DRILLING METHOD/EQUIPMENT : **SPEEDSTAR 15 TRUCK-MOUNTED AIR ROTARY**

START : **9/23/99** END : **9/24/99** LOGGER: **HOKKAIDO(BILL&STEVE)**

DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
0	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
	0-2FT Topsoil
	2-22FT Sand/gravel w/silt (dry,brown)
5	
10	
15	
20	
	22-26FT Brown silty gravel
25	
	26-33FT Brown gravel (like till)
30	

CH2MHILL

PROJECT NUMBER : 151973.A1.AT	WELL NUMBER : CHMW-1 SHEET 2 OF 3

WELL CONSTRUCTION/BORING LOG

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' S. OF CHTW-1**

WATER LEVELS : **21'6 3/4" ATD**

DRILLING METHOD/EQUIPMENT : **SPEEDSTAR 15 TRUCK-MOUNTED AIR ROTARY**

START : **9/23/99** END : **9/24/99** LOGGER: **HOKKAIDO(BILL&STEVE)**

DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
	33-35FT Brown silt
35	35-57FT Lt.brown gravel, productive water-bearing zone
40	
45	
50	
55	
	57-59FT Dk.brown gravel & sand NOTE: No "soupy sand" at 50' like in CHTW
60	

CH2MHILL

PROJECT NUMBER : 151973.A1.AT

WELL NUMBER : CHMW-1

WELL CONSTRUCTION/BORING LOG

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' S. OF CHTW-1**

WATER LEVELS : **21'6 3/4" ATD**

DRILLING METHOD/EQUIPMENT : **SPEEDSTAR 15 TRUCK-MOUNTED AIR ROTARY**

START : **9/23/99** END : **9/24/99** LOGGER: **HOKKAIDO(BILL&STEVE)**

DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
65	
70	
75	76-82FT Dk.brown sand & gravel
80	82-83FT Gray silty sand & gravel
85	83-85FT Blue sand & gravel
	WELL: STICKUP=2' (2"sch 40 pvc) SCREEN=75'-84.5' (2"sch 40 pvc, 20-slot) 6" endcap 84.5 -85 fbgs ANNULUS=15 bags 10-20 cost sand (50lb. ea) 52 bags med. bentonite chips (50lbs ea) MONUMENT=6" steel protective casing in concrete
0	

CH2MHILL

PROJECT NUMBER : 151973.A1.AT	WELL NUMBER : CHMW-2(S)
	SHEET 1 OF 2

WELL CONSTRUCTION/BORING LOG

TOC elev = 209.39 Stickup = 1.45
grd = 207.94

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' N. OF TW-2(~15FT E.OF MW-2(D)**

WATER LEVELS :

DRILLING METHOD/EQUIPMENT: **STAR 71 CABLE TOOL, 8" STEEL CASING**

START : **11/17/99** END : **11/19/99** LOGGER: **HOKKAIDO(DARYL & TOM)**

DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
0	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
	0-3FT Topsoil & gravels
	3-21FT Brown silty sand and gravels
5	
10	
15	
20	
	21-26FT Larger gravels & sand slightly silty, very hard
25	
	26-27FT Brown silty sand & gravel
	27-28FT Sandier w/gravel (gravel smaller)
30	

CH2MHILL

PROJECT NUMBER : 151973.A1.AT	WELL NUMBER : CHMW-2(S) SHEET 2 OF 2

WELL CONSTRUCTION/BORING LOG

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' N. OF TW-2(~15FT E.OF MW-2(D)**

WATER LEVELS :

DRILLING METHOD/EQUIPMENT: **STAR 71 CABLE TOOL, 8" STEEL CASING**

START : **11/17/99** END : **11/19/99** LOGGER: **HOKKAIDO(DARYL & TOM)**

DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
35	36-43FT Clean sand & gravel w/H20 Total casing=46'-81/2" Well: Stickup=2' (2" sch 40 pvc) w/j-plug Screen=33'-421/2' bgs w/2 centralizers & 6' end (2"sch 40 pvc, 20-slot) Annulus=13 50-lb bags 10-20 cgsi sand 18 50-lb bags medium bentonite chips Monument= 6"steel protecting casing in concrete (7 bags)
40	
45	
50	
55	
60	

CH2MHILL

PROJECT NUMBER : 151973.A1.AT	WELL NUMBER : CHMW-2(D) SHEET 1 OF 3

WELL CONSTRUCTION/BORING LOG

TOC elev = 209 Stickup = 1.8 grd = 207.2

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' N. OF TW-2**

WATER LEVELS :

DRILLING METHOD/EQUIPMENT: **SPEEDSTAR 15, 8" STEEL CASING(TO58") &STAR 71 CABLE TOOL, 8" CASING**

START : **11/12/99** END : **11/18/99** LOGGER: **HOKKAIDO(STEVE & TOM)**

DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
0	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
	0-4FT Dark brown topsoil
	4-9FT Brown silty gravel
5	
10	9-15FT Brown gravel
15	15-24FT Brown, silty gravel, moist
20	
25	24-26FT Hard till, brown
	26-35FT Loose sand & gravel H20
30	

CH2MHILL

PROJECT NUMBER : 151973.A1.AT	WELL NUMBER : CHMW-2(D) SHEET 2 OF 3

WELL CONSTRUCTION/BORING LOG

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' N. OF TW-2**

WATER LEVELS :

DRILLING METHOD/EQUIPMENT: **SPEEDSTAR 15, 8" STEEL CASING(TO58") &STAR 71 CABLE TOOL, 8" CASING**

START : **11/12/99** END : **11/18/99** LOGGER: **HOKKAIDO(STEVE & TOM)**

DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
35	35-48FT Brown till
40	
45	
50	48-58FT Loose sand & gravel H20
55	
60	58-66FT Brown tight Silt Bound sand & gravel

CH2MHILL

PROJECT NUMBER : 151973.A1.AT	WELL NUMBER : CHMW-2(D) SHEET 3 OF 3

WELL CONSTRUCTION/BORING LOG

PROJECT : **LONE STAR, DUPONT** LOCATION : **50' N. OF TW-2**

WATER LEVELS :

DRILLING METHOD/EQUIPMENT: **SPEEDSTAR 15, 8" STEEL CASING(TO58") &STAR 71 CABLE TOOL, 8" CASING**

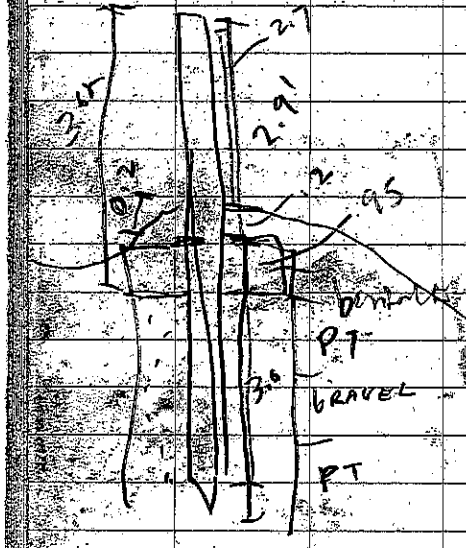
START : **11/12/99** END : **11/18/99** LOGGER: **HOKKAIDO(STEVE & TOM)**

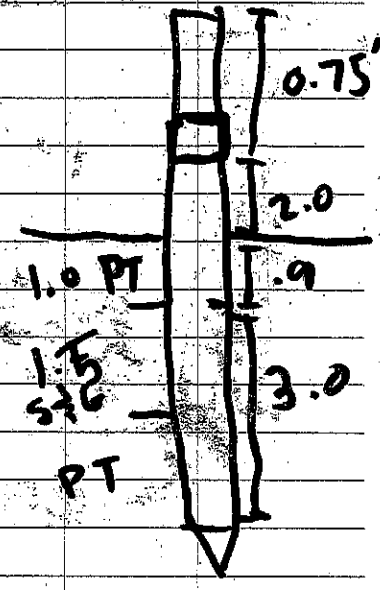
DEPTH BELOW SURFACE (FT)	CORE DESCRIPTION/COMMENTS
	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.
65	66-73FT NO RECORD
	Total Casing=72'-41/4"
	Well:
70	Stickup=2' (2"sch 40 pvc) w/j plug
	Screen= 63'-721/2' bgs (2" sch 40 pvc, 20-slot)
	w/centralizer 6"end cap 721/2-73 fbgs
	Annulus=13 50-lb bags 10-20 cssi sand
	34 50-lb bags medium bentonite chips
	Monument= 6" steel protectivecasing in concrete
75	
80	
85	
90	

CHMW- 4 (S) 18.42

4 (D) 20.81

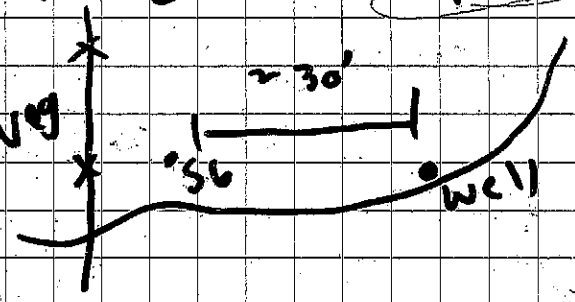
CHMW-1 19.40 14:21





Pond L. well 2.95

Pond L. SG 1.07



BM-MW-1 14.23' 12:30

BM-SG-1 2.53' 12:32

EM-1A 3.69' 12:40

Top 6.65'

SG EM1 dry Top 3.33

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
040001	SL-1	1 of 1

Project Name: North Sequalichew Creek
Location: Fort Lewis, WA
Drilling Method: Hollow stem auger, 4" ID ; Holt Drilling
Sampling Method: 3" diameter D&M
Ground Elevation 214.94

Top of PVC Casing Elev. (ft mllw) 217.74
Depth to Water (ft BTC) 6.25
Start Date March 11, 2004
Finish Date March 11, 2004

Depth feet	Well Construction	Tests\Remarks	Blows/ 6"	Sample ID	Mtl. Graphic	Description
	5" diameter steel monument, 3' stickup; Concrete seal 0'-2'					Grass, duff
						FILL
						Gravel up to 1-1/2" diameter, to a depth of 8" below ground surface
			4 3 3	S-1		Medium stiff, moist to very moist, dark brown, gravelly SILT with SAND
		3/26/04 ▼				
5			3 3 4	S-2		•Very gravelly drilling, no recovery
			9 8 11	S-3		Medium dense, wet, gray, sandy GRAVEL; sand medium to coarse, gravel fine to coarse
			4 6 6	S-4		•Low recovery, trace gravel in sampler
			7 7 7	S-5		RECESSIONAL OUTWASH Medium dense, wet, gray, very gravelly SAND; sand predominantly coarse
10	Bentonite chips 2'-13'		7 7 9	S-6		Medium dense, wet, gray-brown, sandy GRAVEL; sand predominantly coarse
			6 7 12	S-7		
			11 10 9	S-8		•Trace silt
15	10/20 silica sand filter pack 13'-20'		10 7 7	S-9		•Trace silt
	20-slot screen 15'-20'; slip cap with SS screw 20'-20.3'		4 6 7	S-10		
20						Bottom of boring at 20 feet.

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector
▼ Water Level (ATD)
▽ Static Water Level

Logged by: RRH
Approved by: LJH
Figure No. B - 2

SEQUALICHEW CREEK.GPJ July 20, 2004
MW_GEOLG

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
040001	HM-MW-1	1 of 1

Project Name: North Sequalitchew Creek
Location: DuPont, Washington
Drilling Method: Hollow Stem Auger - 4" ID ; Holt Drilling
Sampling Method: 3" Diameter D&M

Top of Casing Elev. (ft mllw): 221.06
Ground Surfave Elev. (ft): 217.75
Depth to Water (ft bgs): 5
Start Date: August 2, 2004
Finish Date: August 2, 2004

Depth feet	Well Construction	Tests\Remarks	Blows/ 6"	Sample ID	Mtl. Graphic	Description
1						Brown, slightly silty GRAVEL; gravel, predominantly coarse and cobbles (observed from drill action and cuttings) (GP)
2	5" diameter steel monument, cement seal 0'-4'					
3		18"/5"	3 27 30	2.5-4		Brown, moist, slightly silty to trace silt, sandy GRAVEL; sand medium to coarse; gravel fine to coarse, abundant cobbles, subangular to rounded (GW)
4						
5		8/2/04 ▼ 18"/8"	11 23 23	5-6.5		Brown to olive gray, wet, very sandy GRAVEL, trace silt; sand medium to coarse, predominantly medium; gravel fine to coarse with cobbles, subangular to subround; no apparent organization.
6	Bentonite Chips 4'-7.5'					
7						
8		18"/11"	19 22 24	7.5-9		Color change to olive gray; grades to medium to coarse sand and predominantly fine gravel; increase in silt (still trace silt), less cobbles.
9						
10		18"/6"	22 28 32	10-11.5		Olive gray to gray-green, wet, SAND; trace gravel; sand medium to coarse, occasional zones of fine to medium; gravel fine (SP-SW)
11	10/20 silica sand filter pack 7.5'-20.3'					
12						
13		18"/12"	21 30 35	12.5-14		Olive gray, wet, slightly silty, very sandy GRAVEL; gravel fine to coarse; with cobbles; sand predominantly medium to coarse (GW-GM)
14						
15	20-slot screen 10'-20'; slip cap with SS screw 20'-20.3'	18"/10"	21 31 44	15-16.5		Gray-green to olive gray, wet, SAND, trace gravel; sand predominantly medium to coarse; gravel fine (SW)
16						Olive gray, wet, very sandy GRAVEL, trace silt, sand medium to coarse, occasional fine, predominantly coarse; gravel fine to coarse (GW)
17						
18		18"/10"	26 50/6"	17.5-19		Gray-green, wet SAND; trace gravel; sand predominantly medium to coarse (SW)
19						Olive-gray, wet, very sandy GRAVEL, trace silt; gravel fine to coarse; sand predominantly medium to coarse (GW)
20		18"/11"	26 50/6"	20-21.5		Gray to olive gray, wet SAND; sand medium; homogenous (SP)
21						
22						Olive gray to gray, wet, sandy GRAVEL, trace silt; gravel fine to coarse; subrounded to rounded; sand medium to coarse, predominantly medium (GW)
23						Total depth = 20' drilled, 22.5' driven.
24						
25						
26						
27						
28						
29						

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector
▼ Water Level (ATD)
▽ Static Water Level

Logged by: ILE
Approved by: LJH
Figure No. A-2

APPENDIX B

MW_GEOL S CRK.GPJ November 23, 2004

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
040001	EM-3	1 of 1

Project Name: North Sequalichew Creek
Location: Fort Lewis, WA
Drilling Method: Hollow stem auger, 4" ID ; Holt Drilling
Sampling Method: 3" diameter D&M
Ground Elevation 214.63

Top of PVC Casing Elev. (ft mllw) 217.38
Depth to Water (ft BTC) 4.96
Start Date March 11, 2004
Finish Date March 11, 2004

Depth feet	Well Construction	Tests\Remarks	Blows/ 6"	Sample ID	Mtl. Graphic	Description
	5" diameter steel monument, 3' stickup; Concrete seal 0'-2'					Sod and dark brown organic soil
						FILL
		3/26/04 ▼				Gravel, some cobbles at 0.5'
			3 7 10	S-1		Medium dense, moist, dark brown, sandy GRAVEL with SILT and ORGANICS, trace wood
			3 6 8	S-2		Medium dense, wet, gray SAND and GRAVEL
5			6 2 1	S-3		MARSH DEPOSITS
		K Test K = 1x10^{-6} cm/s	1 1 9	S-4		Soft, wet, brown, slightly fibrous PEAT, trace gravel
			8 12 14	S-5		Medium dense, wet, brown, sandy GRAVEL to GRAVEL, trace silt
10	Bentonite chips 2'-13'		2 6 6	S-6		RECESSIONAL OUTWASH
			7 8 13	S-7		Medium dense, wet, gray SAND, trace gravel; sand fine to medium; 1/4" silt seam
			1 12 25	S-8		No recovery, coarse gravel in shoe of sampler
15			16 17 16	S-9		Dense, wet, brown, gravelly SAND to sandy GRAVEL
	10/20 silica sand filter pack 13'-20'		11 16 32	S-10		Dense, wet, sandy GRAVEL
	20-slot screen 15'-20'; slip cap with SS screw 20'-20.3'		15 25 35	S-11		
20						Bottom of boring at 20 feet.

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector
▼ Water Level (ATD)
▽ Static Water Level

Logged by: RRH
Approved by: LJH

Figure No. B - 1

SEQUALICHEW CREEK.GPJ 7/29/04

Aspect consulting
IN-DEPTH PERSPECTIVE

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
040001	BM-MW-1	1 of 1

Project Name: North Sequalitchew Creek
Location: DuPont, Washington
Drilling Method: Hollow Stem Auger - 4" ID ; Holt Drilling
Sampling Method: 3" Diameter D&M

Top of Casing Elev. (ft mllw): 232.32
Ground Surfave Elev. (ft): 229.37
Depth to Water (ft bgs): 12.5
Start Date: August 3, 2004
Finish Date: August 3, 2004

Depth feet	Well Construction	Tests\Remarks	Blows/ 6"	Sample ID	Mtl. Graphic	Description
1	5" diameter steel monument, cement seal 0'-1.5'					Brown, dry, GRAVEL, trace silt; gravel fine to coarse, predominantly coarse; abundant cobbles, subrounded to rounded (GW)
2						
3						(Road fill)
4	Natural Fill 1.5'-5'					
5		18"/4"	11	5-6.5		Brown to tan, moist sandy GRAVEL, trace silt; gravel fine to coarse, subrounded to rounded; sand predominantly medium to coarse.
6			12			
7			10			
8		18"/12"	4	7.5-9		Brown to reddish brown, moist, slightly gravelly SAND, trace silt; sand fine to coarse, predominantly medium; gravel fine, subangular to rounded (SP)
9	Bentonite Chips 5'-12'		10			
10			16			
11		18"/5"	9	10-11.5		Occasional coarse gravel and grades medium to coarse sand.
12		8/3/04 ▼	15			
13		18"/6"	19			
	10/20 silica sand filter pack 12'-26.5'		8	12.5-14		Brown to red-brown, wet, gravelly SAND, trace silt; sand predominantly coarse; gravel fine to coarse, predominantly fine.
15		18"/10"	14			
16			15			
17			9	15-16.5		
18		18"/8"	10			Yellowish-green to brown, highly oxidized, wet, slightly to trace silt; sandy GRAVEL; gravel fine to coarse; sand predominantly coarse (GW-GM)
19			16			
20	20-slot screen 15'-25'; slip cap with SS screw 25'-25.3'	18"/12"	5	17.5-19		Yellow brown, highly oxidized, wet, slightly gravelly SAND, trace silt; sand medium to coarse, predominantly coarse; gravel predominantly fine (SP)
21			8			Grades to slightly silty and gravelly in shoe (SP-SM)
22			8			
23		18"/14"	9	20-21.5		Gray olive, wet, SAND; trace gravel; trace to no silt; sand predominantly medium to coarse (SP)
24			11			
25		18"/3"	13			Gray green, wet, slightly silty to trace silt, sandy GRAVEL; gravel fine to coarse, subrounded to rounded; sand medium to coarse. (GP-GM)
26			13	22.5-24		Gray green, wet, SAND; sand medium (SP)
27			25			
28			24			Gray olive, wet, sandy GRAVEL, trace silt; gravel fine to coarse, sand predominantly medium to coarse (GP)
29			28	25-26.5		Gray olive, wet, slightly silty sandy GRAVEL; gravel fine to coarse; sand medium to coarse (GP-GM)
			19			
			17			Total depth = 25' drilled; 26.5' driven.

Sampler Type (ST):
- 3.25" OD D & M Split-Spoon Ring Sampler
- No Recovery
- 2" OD Split-Spoon Sampler

PID - Photoionization Detector
▼ Water Level (ATD)
▽ Static Water Level

Logged by: ILE
Approved by: LJH
Figure No. A- 1

APPENDIX B

MW_GEOL S CRK_SEQ CRK.GPJ November 23, 2004

CH2MHILL

GS elev = 212.1'

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-2
Sheet: 1 of 3

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~10' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/12/02 0934 **FINISH:** 12/12/02 1228 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0					Ground Surface	
		DM	12	2-5-5 (10)	SILTY SAND WITH ORGANICS (SM) Dark brown, moist, loose, fine grained sand, trace fine to medium round to subround gravel, est. 30-40% fines, 20% organics (TOPSOIL)	Two piezometers installed in separate monuments. EM-2(S) is the shallow piezometer, and EM-2(D) is the deep piezometer
		DM	6	5-6-6 (12)	SANDY SILTY GRAVEL (GM) Dark brown, moist to wet, medium dense, well graded round to subround gravel, est. 20% fines, 30-40% sand, trace organics (FILL)	3': Driller states in gravel and a little water
		DM	18	3-1-1 (2)	SILTY SAND WITH GRAVEL (SM) Light brown, moist, medium dense, fine to medium grained sand, fine to medium round to subround gravel, est. 15-20% gravel, 20% fines, trace organics (FILL)	
5		DM	18	6-16-18 (34)		5': Driller states drilling in gravel
					PEAT (PT) Dark brown, wet, very soft, fiberous	
					SANDY SILTY GRAVEL (GM) Gray, moist, medium dense, well graded round to subround gravel, fine to medium grained sand, est. 20% fines, 30% sand	8': Sampled, then loaded hole with water
		DM	12	18-21-15 (36)	SILTY SAND WITH GRAVEL (SM) Gray, wet, medium dense, fine to medium grained sand, fine to coarse round to subround gravel, est. 20-30% fines, 20-30% gravel, not compacted, soupy	
10						
		DM	12	18-22-18 (40)	GRAVELLY WELL GRADED SAND (SW) Gray, wet, medium dense, round to subround sand and gravel, fine to medium gravel, trace coarse gravel, est. <5% fines, 30-40% gravel	13': Driller states from 8-13' pretty sandy, not much gravel 14': Sampler wet
15						
		DM	10	44-50/6" (50/6")	GRAVELLY WELL GRADED SAND (SW) Gray, moist to wet, very dense, fine to coarse grained sand, fine round to subround gravel, est. 30-35% gravel	18': Top of sample was heave
20						

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-2
Sheet: 2 of 3

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~10' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/12/02 0934 **FINISH:** 12/12/02 1228 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		DM	12	24-26-30 (56)	GRAVELLY WELL GRADED SAND (GW) Gray, moist to wet, medium dense, fine to coarse grained sand, fine to coarse round to subround gravel, est. 30-40% gravel	20.5': Heave in sampler
		DM	12	34-50/6" (50/6")	SANDY WELL GRADED GRAVEL (GW) Gray, moist to wet, very dense, well graded sand, round to subround gravel, est. 30-35% sand	
25		DM	12	23-36-50/6" (86/12")	SANDY WELL GRADED GRAVEL (GW) -Similar to above, gray, moist to wet, dense to very dense, well graded sand, est. 30-40% sand, becomes siltier toward bottom of sample, est. up to 10% silt toward bottom of sample	25.5': Driller drained water out of samples before opening split spoon. Driller loads hole with water, difficult to determine if samples are wet from drilling water or groundwater. All heave in sample from 25.5'. Resampled.
30		DM	12	32-40-50/6" (90/12")	GRAVELLY WELL GRADED SAND (SW) Gray, moist to wet, very dense, fine to coarse grained sand, fine round to subround gravel, "clean"-little to no fines	
		DM	12	36-44-50/6" (94/12")	GRAVELLY WELL GRADED SAND (SW) -Similar to above	
35		DM	2	44-50/3" (50/3")	WELL GRADED SAND (SW) Gray, moist to wet, very dense, fine to coarse round to subround sand	
		DM	6	36-50/6" (50/6")	SANDY WELL GRADED GRAVEL (GW) Gray, moist to wet, very dense, well graded sand, round to subround gravel, est. 30-40% sand, est. 5% silt	
40		DM	3	33-40-50/6" (90/12")	POORLY GRADED SAND WITH GRAVEL (SP) Gray, moist to wet, very dense, fine to medium grained sand, coarse round to subround gravel, est. 15-20% gravel	38': 3" of heave in sampler

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-2
Sheet: 3 of 3

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~10' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/12/02 0934 **FINISH:** 12/12/02 1228 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		DM	10	16-38-50/6" (88/12")	**WELL GRAED SAND WITH GRAVEL (SW)** Gray, moist to wet, very dense, fine round to subround gravel, "clean", grades to **WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM)** 42' Gray, moist to wet, very dense, fine round to subround gravel, est. 15% gravel, 10-15% silt	
		DM	12	18-28-30 (58)	**POORLY GRADED SAND (SP)** Gray, moist to wet, fine to medium grained sand, trace fine to coarse round to subround gravel, est. 5% or less gravel	
45		DM	12	29-36-42 (78)	**POORLY GRADED SAND (SP)** -Similar to above, some gravels have brown staining surrounding the gravel and within the fine grained sand, fine gravel	
Qvr		DM	12	36-50/6" (50/6")	**POORLY GRADED SAND WITH GRAVEL (SP)** Gray, moist, very dense, fine to medium grained sand, fine to coarse round to subround gravel, gravel was packed in "tight", trace dark organics?, pockets/lenses of fine sand at 48'	48': Driller states it felt more compacted Bottom of boring at 51.7' at 1228 on 12-12-02
50		DM	6	(100/6")	**SILTY WELL GRADED SAND WITH GRAVEL (SM)** Gray, moist to wet, very dense, some is compact where the sand is finer grained, est. 20-25% gravel	**Deep Piezometer Construction (EM-2(D))** +2.55-0' Steel riser, locking monument 0-2' Concrete 2-36' Quick grout 36-38' Bentonite chips 38-51.7' Lapis Lustre 2/12 silica sand 0-40' Blank pvc 40-50' 0.020 machine slot screen and cap
Qvt		SS	6	(100/8")	**SILTY SAND WITH GRAVEL (SM)** Gray, moist, very dense, fine grained sand, fine round to subround gravel, est. 20-25% gravel, compacted looking	
55					BOTTOM OF BORING	**Shallow Piezometer Construction (EM-2(S))** Drilled and installed in a separate monument about 3 feet east of deep well 0-1' Concrete and riser 1-2' Bentonite chips 2-5' Lapis Lustre 2/12 silica sand 0-2.5' Blank pvc 2.5-5' 0.020 machine slot screen and cap
60						

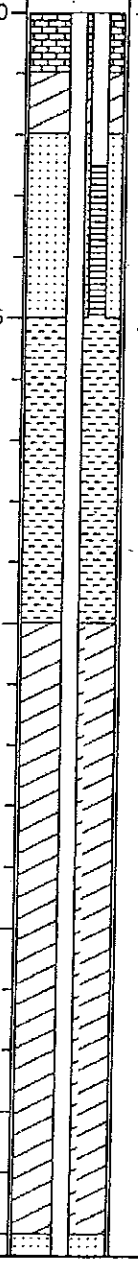
CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-1
Sheet: 1 of 2

SOIL BORING LOG

GS elev = 207.3

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~100' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/11/02 1544 **FINISH:** 12/11/02 1620 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0					Ground Surface	Drilled down to 24 feet bgs before first sample. Two piezometers installed in one monument. EM-1(S) is the shallow piezometer, and EM-1(D) is the deep piezometer 4': Driller states in gravel and a little water 12': Sounded gravelley to 14' while drilling, rig stopped in gravel 14': Loaded hole with water 14-16': Gravelly, smoother drilling below 16' 17': Driller states cobbles about 4" in diameter, then smaller sized gravels below 17' 17-24': Smooth drilling, loaded hole with water
5						
10						
15						
20						

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-1
Sheet: 2 of 2

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland LOCATION: ~100' S. of Edmond Marsh Trail
ELEVATION: DRILLING CONTRACTOR: Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log START: 12/11/02 1544 FINISH: 12/11/02 1620 LOGGER: S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
25		DM	12	16-20-25 (45)	POORLY GRADED SAND WITH GRAVEL (SP) Gray, wet, medium dense, fine to medium grained sand, fine to coarse round to subround gravel, est. 15-20% gravel	
		DM	0	39-50/4" (50/4")	POORLY GRADED SAND WITH GRAVEL (SP) -similar to above but fine to medium gravel	Bottom of boring at 33.5' at 1620 on 12/11/02.
30		DM	12	34-35-35 (70)	No recovery -Slough	Measured groundwater at 6.10' (EM-1(S)) and 7.47' (EM-1 (D)) below top of steel on 12/11/02
		DM	6	50/6" (50/6")	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Gray, wet, very dense, fine to medium grained sand, fine to coarse gravel, gets siltier toward bottom of sample, grades to SILTY SAND WITH GRAVEL (SM) at 32' Gray, wet, very dense, fine to medium grained sand, fine to medium round to subround gravel, est. 10-20% silt, 20-25% gravel	Piezometer Construction (EM-1(S) and EM-1(D)) +3.65-0' Steel riser, locking monument 3.xx-2.5' Blank PVC (EM-1(S)) 3.xx-22' Blank PVC (EM-1(D)) 0-1' Concrete 1-2' Bentonite chips 2-5' Lapis Lustre 2/12 silica sand 2.5-5' 0.020 machine slot screen and cap (EM-1(S)) 5-10' Cuttings 10-20' Bentonite chips 20-33.5' Lapis Lustre 2/12 silica sand 22-32' 0.020 machine slot screen and cap (EM-1(D)) Note: Both piezometers are in one steel, riser monument
35					BOTTOM OF BORING	
40						

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-1A
Sheet: 1 of 5

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~100' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/11/02 **FINISH:** 12/11/02 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
0					Ground Surface	
		DM	18	1/12"-1/6" (2)	ORGANICS Dark brown, moist, very soft	
		DM	18	5-7-12 (19)	PEAT (PT) Dark brown, moist, very soft, fiberous	
		DM	8	43-40-40 (80)	SANDY SILTY GRAVEL (SM) Light brown, wet, loose, fine to coarse grained sand, coarse round to subround gravel	3': Driller states in gravel and a little water
5		DM	8	35-37-39 (76)	PEAT (PT) Dark brown, moist, very soft, fiberous, trace gravel mixed in	4.5': Sampler very wet, large gravel/small cobble jammed in shoe
					SANDY SILTY GRAVEL (GM) -Similar to above, light brown, wet, dense, fine to coarse grained sand, coarse round to subround gravel	6': Drilled in gravel from 4.5-6'.
					SILTY SAND WITH GRAVEL (SM) Gray, wet, dense, fine to coarse grained sand, fine to coarse round to subround gravel, trace round cobbles (TILL-LIKE)	
10		DM	10	28-35-39 (74)	SILTY GRAVEL WITH SAND (SM) Gray, wet, dense, fine to coarse gravel, fine to coarse grained sand, est. 30% silt, 20% sand (TILL-LIKE) In shoe: SANDY SILT (ML) Gray, moist, hard, fine to medium grained sand, est. 20-30% sand	
15		DM	12	42-35-38 (73) ?	SANDY WELL GRADED GRAVEL WITH SILT (GW-GM) Gray, wet, medium dense, fine to coarse round to subround gravel, fine to coarse sand, est. 30% sand, 10-15% fines	14': Sampler wet 17': Driller states not as much rock, large gravel 19': Water poured out of sampler 19.5': Measured groundwater through augers at 1406 on 12/11/02. Augers may be acting as a barrier.
20		DM	4	21-25-27 (52)		

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-1A
Sheet: 2 of 5

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~100' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/11/02 **FINISH:** 12/11/02 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					GRAVELLY SAND (SW) Gray, wet, medium dense, fine to coarse grained sand, fine to coarse round to subround gravel, est. 30-40% gravel	
25		DM	10	42-33-30 (63)	POORLY GRADED SAND WITH GRAVEL (SP Gray, wet, medium dense, fine to medium grained sand, fine to coarse round to subround gravel, trace fine cobbles, est. 15-20% gravel	
30		DM	12	24-35-38 (73)	WELL GRADED SAND WITH GRAVEL (SW) Gray, wet, medium dense, fine to coarse grained sand, fine to medium round to subround gravel, trace fines, increased fines toward bottom of sampler, est. 20-30% gravel	
35		DM	6	50/6" (50/6")	POORLY GRADED SAND WITH SILT AND GRAVEL TO SILTY SAND WITH GRAVEL (SP-SM/SM) Gray, wet, very dense, fine to medium grained sand, fine to medium round to subround gravel, est. 10-20% fines, 20-25% gravel (TILL??)	34': Driller states back into a few cobbles
40		DM	4	50/4" (50/4")		

Qvc

Bottom of Boring

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-1A
Sheet: 3 of 5

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~100' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/11/02 **FINISH:** 12/11/02 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Gray, wet, very dense, fine to medium grained sand, fine to coarse round to subround gravel, est. 10% fines, 10-15% gravel	
45		DM	4	50/5" (50/5")	POORLY GRADED SAND (SP) Gray, wet, very dense, fine to medium grained sand, trace fines	
50		DM	4	50/4" (50/4")	GRAVELLY WELL GRADED SAND WITH SILT (SW-SM) Gray, wet, very dense, fine to coarse round to subround gravel, est. 5-10% fines, 30-40% gravel	
55		DM	6	50/6" (50/6")	POORLY GRADED SAND (SP) Gray, wet, very dense, fine to medium grained sand	
60		DM	6	50/6" (50/6")		59': Driller states a little more gravel

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-1A
Sheet: 4 of 5

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland **LOCATION:** ~100' S. of Edmond Marsh Trail
ELEVATION: **DRILLING CONTRACTOR:** Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log **START:** 12/11/02 **FINISH:** 12/11/02 **LOGGER:** S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Gray, wet, very dense, fine to medium grained sand, fine to medium round to subround gravel, est. 10-15% fines, 5-10% gravel	
65		DM	5	50/5" (50/5")	WELL GRADED SAND WITH GRAVEL TO WELL GRADED SAND WITH SILT AND GRAVEL (SW/SW-SM) Gray, wet, very dense, fine to coarse grained sand, fine to medium round to subround gravel, est. 5-10% fines, 20-30% gravel	
70		DM	5	50/5" (50/5")	POORLY GRADED SAND (SP) Gray, wet, very dense, medium to coarse grained round to subround sand, fine to medium round to subround gravel, est. <5% fines, 5-10% gravel	
75		DM	6	50/6" (50/6")	WELL GRADED SAND WITH GRAVEL TO WELL GRADED SAND WITH SILT AND GRAVEL (SW/SW-SM) Gray, wet, very dense, fine to coarse grained sand, fine round to subround gravel, est. 5-10% fines, 10-15% gravel	
80		DM	5	50/5" (50/5")		

CH2MHILL

PROJECT NUMBER: 151973.A4.WL BORING NUMBER: EM-1A
Sheet: 5 of 5

SOIL BORING LOG

PROJECT: N. Sequalitchew Creek Wetland LOCATION: ~100' S. of Edmond Marsh Trail
ELEVATION: DRILLING CONTRACTOR: Cascade Drilling
DRILLING METHOD AND EQUIPMENT: CME 75 nodwell track rig, HSA, Dames & Moore, 140lb hammer
WATER LEVELS: See log START: 12/11/02 FINISH: 12/11/02 LOGGER: S. McGinnis

DEPTH BELOW GROUND SURFACE	WELL INSTALLATION	SAMPLE TYPE	SAMPLE RECOVERY (IN)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Gray, wet, very dense, fine grained sand, fine to medium round to subround gravel, est. 10-15% fines, 20-30% gravel	
						83': Driller states into silts
85		DM	4	50/4" (50/4")	SILT (ML) Gray, moist to wet, hard	
90		DM	4	50/4" (50/4")	SILT (ML) -Similar to above, gray, moist to wet, hard, fine to medium sand seams	Bottom of boring at 89.3' at 1300 on 12/11/02.
					BOTTOM OF BORING	Driller states not much heave while drilling
						Backfilled boring with grout. Could not install piezometer in this boring. Had to move 3' north and redrill to the bottom of the piezometer installation.
95						
100						

RESOURCE PROTECTION WELL REPORT

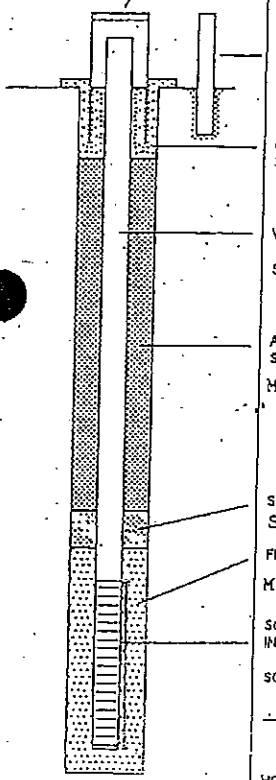
Close Demolition Waste Area - Ft. Lewis

START CARD NO. 17224

PROJECT NAME: Fort Lewis Public Works
WELL IDENTIFICATION NO. D-3
DRILLING METHOD: reverse circ. w/air
DRILLER: Charles E. Shorey, Jr.
FIRM: Layne Christensen Company
SIGNATURE:
CONSULTING FIRM: IMCO General Construction
REPRESENTATIVE: Roger Dudley

COUNTY: Pierce
LOCATION: ___ ¼ ___ ¼ SEC 26 TWN 19N R 1E
STREET ADDRESS OF WELL: Fort Lewis, WA 98433-9500
WATER LEVEL ELEVATION: 11' BGS
GROUND SURFACE ELEVATION: 216
DATE INSTALLED: 8-5-96
DATE DEVELOPED: 8-12-96, 8-14-96

AS-BUILT



OF BORING 24 FT.

WELL DATA

STEEL SURFACE MONUMENT
W/LOCK 3 FT. ABOVE G.L.
PROTECTIVE POSTS no
CONCRETE SURFACE SEAL 2' TO +4" FT.
WELL CASING 14 TO +3 FT.
SCHEDULE 80 TFJ PVC 2"
ANNULAR SEALANT 8 TO 2 FT.
Material: Cement
SEAL 10 TO 8 FT.
Silica sand 12'-10'
FILTER PACK 24 TO 12 FT.
Material: 10-20 sand
SCREEN INTERVAL 24 TO 14 FT.
SCHEDULE 80 TFJ PVC 2"
.02 FACTORY SLOTTED
HOLE DIAMETER
9 IN. 24 TO 0 FT.
___ IN ___ TO ___ FT.

FORMATION DESCRIPTION

0'-5' Coarse sand with medium gravel, brown in color

5'-10' Coarse to medium sand, with large and medium cobbles

10'-15' Fine silty sand, wet, light brown

11' Static water level

15'-20' Fine, dense sand with silt and uniform cobbles

20'-24' Fine silty sand, dense with uniform cobbles

WELL DEVELOPMENT DATA

8-12-96 Bailed 15 gallons from well to remove sediments
Temperature: 60 degrees F
pH: 6.0 Very silty, brown

8-14-96 Pumped 150 gallons from well to stabilize.
Temperature: 60 degrees F
pH; 6.0 Clear, no sediment

Layne Christensen Company
1401 E 26th Street - Tacoma WA 98421 (206) 572-4222 FAX (206) 572-4223

WELL COMPLETION REPORT

Project CELL 5, LFS, FT. LEWIS
Completion date 2/25/93
Contractor ANDREW WELL DRILLING SERVICE
Rig INGERSOLL RAND T-4W
Operator BOB DEWILD/MATT GILBERT
Inspector RICHARD SMITH
Depth 35.0 Datum GROUND SURFACE

HOLE DATA
Size: 6" in. to 35' ft.
____ in. to ____ ft.
____ in. to ____ ft.

CASING
Type 6" DIAMETER, 5' LONG STEEL SURFACE CASING
Mfr.
Ht. above gnd. surf. 3.0'
Drive shoe NO
Size: 6" in. to 3' AGS ft.
6" in. to 3' BGS ft.
____ in. to ____ ft.

SCREEN - 20' -30' (10') THREADED
Type PVC SCH 80 MONOFLEX 20 SLOT
Mfr. CAMPBELL
Composition PVC Dia. 2" ID

Fittings:	Length	Dia.
Riser	22.8'	2" ID
Tailpipe	0.2'	2" ID

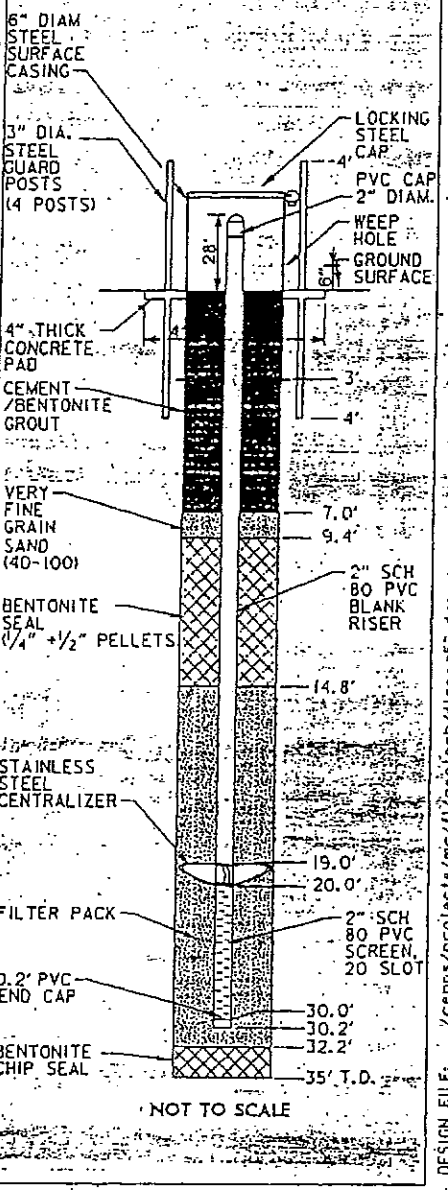
Centralizer- S.S. mounted on outside of PVC Riser 19' -20' BGS

FILTER
Source CSSI - ENVIRONMENTAL MEDIA
Composition SILICA SAND
Gradation 10-20
Inst. method POUR FROM SURFACE
Volume used 4 SACS (100 LB SAC)
Depth 14.8' to 32.2' ft.

GROUT
Composition CEMENT/BENT 5%/H20
Volume used 2-94 LBS BAGS CEMENT (12GAL)
Inst. method POUR DOWNHOLE W/BUCKET
Depth 0' to 7' ft.
____ to ____ ft.

REMARKS: BOTTOM PLUG BENT. CHIPS ½, 50 LB BAG
UPPER PLUG: BENT. PELLETS (⅜"), 2 - 50 LB
BUCKETS, VERY FINE SAND: ½ - 50 LB BAG.
FILLED CASING W/POTABLE WATER TO GROUND
SURFACE PRIOR TO INSTALLATION TO PREVENT
HEAVING AND AID IN PLACING BENT. PLUG.
GROUT RATIO: -1 SAC CEMENT (94 LBS)
6 GAL H20 - 5% BENT. BY WT

WELL DETAIL (AS BUILT)
93-MFS-C5-3



NOT TO SCALE

DESIGN FILE: /cenps/projects/mc/112geotech/11geoc53.dgn DATE AND TIME PLOTTED: 06-MAY-1993

DRILLING LOG	DIVISION NPO	INSTALLATION FORT LEWIS	SHEET 1 OF 1 SHEETS
1. PROJECT RCRA WELLS, CS, LF5		10. SIZE AND TYPE OF BIT 6" ODEX/6" ID TEMP CASING	
2. LOCATION (COORDINATES OR STATION) N 659,446.7 E 1,468,392.9		11. DATUM FOR ELEVATION SHOWN (TBM OR MSL) MSL	
3. DRILLING AGENCY ANDREW WELL DRILLING SERVICE		12. MANUFACTURER'S DESIGNATION OF DRILL INGERSOLL RAND T-4W	
4. HOLE NO. (AS SHOWN ON DRAWING TITLE AND FILE NUMBER) 93-WFS-CS-3		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED -0-	
5. NAME OF DRILLER BOB DEWILD, MATT GILBERT		14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER 195.5	
7. THICKNESS OF OVERBURDEN +35'		16. DATE HOLE STARTED 930CT24 COMPLETED 930CT24	
8. DEPTH DRILLED INTO ROCK -0-		17. ELEVATION TOP OF HOLE 216.9	
9. TOTAL DEPTH OF HOLE 35'		18. TOTAL CORE RECOVERY FOR BORING	
		19. NAME AND SIGNATURE OF INSPECTOR BILL GOSS	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (DESCRIPTION)	% CORE RECOV-ERY	BOX OR SAMPLE NO.	REMARKS (DRILLING TIME, WATER LOSS, DEPTH OF WEATHERING, ETC., IF SIGNIFICANT)
	0		GP; POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED, DRY, BROWN		A	DRILLED W/6; ODEX, 6" DRILLING CONCURRENT W/CASING, BIT LEADS CASING BY 6"
	10				B	SAMPLES TAKEN FROM DISCHARGE AT 5' INTERVALS
					C	AIR MONITORING WITH CGI AND PID - NO DETECT
	20		SWL 21.4'		D	
195.5			GP; POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED, WET, BROWN		E	
	30				F	
	35		T.D. 35'		G	

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT RCRA WELLS, CS, LF5 HOLE NO. 93-WFS-CS-3

MAR 71
SEP 90 MODIFIED FOR CADD BY CEHQ

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 218.9 | Hole No. 93-MFS-CS-3

PROJECT RCRA WELLS, CS, LF5 | INSTALLATION FT LEWIS | SHEET 2 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (DESCRIPTION)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (DRILLING TIME, WATER LOSS, DEPTH OF WEATHERING, ETC., IF SIGNIFICANT)
	10		GP: POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED, SAND FINE - COARSE, ROUNDED GRAVEL TO 1", DRY, BROWN		B	SAMPLE B @ 10'
	11					AIR MONITORING 10-15' PID (-0.8) PPM CGI 20.8%, 0.0.0
	12					
	13					
	14					
	15		GP: POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED, SAND FINE - COARSE, ROUNDED GRAVEL TO 1½" - DRY, TO SLT. MOIST, BROWN		C	SAMPLE C @ 15'
	16					AIR MONITORING 15'-17' PID (-0.8)PPM CGI 20.8.0.0.0 - 1 9:25 - 10:15 @ 17' WELD CASING
	17					AIR MONITORING 17'-20' PID (-0.4)PPM CGI 21.0.1.0.0
	18					
	19					
	20					

ENG FORM 1836-A PREVIOUS EDITIONS ARE OBSOLETE. SEP 80 MODIFIED FOR CADD BY CEMPS

PROJECT RCRA WELLS, CS, LF5 | HOLE NO. 93-MFS-CS-3

DRILLING LOG	DIVISION: NPD	INSTALLATION: FORT LEWIS	SHEET 1 OF 4 SHEETS
1. PROJECT: RCRA WELLS, C5, LF5		10. SIZE AND TYPE OF BIT: 6" ODEX/6" ID TEMP. CASING	
2. LOCATION (COORDINATES OR STATION): N 659,446.7 E 1,368,392.9		11. DATUM FOR ELEVATION SHOWN: MSL	
3. DRILLING AGENCY: ANDREW WELL DRILLING SERVICE		12. MANUFACTURER'S DESIGNATION OF DRILL: INGERSOLL RAND T-4W	
4. HOLE NO. (AS SHOWN ON DRAWING) TITLE AND FILE NUMBER: 93-WFS-C5-3		13. TOTAL NO. OF OVERBURDEN & BEDROCK SAMPLES TAKEN: DISTURBED 7; UNDISTURBED -0-	
5. NAME OF DRILLER: BOB DEWILD, MATT GILBERT		14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER: 195.5	
7. THICKNESS OF OVERBURDEN: ±35'		16. DATE HOLE: STARTED 930CT24; COMPLETED 930CT24	
8. DEPTH DRILLED INTO ROCK: -0-		17. ELEVATION TOP OF HOLE: 218.9	
9. TOTAL DEPTH OF HOLE: 35'		18. TOTAL CORE RECOVERY FOR BORING: 1	
		19. NAME AND SIGNATURE OF INSPECTOR: BILL GOSS	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (DESCRIPTION)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (DRILLING TIME, WATER LOSS, DEPTH OF WEATHERING, ETC., IF SIGNIFICANT)
	0		GP: POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED. SAND FINE -COARSE ROUNDED GRAVEL TO 3". DRY. BROWN. OCCASIONAL COBBLE TO 6"			DRILLED W/6" ODEX, 6" CASING CONCURRENT W/DRILLING. BIT LEADS CASING BY 6" SAMPLES TAKEN FROM DISCHARGE LINE AT 5' INTERVALS AIR MONITORING W/PID & CGI AIR MONITORING @ 5' PID 1-0.4 PPM CGI 20,9,0,0,0
	5		GP: POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED. SAND FINE - COARSE. ROUNDED GRAVEL TO 1". SLT. MOIST. BROWN		(1)	SAMPLE (1) @ 5'
	10					

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. SEP 90 MODIFIED FOR CADD BY CEMPR

PROJECT: RCRA WELLS, C5, LF5 HOLE NO. 93-WFS-C5-3

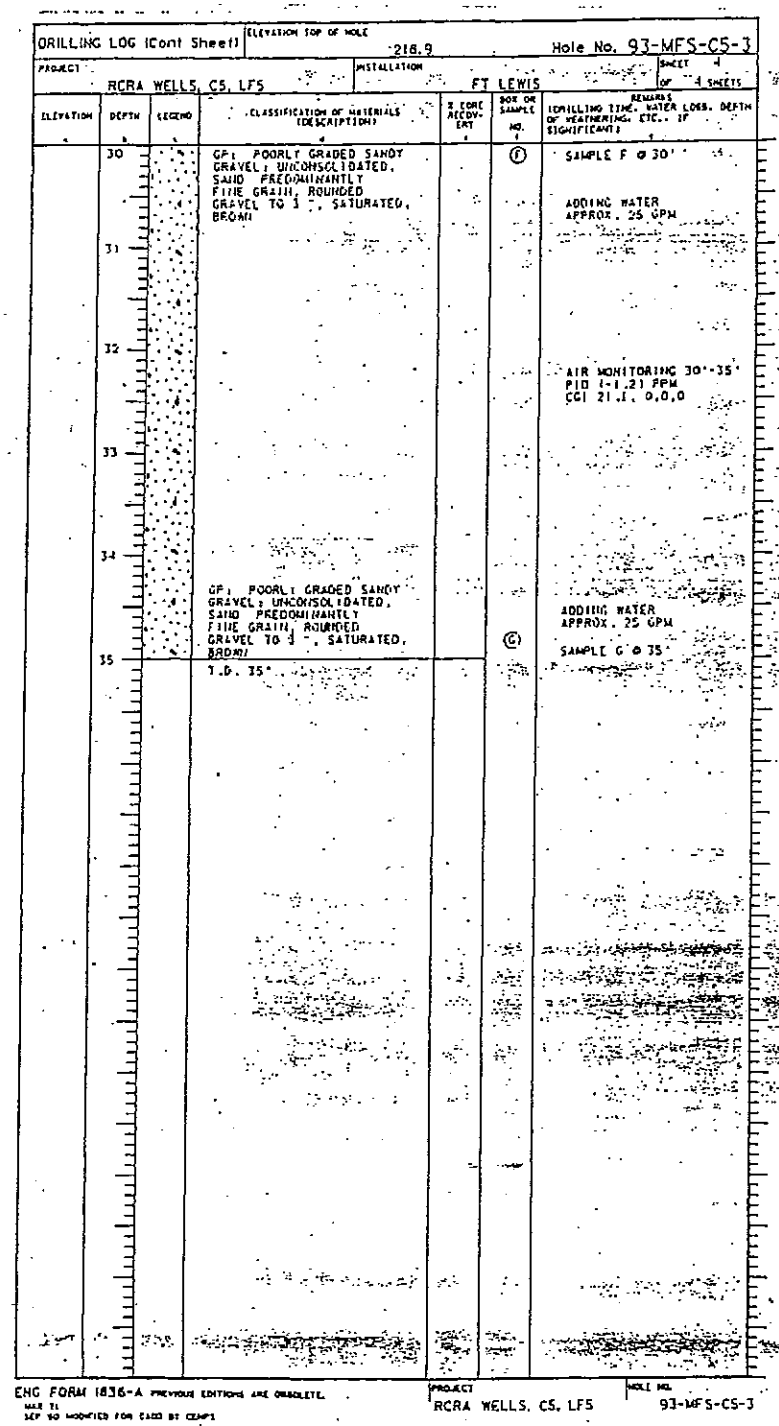
DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 216.9 | Hole No. 93-MFS-C5-3

PROJECT: RCRA WELLS, C5, LF5 | INSTALLATION: FT LEWIS | SHEET 3 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (DESCRIPTION)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (DRILLING TIME, WATER LOSS, DEPTH OF WEATHERING, ETC. - IF SIGNIFICANT)
	20		GP: POORLY GRADED SAND & GRAVEL; UNCONSOLIDATED, SAND FINE - COARSE, ROUNDED GRAVEL TO 1½", DRY, BROWN		(D)	SAMPLE D @ 20'
	21		@ 21' SAMPLE MOIST			AIR MONITORING 20'-25' PID (-0.4)PPM CGI 21, 1.0, 0
195.5			SWL 21.4			
	22					
	23					
	24					
	25		GP: POORLY GRADED SAND & GRAVEL; UNCONSOLIDATED, SAND FINE - COARSE, ROUNDED GRAVEL TO 1½", MOIST, BROWN		(E)	SAMPLE E @ 25'
						@ 25' ADD POTABLE WATER WHILE DRILLING APPROX. 2GPM
	26					FOOTEM LOSE FROZEN HOSE THAW HOSE & ADD WATER
	27					
	28					AIR MONITORING 25'-30' PID (-1.0) PPM CGI 21.0.0.0.1
	29		GP: AS ABOVE W/SAND PREDOMINANTLY FINE GRAIN			
	30					

ENG FORM 1836-A PREVIOUS EDITIONS ARE OBSOLETE. MAR 77 SEP 90 MODIFIED FOR CADD BY CEMPS

PROJECT: RCRA WELLS, C5, LF5 | HOLE NO. 93-MFS-C5-3



DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 218.9 | Hole No. 93-MFS-CS-3

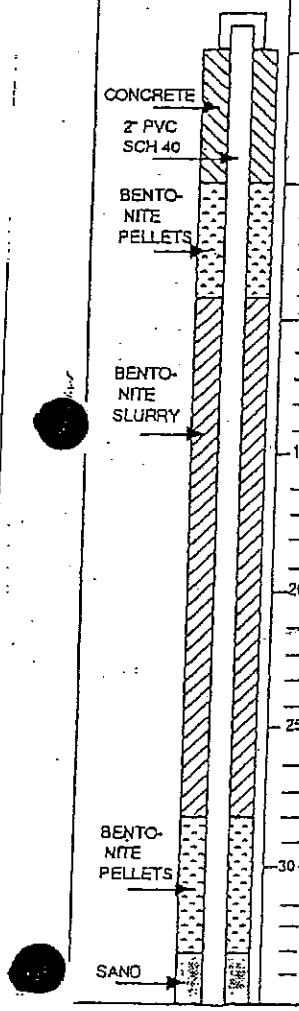
PROJECT: RCRA WELLS, CS, LF5 | INSTALLATION: FT LEWIS | SHEET 4 OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (DESCRIPTION)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (DRILLING TIME, WATER LOSS, DEPTH OF WEATHERING, ETC., IF SIGNIFICANT)
	30		GP: POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED, SAND PREDOMINANTLY FINE GRAIN, ROUNDED GRAVEL TO 3", SATURATED, BROWN		(F)	SAMPLE F @ 30'
						ADDING WATER APPROX. 25 GPM
	31					
	32					AIR MONITORING 30'-35' PID (-1.2) PPM CGI 21.1, 0.0,0
	33					
	34					
			GP: POORLY GRADED SANDY GRAVEL; UNCONSOLIDATED, SAND PREDOMINANTLY FINE GRAIN, ROUNDED GRAVEL TO 3", SATURATED, BROWN			ADDING WATER APPROX. 25 GPM
	35		T.D. 35'		(G)	SAMPLE G @ 35'

ENG FORM 1836-A PREVIOUS EDITIONS ARE OBSOLETE. MAR 71 SEP 80 MODIFIED FOR USED BY CEMP1

PROJECT: RCRA WELLS, CS, LF5 | HOLE NO. 93-MFS-CS-3

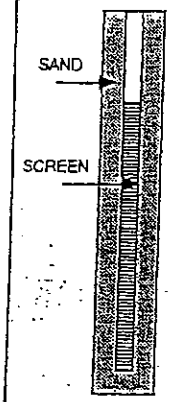
DRILLING LOG	PROJECT FT. LEWIS	PROJECT NUMBER 8820072A	SHEET 1 OF 2 SHEETS
LOCATION	LANDFILL #5	TOTAL NUMBER SAMPLES 0 (Sample Collected in Adjacent Hole)	
DRILLING AGENCY	HOLT	DEPTH TO WATER BELOW GRD SURFACE 22.06 FT	
HOLE NO.	88-2-VD	DATE HOLE STARTED 11/16/88	COMPLETED 11/17/88
NAME OF DRILLER	RANDY HOLT	ELEVATION AT REFERENCE POINT 220.03 FT	
TOTAL DEPTH OF HOLE	49.0 FT	SIGNATURE OF INSPECTOR	Warren Perkins William Deutsch



OPT (FT)	S T	B/FT	SAMP. NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS Gals water added	
					Gravel with Sand		5
							5
					Yellow-gray, angular fragments	Bailed Material	5
							5
							5
							5
							5
					Yellow-gray, coarse sand with angular fragments, few 1-2" pebbles	Bailed Material	5
					Yellow-gray gravel with coarse sand fragments of some large cobbles to 5"	Bailed Material 11'10"	
					Yellow-gray gravel with some pebbles, not as many angular fragments	Bailed Material	5
					Yellow-gray pebbly gravel	Bailed Material	5
					Same as above, except more large angular fragments	Bailed Material	5
					As above, drilling harder at @ 18 ft similar to 88-1-SS	Bailed Material	
					Sandy gravel, yellow-gray, few 3-4" rock fragments; no pebbles	Vashon Recessional Gravel	5
						Bailed Material	5
					Sandy gravel, some silt, still hard drilling	Bailed Material	5
					As above		5
					Yellow-gray, sandy gravel, some silt; easier drilling	Water at 25' Bailed Material	5
					as above; drilling fairly hard	Bailed Material	2
					Yellow-gray, sandy gravel, angular fragments with some broken cobbles	Water bubbling into hole; drilling easier, able to drive casing ahead	
					Yellow-gray angular fragments	Vashon Till	7
					as above	Bailed sample; bailer full of water	7
					Sand/gravel, some silt	Hole making some water, not a lot	10
					as above	Hole making a little water	5

DRILLING LOG (Cont. Sheet) | HOLE NO. 88-2-VD

DIVISION | INSTALLATION FT. LEWIS | SHEET 2 OF 2 SHEETS



DPT (FT)	S T	B/FT	SAMP NO.	% REC.	CLASSIFICATION OF MATERIALS (DESCRIPTION)	REMARKS
						Water coming into
40					Well rounded coarse sand and gravel Some silt and crushed cobbles	hole in good quantity Vashon Advance Gravel Bailed sample
45					Slow drilling, large cobbles; cuttings all pulverized	Water at 28' below ground
					Heaving sand bottom 1 foot	
50					TOTAL DEPTH = 49 FT	

Woodward-Clyde Consultants

APPENDIX B

Field Data Sheets

DuPont Sampling and Analysis Plan

CalPortland -- Dupont, WA

Project Site/Location:	

Routine Station Maintenance			
Personnel:	Weather:	Arrival Date/Time:	
Station Battery Voltage:		Battery Changed? (Y/N -- New Voltage)	
Data Logger Desiccant OK? (Y/N)		Sensor(s) Cleaned & Secure? (Y/N)	
Flow Meter Desiccant OK? (Y/N)		Staff Plate Cleaned & Secure? (Y/N)	
Data Downloaded? (Y/N)		Rain Gage Cleaned & Secure? (Y/N)	
Water Level & Flow		**Water Quality Measurements & Observations (*In-Situ*)**	
Flow Meter Battery Voltage:		Data Logger Recorded Temp (°C) :	
Battery Changed? (Y/N -- New Voltage)		YSI Measured Temp (°C) :	
Date/time correct? (Y/N)		DO (mg/l) :	
Data Logger(s) Desiccant OK? (Y/N)		DO (% saturation) :	
Flow Meter Data Downloaded? (Y/N)		Salinity (ppt) :	
Staff Plate/Well Level (decimal-feet):		pH :	
Data Logger/Meter Recorded Level:		Turbidity (NTU) :	
Velocity (feet per second):		Water Color? (e.g., yellow, brown, grey)	
Flow Rate (CFS):		Floating Oil/Grease? (Y/N)	
Level Calibrated? (Y/N)		Floating Debris/Scum? (Y/N)	
Level Offset (Post-Calibration)		Potentially Harmful Materials? (Y/N)	
Level Offset (Post-Calibration)			

Notes, observations, and maintenance items for future visits. Include observations regarding channel/site conditions, such as: presence/absence of beaver dams; downed trees; streambed composition (e.g., embedded with sediment); vegetation; and particularly fast or slow flow velocities.

DuPont Sampling and Analysis Plan

CalPortland -- Dupont, WA

YSI Professional Handheld Multimeter Calibration Record	
CONDUCTIVITY and PH CALIBRATION*	DO CALIBRATION*
1. Press the Cal key. **2. Highlight the parameter you wish to calibrate and press enter. For Conductivity, a second menu will offer the option of calibrating Specific Conductance, Conductivity, or Salinity. Calibrating one automatically calibrates the other two. An additional sub-menu will require you to select the calibration units. For pH, auto-buffer recognition will determine which buffer the sensor is in and it will allow you to calibrate up to 6 points.** **3. Place the correct amount of calibration standard into a clean, dry or pre-rinsed container.** **4. Immerse the probe into the solution, making sure the sensor and thermistor are adequately immersed. Allow at least one minute for temperature to stabilize.** **5. For any of parameters, enter the calibration solution value by highlighting Calibration Value, pressing enter, and then using the alpha/numeric keypad to enter the known value. Once you have entered the value of the calibration standard, highlight <<<ENTER>>> and press enter.** **6. Wait for the readings to stabilize, highlight Accept Calibration and press enter to calibrate.** **7. For pH, continue with the next point by placing the probe in a second buffer and following the on-screen instructions or press Cal to complete the calibration.**	The Pro Plus offers four options for calibrating dissolved oxygen. The first is an air calibration method in % saturation. The second and third calibrates in mg/L or ppm to a solution with a known DO concentration (usually determined by a Winkler Titration). Calibration of any option (% or mg/L and ppm) will automatically calibrate the other. The fourth option is a zero calibration. If performing a zero calibration, you must perform a % or mg/L calibration following the zero calibration. For both ease of use and accuracy, YSI recommends performing the following 1-point DO % calibration: 1. Moisten the sponge in the cal/transport sleeve with a small amount of water and install it on the probe. The cal/transport sleeve ensures venting to the atmosphere. Disengage a thread or two to ensure atmospheric venting. Make sure the DO and temperature sensors are not immersed in the water. 2. Turn the instrument on. 3. Press the Cal key, highlight DO and press enter. 4. Highlight DO%, then press Enter. 5. Verify the barometric pressure and salinity displayed are accurate. Once DO and temperature are stable, highlight Accept Calibration and press enter.
*Additional calibration information can be found at: http://www.ysi.com/media/pdfs/605595-YSI-Pro-Plus-Quick-Start-Guide-RevB.pdf	

Date:	
Time:	
Staff:	

pH		
7	Initial	
	Calibration	
	Final	
4	Initial	
	Calibration	
	Final	
10	Initial	
	Calibration	
	Final	

Conductivity (Includes Salinity)		
Initial (µS/cm)	Calibration (µS/cm)	Final (µS/cm)

Dissolved Oxygen (1-Point DO Saturation Method)		
Initial (%)	Calibration (%)	Final (%)

APPENDIX C

Hydrologic Calculations

Western Washington Hydrology Model 2012

WWHM2012
PROJECT REPORT

Project Name: Basins C D
Site Name: Pioneer Aggregates
Site Address: Pioneer Avenue
City : DuPont
Report Date: 11/25/2020
Gage : 38 IN CENTRAL
Data Start : 10/01/1901
Data End : 09/30/2059
(adjusted) **Precip Scale:** 0.00
Version Date: 2019/09/13
Version : 4.2.17

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

Low Flow Threshold for POC 2 : 50 Percent of the 2 Year

High Flow Threshold for POC 2: 50 year

PREDEVELOPED LAND USE

Name : Watershed C
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	19.2
A B, Lawn, Steep	14.4
C, Lawn, Flat	57.5
C, Lawn, Mod	49.3
C, Lawn, Steep	20.7
Pervious Total	161.1

Impervious Land Use	acre
DRIVEWAYS MOD	1
Impervious Total	1
Basin Total	162.1

Element Flows To:

Surface	Interflow	Groundwater

Name : Watershed D
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	4
A B, Lawn, Mod	41.5
C, Lawn, Flat	140
C, Lawn, Mod	15.9
C, Lawn, Steep	26.3
Pervious Total	227.7

Impervious Land Use	acre
Impervious Total	0
Basin Total	227.7

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin C
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	19.2
A B, Lawn, Steep	14.4
C, Lawn, Flat	57.5
C, Lawn, Mod	49.3
C, Lawn, Steep	20.7
Pervious Total	161.1

Impervious Land Use	acre
DRIVEWAYS MOD	1
Impervious Total	1
Basin Total	162.1

Element Flows To:

Surface	Interflow	Groundwater
Infilt Pond C	Infilt Pond C	

Name : Basin D
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	4
A B, Lawn, Mod	41.5
C, Lawn, Flat	140
C, Lawn, Mod	15.9
C, Lawn, Steep	26.3
Pervious Total	227.7

Impervious Land Use	acre
Impervious Total	0
Basin Total	227.7

Element Flows To:

Surface	Interflow	Groundwater
Infilt Pond D	Infilt Pond D	

Name : Infilt Pond C
Bottom Length: 450.00 ft.
Bottom Width: 113.00 ft.
Depth: 6 ft.
Volume at riser head: 6.8406 acre-feet.
Infiltration On
Infiltration rate: 8.1
Infiltration safety factor: 1
Wetted surface area On
Total Volume Infiltrated (ac-ft.): 22322.842
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 22322.842
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure

Riser Height: 5 ft.
Riser Diameter: 24 in.

Element Flows To:
Outlet 1 **Outlet 2**

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	1.167	0.000	0.000	0.000
0.0667	1.172	0.078	0.000	9.576
0.1333	1.177	0.156	0.000	9.618
0.2000	1.182	0.235	0.000	9.661
0.2667	1.188	0.314	0.000	9.703
0.3333	1.193	0.393	0.000	9.746
0.4000	1.198	0.473	0.000	9.788
0.4667	1.203	0.553	0.000	9.831
0.5333	1.208	0.633	0.000	9.874
0.6000	1.214	0.714	0.000	9.916
0.6667	1.219	0.795	0.000	9.959
0.7333	1.224	0.877	0.000	10.00
0.8000	1.229	0.958	0.000	10.04
0.8667	1.235	1.041	0.000	10.08
0.9333	1.240	1.123	0.000	10.13
1.0000	1.245	1.206	0.000	10.17
1.0667	1.251	1.289	0.000	10.21
1.1333	1.256	1.373	0.000	10.26
1.2000	1.261	1.457	0.000	10.30
1.2667	1.266	1.541	0.000	10.34
1.3333	1.272	1.626	0.000	10.39
1.4000	1.277	1.711	0.000	10.43
1.4667	1.282	1.796	0.000	10.47
1.5333	1.288	1.882	0.000	10.52
1.6000	1.293	1.968	0.000	10.56
1.6667	1.298	2.054	0.000	10.60
1.7333	1.304	2.141	0.000	10.65
1.8000	1.309	2.228	0.000	10.69
1.8667	1.315	2.316	0.000	10.74
1.9333	1.320	2.403	0.000	10.78
2.0000	1.325	2.492	0.000	10.82
2.0667	1.331	2.580	0.000	10.87
2.1333	1.336	2.669	0.000	10.91
2.2000	1.342	2.758	0.000	10.96
2.2667	1.347	2.848	0.000	11.00
2.3333	1.352	2.938	0.000	11.04
2.4000	1.358	3.028	0.000	11.09
2.4667	1.363	3.119	0.000	11.13
2.5333	1.369	3.210	0.000	11.18
2.6000	1.374	3.302	0.000	11.22
2.6667	1.380	3.393	0.000	11.27
2.7333	1.385	3.486	0.000	11.31
2.8000	1.391	3.578	0.000	11.36
2.8667	1.396	3.671	0.000	11.40
2.9333	1.401	3.764	0.000	11.45

3.0000	1.407	3.858	0.000	11.49
3.0667	1.412	3.952	0.000	11.54
3.1333	1.418	4.046	0.000	11.58
3.2000	1.424	4.141	0.000	11.63
3.2667	1.429	4.236	0.000	11.67
3.3333	1.435	4.332	0.000	11.72
3.4000	1.440	4.428	0.000	11.76
3.4667	1.446	4.524	0.000	11.81
3.5333	1.451	4.620	0.000	11.85
3.6000	1.457	4.717	0.000	11.90
3.6667	1.462	4.815	0.000	11.94
3.7333	1.468	4.912	0.000	11.99
3.8000	1.474	5.011	0.000	12.03
3.8667	1.479	5.109	0.000	12.08
3.9333	1.485	5.208	0.000	12.13
4.0000	1.490	5.307	0.000	12.17
4.0667	1.496	5.407	0.000	12.22
4.1333	1.502	5.507	0.000	12.26
4.2000	1.507	5.607	0.000	12.31
4.2667	1.513	5.708	0.000	12.36
4.3333	1.518	5.809	0.000	12.40
4.4000	1.524	5.910	0.000	12.45
4.4667	1.530	6.012	0.000	12.49
4.5333	1.535	6.114	0.000	12.54
4.6000	1.541	6.217	0.000	12.59
4.6667	1.547	6.320	0.000	12.63
4.7333	1.552	6.423	0.000	12.68
4.8000	1.558	6.527	0.000	12.73
4.8667	1.564	6.631	0.000	12.77
4.9333	1.570	6.735	0.000	12.82
5.0000	1.575	6.840	0.000	12.87
5.0667	1.581	6.945	0.365	12.91
5.1333	1.587	7.051	1.030	12.96
5.2000	1.593	7.157	1.886	13.01
5.2667	1.598	7.263	2.883	13.05
5.3333	1.604	7.370	3.979	13.10
5.4000	1.610	7.477	5.134	13.15
5.4667	1.616	7.585	6.307	13.19
5.5333	1.621	7.693	7.456	13.24
5.6000	1.627	7.801	8.540	13.29
5.6667	1.633	7.910	9.523	13.34
5.7333	1.639	8.019	10.37	13.38
5.8000	1.644	8.128	11.08	13.43
5.8667	1.650	8.238	11.65	13.48
5.9333	1.656	8.348	12.09	13.53
6.0000	1.662	8.459	12.46	13.57
6.0667	1.668	8.570	13.01	13.62

Name : Infilt Pond D
Bottom Length: 1000.00 ft.
Bottom Width: 37.70 ft.
Depth: 6 ft.
Volume at riser head: 6.1485 acre-feet.
Infiltration On
Infiltration rate: 8.2
Infiltration safety factor: 1

Wetted surface area On
Total Volume Infiltrated (ac-ft.): 31272.175
Total Volume Through Riser (ac-ft.): 1.011
Total Volume Through Facility (ac-ft.): 31273.186
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 5 ft.
Riser Diameter: 24 in.

Element Flows To:
Outlet 1 **Outlet 2**

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.865	0.000	0.000	0.000
0.0667	0.875	0.058	0.000	7.234
0.1333	0.884	0.116	0.000	7.313
0.2000	0.894	0.176	0.000	7.392
0.2667	0.903	0.235	0.000	7.471
0.3333	0.913	0.296	0.000	7.550
0.4000	0.922	0.357	0.000	7.629
0.4667	0.932	0.419	0.000	7.709
0.5333	0.941	0.482	0.000	7.788
0.6000	0.951	0.545	0.000	7.867
0.6667	0.961	0.608	0.000	7.946
0.7333	0.970	0.673	0.000	8.026
0.8000	0.980	0.738	0.000	8.105
0.8667	0.990	0.803	0.000	8.185
0.9333	0.999	0.870	0.000	8.265
1.0000	1.009	0.937	0.000	8.344
1.0667	1.018	1.004	0.000	8.424
1.1333	1.028	1.073	0.000	8.504
1.2000	1.038	1.142	0.000	8.584
1.2667	1.047	1.211	0.000	8.664
1.3333	1.057	1.281	0.000	8.743
1.4000	1.067	1.352	0.000	8.824
1.4667	1.076	1.424	0.000	8.904
1.5333	1.086	1.496	0.000	8.984
1.6000	1.096	1.568	0.000	9.064
1.6667	1.106	1.642	0.000	9.144
1.7333	1.115	1.716	0.000	9.225
1.8000	1.125	1.791	0.000	9.305
1.8667	1.135	1.866	0.000	9.385
1.9333	1.144	1.942	0.000	9.466
2.0000	1.154	2.019	0.000	9.547
2.0667	1.164	2.096	0.000	9.627
2.1333	1.174	2.174	0.000	9.708

2.2000	1.183	2.252	0.000	9.789
2.2667	1.193	2.332	0.000	9.869
2.3333	1.203	2.412	0.000	9.950
2.4000	1.213	2.492	0.000	10.03
2.4667	1.223	2.573	0.000	10.11
2.5333	1.232	2.655	0.000	10.19
2.6000	1.242	2.738	0.000	10.27
2.6667	1.252	2.821	0.000	10.35
2.7333	1.262	2.905	0.000	10.43
2.8000	1.272	2.989	0.000	10.51
2.8667	1.282	3.074	0.000	10.60
2.9333	1.291	3.160	0.000	10.68
3.0000	1.301	3.247	0.000	10.76
3.0667	1.311	3.334	0.000	10.84
3.1333	1.321	3.421	0.000	10.92
3.2000	1.331	3.510	0.000	11.00
3.2667	1.341	3.599	0.000	11.09
3.3333	1.351	3.689	0.000	11.17
3.4000	1.361	3.779	0.000	11.25
3.4667	1.370	3.870	0.000	11.33
3.5333	1.380	3.962	0.000	11.41
3.6000	1.390	4.054	0.000	11.49
3.6667	1.400	4.147	0.000	11.58
3.7333	1.410	4.241	0.000	11.66
3.8000	1.420	4.335	0.000	11.74
3.8667	1.430	4.430	0.000	11.82
3.9333	1.440	4.526	0.000	11.91
4.0000	1.450	4.623	0.000	11.99
4.0667	1.460	4.720	0.000	12.07
4.1333	1.470	4.817	0.000	12.15
4.2000	1.480	4.916	0.000	12.24
4.2667	1.490	5.015	0.000	12.32
4.3333	1.500	5.114	0.000	12.40
4.4000	1.510	5.215	0.000	12.48
4.4667	1.520	5.316	0.000	12.57
4.5333	1.530	5.417	0.000	12.65
4.6000	1.540	5.520	0.000	12.73
4.6667	1.550	5.623	0.000	12.82
4.7333	1.560	5.727	0.000	12.90
4.8000	1.570	5.831	0.000	12.98
4.8667	1.580	5.936	0.000	13.06
4.9333	1.590	6.042	0.000	13.15
5.0000	1.600	6.148	0.000	13.23
5.0667	1.610	6.255	0.365	13.31
5.1333	1.621	6.363	1.030	13.40
5.2000	1.631	6.471	1.886	13.48
5.2667	1.641	6.580	2.883	13.57
5.3333	1.651	6.690	3.979	13.65
5.4000	1.661	6.800	5.134	13.73
5.4667	1.671	6.912	6.307	13.82
5.5333	1.681	7.023	7.456	13.90
5.6000	1.691	7.136	8.540	13.98
5.6667	1.702	7.249	9.523	14.07
5.7333	1.712	7.363	10.37	14.15
5.8000	1.722	7.477	11.08	14.24
5.8667	1.732	7.592	11.65	14.32
5.9333	1.742	7.708	12.09	14.40

6.0000	1.752	7.825	12.46	14.49
6.0667	1.763	7.942	13.01	14.57

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:161.1
Total Impervious Area:1

Mitigated Landuse Totals for POC #1
Total Pervious Area:161.1
Total Impervious Area:1

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	7.15659
5 year	14.082833
10 year	20.66757
25 year	31.840733
50 year	42.64107
100 year	55.940025

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1902	4.799	0.000
1903	3.466	0.000
1904	25.520	0.000
1905	4.233	0.000
1906	1.571	0.000
1907	12.609	0.000
1908	5.300	0.000
1909	6.989	0.000
1910	14.200	0.000
1911	9.354	0.000
1912	55.963	0.000
1913	6.386	0.000
1914	39.323	0.000

1915	3.687	0.000
1916	8.055	0.000
1917	2.298	0.000
1918	4.539	0.000
1919	4.129	0.000
1920	9.261	0.000
1921	6.609	0.000
1922	17.117	0.000
1923	7.087	0.000
1924	3.338	0.000
1925	3.459	0.000
1926	6.149	0.000
1927	3.354	0.000
1928	4.887	0.000
1929	12.189	0.000
1930	4.365	0.000
1931	4.843	0.000
1932	5.332	0.000
1933	6.063	0.000
1934	20.863	0.000
1935	4.242	0.000
1936	6.076	0.000
1937	15.127	0.000
1938	5.018	0.000
1939	1.735	0.000
1940	6.513	0.000
1941	2.472	0.000
1942	13.789	0.000
1943	6.739	0.000
1944	19.359	0.000
1945	5.697	0.000
1946	10.648	0.000
1947	2.796	0.000
1948	10.617	0.000
1949	10.733	0.000
1950	3.312	0.000
1951	3.177	0.000
1952	36.522	0.000
1953	28.551	0.000
1954	5.398	0.000
1955	3.533	0.000
1956	2.073	0.000
1957	5.164	0.000
1958	19.341	0.000
1959	16.116	0.000
1960	3.516	0.000
1961	22.333	0.000
1962	5.470	0.000
1963	3.069	0.000
1964	31.433	0.000
1965	11.702	0.000
1966	3.930	0.000
1967	14.803	0.000
1968	5.405	0.000
1969	5.852	0.000
1970	12.098	0.000
1971	12.768	0.000

1972	52.820	0.000
1973	12.265	0.000
1974	12.727	0.000
1975	29.304	0.000
1976	21.674	0.000
1977	2.415	0.000
1978	19.844	0.000
1979	7.557	0.000
1980	15.201	0.000
1981	5.582	0.000
1982	3.596	0.000
1983	10.771	0.000
1984	11.121	0.000
1985	19.657	0.000
1986	5.284	0.000
1987	16.103	0.000
1988	5.029	0.000
1989	5.135	0.000
1990	7.297	0.000
1991	14.980	0.000
1992	11.209	0.000
1993	7.477	0.000
1994	11.829	0.000
1995	3.511	0.000
1996	14.451	0.000
1997	5.092	0.000
1998	11.456	0.000
1999	2.804	0.000
2000	6.273	0.000
2001	3.865	0.000
2002	28.697	0.000
2003	7.538	0.000
2004	9.171	0.000
2005	34.781	0.000
2006	3.283	0.000
2007	8.778	0.000
2008	6.181	0.000
2009	4.071	0.000
2010	4.942	0.000
2011	2.348	0.000
2012	6.803	0.000
2013	9.504	0.000
2014	5.199	0.000
2015	27.596	0.000
2016	2.758	0.000
2017	7.909	0.000
2018	18.018	0.000
2019	26.979	0.000
2020	12.928	0.000
2021	10.302	0.000
2022	8.336	0.000
2023	7.925	0.000
2024	45.967	0.000
2025	4.846	0.000
2026	7.863	0.000
2027	4.910	0.000
2028	2.945	0.000

2029	6.624	0.000
2030	15.307	0.000
2031	3.288	0.000
2032	2.451	0.000
2033	3.070	0.000
2034	4.192	0.000
2035	15.150	0.000
2036	6.795	0.000
2037	2.789	0.000
2038	15.705	0.000
2039	2.081	0.000
2040	4.681	0.000
2041	5.905	0.000
2042	13.736	0.000
2043	9.643	0.000
2044	9.191	0.000
2045	4.659	0.000
2046	5.399	0.000
2047	4.288	0.000
2048	5.191	0.000
2049	7.317	0.000
2050	7.509	0.000
2051	18.257	0.000
2052	3.570	0.000
2053	5.536	0.000
2054	32.862	0.000
2055	4.357	0.000
2056	2.675	0.000
2057	4.042	0.000
2058	4.312	0.000
2059	19.759	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	55.9628	0.0000
2	52.8202	0.0000
3	45.9668	0.0000
4	39.3227	0.0000
5	36.5224	0.0000
6	34.7813	0.0000
7	32.8623	0.0000
8	31.4326	0.0000
9	29.3037	0.0000
10	28.6966	0.0000
11	28.5509	0.0000
12	27.5956	0.0000
13	26.9794	0.0000
14	25.5195	0.0000
15	22.3329	0.0000
16	21.6736	0.0000
17	20.8633	0.0000
18	19.8441	0.0000
19	19.7590	0.0000
20	19.6570	0.0000
21	19.3587	0.0000

22	19.3413	0.0000
23	18.2573	0.0000
24	18.0179	0.0000
25	17.1166	0.0000
26	16.1156	0.0000
27	16.1032	0.0000
28	15.7052	0.0000
29	15.3068	0.0000
30	15.2014	0.0000
31	15.1501	0.0000
32	15.1265	0.0000
33	14.9802	0.0000
34	14.8030	0.0000
35	14.4510	0.0000
36	14.1996	0.0000
37	13.7890	0.0000
38	13.7363	0.0000
39	12.9282	0.0000
40	12.7680	0.0000
41	12.7266	0.0000
42	12.6087	0.0000
43	12.2648	0.0000
44	12.1890	0.0000
45	12.0982	0.0000
46	11.8294	0.0000
47	11.7016	0.0000
48	11.4560	0.0000
49	11.2090	0.0000
50	11.1213	0.0000
51	10.7712	0.0000
52	10.7328	0.0000
53	10.6481	0.0000
54	10.6173	0.0000
55	10.3024	0.0000
56	9.6433	0.0000
57	9.5038	0.0000
58	9.3535	0.0000
59	9.2609	0.0000
60	9.1913	0.0000
61	9.1712	0.0000
62	8.7780	0.0000
63	8.3359	0.0000
64	8.0547	0.0000
65	7.9255	0.0000
66	7.9088	0.0000
67	7.8633	0.0000
68	7.5570	0.0000
69	7.5383	0.0000
70	7.5089	0.0000
71	7.4765	0.0000
72	7.3171	0.0000
73	7.2970	0.0000
74	7.0873	0.0000
75	6.9892	0.0000
76	6.8032	0.0000
77	6.7951	0.0000
78	6.7392	0.0000

79	6.6238	0.0000
80	6.6086	0.0000
81	6.5127	0.0000
82	6.3864	0.0000
83	6.2726	0.0000
84	6.1810	0.0000
85	6.1495	0.0000
86	6.0758	0.0000
87	6.0626	0.0000
88	5.9047	0.0000
89	5.8516	0.0000
90	5.6973	0.0000
91	5.5818	0.0000
92	5.5361	0.0000
93	5.4705	0.0000
94	5.4054	0.0000
95	5.3989	0.0000
96	5.3978	0.0000
97	5.3317	0.0000
98	5.3001	0.0000
99	5.2844	0.0000
100	5.1989	0.0000
101	5.1912	0.0000
102	5.1638	0.0000
103	5.1346	0.0000
104	5.0924	0.0000
105	5.0292	0.0000
106	5.0183	0.0000
107	4.9417	0.0000
108	4.9104	0.0000
109	4.8875	0.0000
110	4.8459	0.0000
111	4.8429	0.0000
112	4.7986	0.0000
113	4.6807	0.0000
114	4.6594	0.0000
115	4.5394	0.0000
116	4.3648	0.0000
117	4.3568	0.0000
118	4.3121	0.0000
119	4.2875	0.0000
120	4.2417	0.0000
121	4.2333	0.0000
122	4.1918	0.0000
123	4.1287	0.0000
124	4.0712	0.0000
125	4.0416	0.0000
126	3.9304	0.0000
127	3.8653	0.0000
128	3.6866	0.0000
129	3.5958	0.0000
130	3.5696	0.0000
131	3.5328	0.0000
132	3.5163	0.0000
133	3.5109	0.0000
134	3.4661	0.0000
135	3.4587	0.0000

136	3.3542	0.0000
137	3.3382	0.0000
138	3.3115	0.0000
139	3.2884	0.0000
140	3.2832	0.0000
141	3.1770	0.0000
142	3.0697	0.0000
143	3.0686	0.0000
144	2.9449	0.0000
145	2.8037	0.0000
146	2.7957	0.0000
147	2.7891	0.0000
148	2.7581	0.0000
149	2.6753	0.0000
150	2.4716	0.0000
151	2.4511	0.0000
152	2.4155	0.0000
153	2.3485	0.0000
154	2.2981	0.0000
155	2.0808	0.0000
156	2.0730	0.0000
157	1.7348	0.0000
158	1.5711	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
3.5783	17484	0	0	Pass
3.9729	12565	0	0	Pass
4.3674	8897	0	0	Pass
4.7620	6343	0	0	Pass
5.1566	4656	0	0	Pass
5.5512	3562	0	0	Pass
5.9457	2785	0	0	Pass
6.3403	2182	0	0	Pass
6.7349	1561	0	0	Pass
7.1295	1210	0	0	Pass
7.5240	978	0	0	Pass
7.9186	780	0	0	Pass
8.3132	638	0	0	Pass
8.7078	535	0	0	Pass
9.1023	424	0	0	Pass
9.4969	343	0	0	Pass
9.8915	293	0	0	Pass
10.2860	261	0	0	Pass
10.6806	239	0	0	Pass
11.0752	223	0	0	Pass
11.4698	205	0	0	Pass
11.8643	193	0	0	Pass
12.2589	181	0	0	Pass
12.6535	170	0	0	Pass
13.0481	161	0	0	Pass

13.4426	152	0	0	Pass
13.8372	142	0	0	Pass
14.2318	133	0	0	Pass
14.6264	127	0	0	Pass
15.0209	116	0	0	Pass
15.4155	111	0	0	Pass
15.8101	108	0	0	Pass
16.2046	99	0	0	Pass
16.5992	97	0	0	Pass
16.9938	92	0	0	Pass
17.3884	88	0	0	Pass
17.7829	79	0	0	Pass
18.1775	73	0	0	Pass
18.5721	68	0	0	Pass
18.9667	66	0	0	Pass
19.3612	63	0	0	Pass
19.7558	60	0	0	Pass
20.1504	57	0	0	Pass
20.5450	55	0	0	Pass
20.9395	49	0	0	Pass
21.3341	46	0	0	Pass
21.7287	44	0	0	Pass
22.1232	44	0	0	Pass
22.5178	39	0	0	Pass
22.9124	39	0	0	Pass
23.3070	39	0	0	Pass
23.7015	38	0	0	Pass
24.0961	35	0	0	Pass
24.4907	34	0	0	Pass
24.8853	33	0	0	Pass
25.2798	31	0	0	Pass
25.6744	30	0	0	Pass
26.0690	30	0	0	Pass
26.4636	30	0	0	Pass
26.8581	29	0	0	Pass
27.2527	27	0	0	Pass
27.6473	26	0	0	Pass
28.0419	25	0	0	Pass
28.4364	24	0	0	Pass
28.8310	21	0	0	Pass
29.2256	21	0	0	Pass
29.6201	20	0	0	Pass
30.0147	20	0	0	Pass
30.4093	20	0	0	Pass
30.8039	20	0	0	Pass
31.1984	20	0	0	Pass
31.5930	18	0	0	Pass
31.9876	18	0	0	Pass
32.3822	18	0	0	Pass
32.7767	18	0	0	Pass
33.1713	16	0	0	Pass
33.5659	16	0	0	Pass
33.9605	16	0	0	Pass
34.3550	16	0	0	Pass
34.7496	16	0	0	Pass
35.1442	15	0	0	Pass
35.5387	15	0	0	Pass

35.9333	14	0	0	Pass
36.3279	14	0	0	Pass
36.7225	12	0	0	Pass
37.1170	12	0	0	Pass
37.5116	12	0	0	Pass
37.9062	12	0	0	Pass
38.3008	12	0	0	Pass
38.6953	12	0	0	Pass
39.0899	12	0	0	Pass
39.4845	11	0	0	Pass
39.8791	10	0	0	Pass
40.2736	10	0	0	Pass
40.6682	9	0	0	Pass
41.0628	9	0	0	Pass
41.4573	9	0	0	Pass
41.8519	9	0	0	Pass
42.2465	9	0	0	Pass
42.6411	9	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 6.0805 **acre-feet**
On-line facility target flow: 3.3931 **cfs.**
Adjusted for 15 min: 3.3931 **cfs.**
Off-line facility target flow: 1.9045 **cfs.**
Adjusted for 15 min: 1.9045 **cfs.**

LID Report

LID Technique	Used for Water Quality	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality Treated	Percent Treatment?	Comment
Infilt Pond C POC	N	20313.78			N	100.00			
Total Volume Infiltrated		20313.78	0.00	0.00		100.00	0.00	0%	No Treat. Credit

Compliance with LID Standard 8
Duration Analysis Result = Passed

Stream Protection Duration

Predeveloped Landuse Totals for POC #2
Total Pervious Area:227.7
Total Impervious Area:0

Mitigated Landuse Totals for POC #2
Total Pervious Area:227.7
Total Impervious Area:0

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	Flow(cfs)
2 year	9.453983
5 year	18.751269
10 year	27.642348
25 year	42.801569
50 year	57.51558
100 year	75.693112

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #2

Year	Predeveloped	Mitigated
1902	6.246	0.000
1903	4.718	0.000
1904	33.939	0.000
1905	5.808	0.000
1906	2.062	0.000
1907	16.843	0.000
1908	6.764	0.000
1909	9.046	0.000
1910	19.255	0.000
1911	12.085	0.000
1912	77.843	1.755
1913	8.817	0.000
1914	50.844	0.000
1915	4.788	0.000
1916	10.048	0.000
1917	3.156	0.000
1918	6.084	0.000
1919	5.382	0.000
1920	12.020	0.000
1921	8.763	0.000
1922	22.619	0.000
1923	9.530	0.000
1924	4.652	0.000
1925	4.536	0.000
1926	8.035	0.000
1927	4.560	0.000
1928	6.400	0.000
1929	15.813	0.000
1930	5.877	0.000
1931	6.424	0.000
1932	6.832	0.000
1933	7.918	0.000
1934	27.707	0.000
1935	5.633	0.000

1936	7.878	0.000
1937	20.521	0.000
1938	6.479	0.000
1939	2.219	0.000
1940	8.440	0.000
1941	3.360	0.000
1942	18.130	0.000
1943	8.634	0.000
1944	25.406	0.000
1945	7.749	0.000
1946	14.041	0.000
1947	3.803	0.000
1948	14.258	0.000
1949	14.446	0.000
1950	4.515	0.000
1951	4.113	0.000
1952	50.783	7.074
1953	39.109	0.000
1954	6.849	0.000
1955	4.901	0.000
1956	2.873	0.000
1957	7.121	0.000
1958	26.457	0.000
1959	21.858	0.000
1960	4.398	0.000
1961	29.737	0.000
1962	7.022	0.000
1963	4.264	0.000
1964	42.383	0.000
1965	15.609	0.000
1966	4.977	0.000
1967	19.613	0.000
1968	7.449	0.000
1969	7.567	0.000
1970	15.844	0.000
1971	17.325	0.000
1972	71.605	0.000
1973	16.472	0.000
1974	17.212	0.000
1975	40.503	0.000
1976	28.810	0.000
1977	3.358	0.000
1978	27.189	0.000
1979	9.606	0.000
1980	19.926	0.000
1981	6.878	0.000
1982	4.449	0.000
1983	14.229	0.000
1984	14.551	0.000
1985	26.318	0.000
1986	6.950	0.000
1987	21.177	0.000
1988	6.670	0.000
1989	6.826	0.000
1990	9.281	0.000
1991	18.716	0.000
1992	14.449	0.000

1993	9.817	0.000
1994	15.884	0.000
1995	4.476	0.000
1996	19.610	0.000
1997	6.542	0.000
1998	15.149	0.000
1999	3.625	0.000
2000	8.159	0.000
2001	4.976	0.000
2002	38.857	0.000
2003	9.870	0.000
2004	11.896	0.000
2005	46.782	0.000
2006	4.233	0.000
2007	11.111	0.000
2008	8.046	0.000
2009	5.271	0.000
2010	6.874	0.000
2011	3.144	0.000
2012	9.224	0.000
2013	12.376	0.000
2014	6.602	0.000
2015	37.780	0.000
2016	3.159	0.000
2017	10.697	0.000
2018	25.208	0.000
2019	35.795	0.000
2020	17.250	0.000
2021	13.365	0.000
2022	9.977	0.000
2023	9.850	0.000
2024	64.683	0.000
2025	6.669	0.000
2026	10.472	0.000
2027	6.313	0.000
2028	4.045	0.000
2029	8.691	0.000
2030	20.644	0.000
2031	4.446	0.000
2032	3.072	0.000
2033	4.250	0.000
2034	5.863	0.000
2035	20.444	0.000
2036	9.044	0.000
2037	3.865	0.000
2038	20.483	0.000
2039	2.184	0.000
2040	5.955	0.000
2041	7.500	0.000
2042	18.567	0.000
2043	12.694	0.000
2044	12.165	0.000
2045	5.930	0.000
2046	7.032	0.000
2047	5.805	0.000
2048	7.202	0.000
2049	9.679	0.000

2050	9.773	0.000
2051	24.509	0.000
2052	4.830	0.000
2053	7.495	0.000
2054	44.017	0.000
2055	5.437	0.000
2056	3.707	0.000
2057	5.563	0.000
2058	5.827	0.000
2059	26.461	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	77.8432	7.0742
2	71.6051	1.7552
3	64.6825	0.0000
4	50.8441	0.0000
5	50.7834	0.0000
6	46.7818	0.0000
7	44.0168	0.0000
8	42.3826	0.0000
9	40.5026	0.0000
10	39.1091	0.0000
11	38.8567	0.0000
12	37.7802	0.0000
13	35.7950	0.0000
14	33.9390	0.0000
15	29.7370	0.0000
16	28.8097	0.0000
17	27.7067	0.0000
18	27.1888	0.0000
19	26.4609	0.0000
20	26.4572	0.0000
21	26.3176	0.0000
22	25.4058	0.0000
23	25.2078	0.0000
24	24.5093	0.0000
25	22.6185	0.0000
26	21.8582	0.0000
27	21.1771	0.0000
28	20.6440	0.0000
29	20.5208	0.0000
30	20.4827	0.0000
31	20.4438	0.0000
32	19.9258	0.0000
33	19.6128	0.0000
34	19.6103	0.0000
35	19.2545	0.0000
36	18.7158	0.0000
37	18.5671	0.0000
38	18.1296	0.0000
39	17.3248	0.0000
40	17.2504	0.0000
41	17.2121	0.0000
42	16.8432	0.0000

43	16.4715	0.0000
44	15.8843	0.0000
45	15.8442	0.0000
46	15.8125	0.0000
47	15.6093	0.0000
48	15.1494	0.0000
49	14.5511	0.0000
50	14.4486	0.0000
51	14.4460	0.0000
52	14.2582	0.0000
53	14.2287	0.0000
54	14.0408	0.0000
55	13.3653	0.0000
56	12.6935	0.0000
57	12.3759	0.0000
58	12.1649	0.0000
59	12.0851	0.0000
60	12.0203	0.0000
61	11.8959	0.0000
62	11.1114	0.0000
63	10.6974	0.0000
64	10.4724	0.0000
65	10.0477	0.0000
66	9.9772	0.0000
67	9.8699	0.0000
68	9.8497	0.0000
69	9.8169	0.0000
70	9.7728	0.0000
71	9.6795	0.0000
72	9.6063	0.0000
73	9.5297	0.0000
74	9.2813	0.0000
75	9.2245	0.0000
76	9.0458	0.0000
77	9.0442	0.0000
78	8.8167	0.0000
79	8.7634	0.0000
80	8.6914	0.0000
81	8.6343	0.0000
82	8.4400	0.0000
83	8.1594	0.0000
84	8.0462	0.0000
85	8.0351	0.0000
86	7.9177	0.0000
87	7.8778	0.0000
88	7.7495	0.0000
89	7.5670	0.0000
90	7.4996	0.0000
91	7.4949	0.0000
92	7.4485	0.0000
93	7.2023	0.0000
94	7.1209	0.0000
95	7.0316	0.0000
96	7.0221	0.0000
97	6.9501	0.0000
98	6.8783	0.0000
99	6.8739	0.0000

100	6.8494	0.0000
101	6.8321	0.0000
102	6.8264	0.0000
103	6.7636	0.0000
104	6.6703	0.0000
105	6.6692	0.0000
106	6.6022	0.0000
107	6.5422	0.0000
108	6.4785	0.0000
109	6.4237	0.0000
110	6.3999	0.0000
111	6.3135	0.0000
112	6.2460	0.0000
113	6.0841	0.0000
114	5.9555	0.0000
115	5.9305	0.0000
116	5.8765	0.0000
117	5.8631	0.0000
118	5.8265	0.0000
119	5.8080	0.0000
120	5.8054	0.0000
121	5.6331	0.0000
122	5.5632	0.0000
123	5.4370	0.0000
124	5.3821	0.0000
125	5.2706	0.0000
126	4.9766	0.0000
127	4.9760	0.0000
128	4.9015	0.0000
129	4.8297	0.0000
130	4.7881	0.0000
131	4.7176	0.0000
132	4.6524	0.0000
133	4.5602	0.0000
134	4.5358	0.0000
135	4.5146	0.0000
136	4.4764	0.0000
137	4.4486	0.0000
138	4.4460	0.0000
139	4.3984	0.0000
140	4.2645	0.0000
141	4.2498	0.0000
142	4.2333	0.0000
143	4.1134	0.0000
144	4.0452	0.0000
145	3.8650	0.0000
146	3.8025	0.0000
147	3.7072	0.0000
148	3.6252	0.0000
149	3.3602	0.0000
150	3.3581	0.0000
151	3.1587	0.0000
152	3.1562	0.0000
153	3.1436	0.0000
154	3.0717	0.0000
155	2.8726	0.0000
156	2.2190	0.0000

157	2.1836	0.0000
158	2.0622	0.0000

Stream Protection Duration
POC #2
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
4.7270	21074	5	0	Pass
5.2602	15174	3	0	Pass
5.7934	11041	3	0	Pass
6.3266	7806	2	0	Pass
6.8599	5656	1	0	Pass
7.3931	4265	0	0	Pass
7.9263	3345	0	0	Pass
8.4595	2653	0	0	Pass
8.9927	2048	0	0	Pass
9.5260	1494	0	0	Pass
10.0592	1178	0	0	Pass
10.5924	947	0	0	Pass
11.1256	758	0	0	Pass
11.6588	624	0	0	Pass
12.1920	508	0	0	Pass
12.7253	404	0	0	Pass
13.2585	331	0	0	Pass
13.7917	284	0	0	Pass
14.3249	245	0	0	Pass
14.8581	229	0	0	Pass
15.3914	210	0	0	Pass
15.9246	196	0	0	Pass
16.4578	187	0	0	Pass
16.9910	172	0	0	Pass
17.5242	157	0	0	Pass
18.0574	152	0	0	Pass
18.5907	145	0	0	Pass
19.1239	132	0	0	Pass
19.6571	125	0	0	Pass
20.1903	122	0	0	Pass
20.7235	114	0	0	Pass
21.2568	105	0	0	Pass
21.7900	100	0	0	Pass
22.3232	98	0	0	Pass
22.8564	93	0	0	Pass
23.3896	88	0	0	Pass
23.9228	85	0	0	Pass
24.4561	83	0	0	Pass
24.9893	73	0	0	Pass
25.5225	66	0	0	Pass
26.0557	64	0	0	Pass
26.5889	61	0	0	Pass
27.1222	57	0	0	Pass
27.6554	54	0	0	Pass
28.1886	51	0	0	Pass
28.7218	50	0	0	Pass

29.2550	45	0	0	Pass
29.7882	41	0	0	Pass
30.3215	40	0	0	Pass
30.8547	39	0	0	Pass
31.3879	38	0	0	Pass
31.9211	38	0	0	Pass
32.4543	38	0	0	Pass
32.9875	36	0	0	Pass
33.5208	34	0	0	Pass
34.0540	31	0	0	Pass
34.5872	30	0	0	Pass
35.1204	29	0	0	Pass
35.6536	29	0	0	Pass
36.1869	28	0	0	Pass
36.7201	28	0	0	Pass
37.2533	28	0	0	Pass
37.7865	28	0	0	Pass
38.3197	26	0	0	Pass
38.8529	26	0	0	Pass
39.3862	22	0	0	Pass
39.9194	22	0	0	Pass
40.4526	21	0	0	Pass
40.9858	19	0	0	Pass
41.5190	19	0	0	Pass
42.0523	19	0	0	Pass
42.5855	18	0	0	Pass
43.1187	18	0	0	Pass
43.6519	18	0	0	Pass
44.1851	16	0	0	Pass
44.7183	16	0	0	Pass
45.2516	16	0	0	Pass
45.7848	16	0	0	Pass
46.3180	16	0	0	Pass
46.8512	15	0	0	Pass
47.3844	15	0	0	Pass
47.9177	15	0	0	Pass
48.4509	15	0	0	Pass
48.9841	15	0	0	Pass
49.5173	15	0	0	Pass
50.0505	15	0	0	Pass
50.5837	15	0	0	Pass
51.1170	12	0	0	Pass
51.6502	12	0	0	Pass
52.1834	10	0	0	Pass
52.7166	10	0	0	Pass
53.2498	10	0	0	Pass
53.7831	10	0	0	Pass
54.3163	10	0	0	Pass
54.8495	10	0	0	Pass
55.3827	9	0	0	Pass
55.9159	9	0	0	Pass
56.4491	9	0	0	Pass
56.9824	9	0	0	Pass
57.5156	9	0	0	Pass

Water Quality BMP Flow and Volume for POC #2
On-line facility volume: 8.5564 **acre-feet**
On-line facility target flow: 4.7648 **cfs.**
Adjusted for 15 min: 4.7648 **cfs.**
Off-line facility target flow: 2.6759 **cfs.**
Adjusted for 15 min: 2.6759 **cfs.**

LID Report

LID Technique	Used for Water Quality Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Infiltration Credit	Percent Volume Infiltrated	Water Quality Percent Treated	Comment
Infilt Pond D POC	N	28458.60			N	100.00		
Total Volume Infiltrated		28458.60	0.00	0.00		100.00	0.00	0% No Treat. Credit

Compliance with LID Standard 8
Duration Analysis Result = Passed

POC #3 was not reported because POC must exist in both scenarios and both scenarios must have been run.**Perlnd and Implnd Changes**
No changes have been made.

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WWHM2012
PROJECT REPORT

Project Name: Basin E GW
Site Name: Pioneer Aggregates
Site Address: Pioneer Avenue
City : DuPont
Report Date: 11/25/2020
Gage : 38 IN CENTRAL
Data Start : 10/01/1901
Data End : 09/30/2059
Precip Scale: 1.00
Version Date: 2019/09/13
Version : 4.2.17

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name : Basin E Pre
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	3.5
A B, Lawn, Steep	72.1
C, Lawn, Flat	12.7
SAT, Forest, Flat	4.3
Pervious Total	92.6

Impervious Land Use	acre
Impervious Total	0
Basin Total	92.6

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Watershed E
Bypass: No

GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	3.5
A B, Lawn, Steep	72.1
C, Lawn, Flat	12.7
SAT, Forest, Flat	4.3
Pervious Total	92.6

Impervious Land Use	acre
Impervious Total	0
Basin Total	92.6

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 3	Trapezoidal Pond 3	

Name : Trapezoidal Pond 3
Bottom Length: 600.00 ft.
Bottom Width: 96.00 ft.
Depth: 7 ft.
Volume at riser head: 9.8477 acre-feet.
Infiltration On
Infiltration rate: 8.1
Infiltration safety factor: 1
Wetted surface area On
Total Volume Infiltrated (ac-ft.): 1091797
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 1091797
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 6 ft.
Riser Diameter: 24 in.

Element Flows To:

Outlet 1	Outlet 2

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	1.322	0.000	0.000	0.000
0.0778	1.329	0.103	0.000	10.86
0.1556	1.337	0.206	0.000	10.92
0.2333	1.344	0.311	0.000	10.98
0.3111	1.352	0.416	0.000	11.04
0.3889	1.359	0.521	0.000	11.10
0.4667	1.367	0.627	0.000	11.16
0.5444	1.374	0.734	0.000	11.22
0.6222	1.382	0.841	0.000	11.29
0.7000	1.389	0.949	0.000	11.35
0.7778	1.397	1.057	0.000	11.41
0.8556	1.404	1.166	0.000	11.47
0.9333	1.412	1.276	0.000	11.53
1.0111	1.420	1.386	0.000	11.59
1.0889	1.427	1.497	0.000	11.66
1.1667	1.435	1.608	0.000	11.72
1.2444	1.442	1.720	0.000	11.78
1.3222	1.450	1.832	0.000	11.84
1.4000	1.458	1.945	0.000	11.90
1.4778	1.465	2.059	0.000	11.97
1.5556	1.473	2.174	0.000	12.03
1.6333	1.481	2.288	0.000	12.09
1.7111	1.488	2.404	0.000	12.16
1.7889	1.496	2.520	0.000	12.22
1.8667	1.504	2.637	0.000	12.28
1.9444	1.511	2.754	0.000	12.34
2.0222	1.519	2.872	0.000	12.41
2.1000	1.527	2.990	0.000	12.47
2.1778	1.535	3.109	0.000	12.53
2.2556	1.542	3.229	0.000	12.60
2.3333	1.550	3.349	0.000	12.66
2.4111	1.558	3.470	0.000	12.72
2.4889	1.566	3.592	0.000	12.79
2.5667	1.573	3.714	0.000	12.85
2.6444	1.581	3.837	0.000	12.91
2.7222	1.589	3.960	0.000	12.98
2.8000	1.597	4.084	0.000	13.04
2.8778	1.605	4.208	0.000	13.10
2.9556	1.612	4.334	0.000	13.17
3.0333	1.620	4.459	0.000	13.23
3.1111	1.628	4.586	0.000	13.30
3.1889	1.636	4.713	0.000	13.36
3.2667	1.644	4.840	0.000	13.43
3.3444	1.652	4.968	0.000	13.49
3.4222	1.660	5.097	0.000	13.55
3.5000	1.668	5.227	0.000	13.62
3.5778	1.675	5.357	0.000	13.68
3.6556	1.683	5.487	0.000	13.75
3.7333	1.691	5.619	0.000	13.81
3.8111	1.699	5.751	0.000	13.88
3.8889	1.707	5.883	0.000	13.94
3.9667	1.715	6.016	0.000	14.01
4.0444	1.723	6.150	0.000	14.07
4.1222	1.731	6.284	0.000	14.14
4.2000	1.739	6.419	0.000	14.20
4.2778	1.747	6.555	0.000	14.27

4.3556	1.755	6.691	0.000	14.33
4.4333	1.763	6.828	0.000	14.40
4.5111	1.771	6.965	0.000	14.47
4.5889	1.779	7.104	0.000	14.53
4.6667	1.787	7.242	0.000	14.60
4.7444	1.795	7.382	0.000	14.66
4.8222	1.803	7.522	0.000	14.73
4.9000	1.811	7.662	0.000	14.79
4.9778	1.820	7.803	0.000	14.86
5.0556	1.828	7.945	0.000	14.93
5.1333	1.836	8.088	0.000	14.99
5.2111	1.844	8.231	0.000	15.06
5.2889	1.852	8.375	0.000	15.13
5.3667	1.860	8.519	0.000	15.19
5.4444	1.868	8.664	0.000	15.26
5.5222	1.876	8.810	0.000	15.33
5.6000	1.885	8.956	0.000	15.39
5.6778	1.893	9.103	0.000	15.46
5.7556	1.901	9.251	0.000	15.53
5.8333	1.909	9.399	0.000	15.59
5.9111	1.917	9.548	0.000	15.66
5.9889	1.926	9.697	0.000	15.73
6.0667	1.934	9.847	0.365	15.79
6.1444	1.942	9.998	1.161	15.86
6.2222	1.950	10.15	2.205	15.93
6.3000	1.959	10.30	3.421	16.00
6.3778	1.967	10.45	4.745	16.06
6.4556	1.975	10.60	6.112	16.13
6.5333	1.983	10.76	7.456	16.20
6.6111	1.992	10.91	8.711	16.27
6.6889	2.000	11.07	9.823	16.33
6.7667	2.008	11.22	10.75	16.40
6.8444	2.017	11.38	11.48	16.47
6.9222	2.025	11.54	12.02	16.54
7.0000	2.033	11.69	12.46	16.61
7.0778	2.042	11.85	13.07	16.68

Name : Groundwater
Time Series number 400 is connected to:

Element Flows To:
Outlet 1 **Outlet 2**
Trapezoidal Pond 3

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Landuse Totals for POC #1
Total Pervious Area:92.6

Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:92.6
Total Impervious Area:0

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.694472
5 year	1.66554
10 year	2.813589
25 year	5.188279
50 year	7.936065
100 year	11.870051

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1902	0.422	0.000
1903	0.344	0.000
1904	2.209	0.000
1905	0.399	0.000
1906	0.155	0.000
1907	1.106	0.000
1908	0.457	0.000
1909	0.639	0.000
1910	1.746	0.000
1911	0.792	0.000
1912	21.409	0.000
1913	0.870	0.000
1914	3.061	0.000
1915	0.347	0.000
1916	0.654	0.000
1917	0.215	0.000
1918	0.519	0.000
1919	0.392	0.000
1920	0.782	0.000
1921	0.601	0.000
1922	1.760	0.000
1923	0.892	0.000
1924	0.305	0.000
1925	0.344	0.000
1926	0.536	0.000
1927	0.323	0.000
1928	0.407	0.000

1929	2.441	0.000
1930	0.424	0.000
1931	0.436	0.000
1932	0.432	0.000
1933	0.512	0.000
1934	6.870	0.000
1935	0.403	0.000
1936	0.500	0.000
1937	1.364	0.000
1938	0.463	0.000
1939	0.161	0.000
1940	0.532	0.000
1941	0.249	0.000
1942	1.173	0.000
1943	0.548	0.000
1944	1.641	0.000
1945	0.514	0.000
1946	0.956	0.000
1947	0.253	0.000
1948	0.945	0.000
1949	0.947	0.000
1950	0.314	0.000
1951	0.307	0.000
1952	5.349	0.000
1953	3.215	0.000
1954	0.428	0.000
1955	0.335	0.000
1956	0.199	0.000
1957	0.541	0.000
1958	6.176	0.000
1959	5.202	0.000
1960	0.314	0.000
1961	3.901	0.000
1962	0.472	0.000
1963	0.284	0.000
1964	2.773	0.000
1965	3.175	0.000
1966	0.321	0.000
1967	1.279	0.000
1968	0.515	0.000
1969	0.479	0.000
1970	1.122	0.000
1971	1.544	0.000
1972	4.786	0.000
1973	1.154	0.000
1974	2.271	0.000
1975	3.088	0.000
1976	1.880	0.000
1977	0.219	0.000
1978	5.034	0.000
1979	0.600	0.000
1980	1.310	0.000
1981	0.430	0.000
1982	0.282	0.000
1983	0.920	0.000
1984	0.934	0.000
1985	1.721	0.000

1986	0.451	0.000
1987	1.370	0.000
1988	0.474	0.000
1989	0.476	0.000
1990	0.572	0.000
1991	1.181	0.000
1992	1.981	0.000
1993	1.047	0.000
1994	1.154	0.000
1995	0.296	0.000
1996	3.899	0.000
1997	0.422	0.000
1998	0.986	0.000
1999	0.289	0.000
2000	0.517	0.000
2001	0.314	0.000
2002	2.726	0.000
2003	0.648	0.000
2004	0.911	0.000
2005	8.312	0.000
2006	0.415	0.000
2007	0.681	0.000
2008	0.513	0.000
2009	0.335	0.000
2010	0.458	0.000
2011	0.229	0.000
2012	0.590	0.000
2013	0.800	0.000
2014	0.422	0.000
2015	2.610	0.000
2016	0.203	0.000
2017	0.955	0.000
2018	6.725	0.000
2019	4.625	0.000
2020	1.171	0.000
2021	1.569	0.000
2022	0.471	0.000
2023	0.769	0.000
2024	8.879	0.000
2025	0.456	0.000
2026	0.943	0.000
2027	0.402	0.000
2028	0.279	0.000
2029	0.789	0.000
2030	2.756	0.000
2031	0.302	0.000
2032	0.222	0.000
2033	0.291	0.000
2034	0.387	0.000
2035	1.379	0.000
2036	0.785	0.000
2037	0.253	0.000
2038	1.637	0.000
2039	0.152	0.000
2040	0.391	0.000
2041	0.478	0.000
2042	1.236	0.000

2043	1.078	0.000
2044	2.978	0.000
2045	0.461	0.000
2046	0.530	0.000
2047	0.428	0.000
2048	0.491	0.000
2049	0.625	0.000
2050	0.631	0.000
2051	1.624	0.000
2052	0.330	0.000
2053	0.486	0.000
2054	2.995	0.000
2055	0.346	0.000
2056	0.256	0.000
2057	0.394	0.000
2058	0.479	0.000
2059	4.711	0.000

Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	21.4094	0.0000
2	8.8787	0.0000
3	8.3120	0.0000
4	6.8704	0.0000
5	6.7252	0.0000
6	6.1764	0.0000
7	5.3485	0.0000
8	5.2023	0.0000
9	5.0335	0.0000
10	4.7860	0.0000
11	4.7110	0.0000
12	4.6246	0.0000
13	3.9014	0.0000
14	3.8987	0.0000
15	3.2147	0.0000
16	3.1751	0.0000
17	3.0876	0.0000
18	3.0614	0.0000
19	2.9947	0.0000
20	2.9781	0.0000
21	2.7732	0.0000
22	2.7561	0.0000
23	2.7264	0.0000
24	2.6097	0.0000
25	2.4414	0.0000
26	2.2706	0.0000
27	2.2091	0.0000
28	1.9806	0.0000
29	1.8805	0.0000
30	1.7598	0.0000
31	1.7465	0.0000
32	1.7205	0.0000
33	1.6411	0.0000
34	1.6368	0.0000
35	1.6236	0.0000

36	1.5692	0.0000
37	1.5440	0.0000
38	1.3790	0.0000
39	1.3702	0.0000
40	1.3637	0.0000
41	1.3103	0.0000
42	1.2793	0.0000
43	1.2355	0.0000
44	1.1814	0.0000
45	1.1732	0.0000
46	1.1709	0.0000
47	1.1540	0.0000
48	1.1538	0.0000
49	1.1223	0.0000
50	1.1055	0.0000
51	1.0782	0.0000
52	1.0465	0.0000
53	0.9860	0.0000
54	0.9556	0.0000
55	0.9546	0.0000
56	0.9466	0.0000
57	0.9454	0.0000
58	0.9428	0.0000
59	0.9338	0.0000
60	0.9199	0.0000
61	0.9109	0.0000
62	0.8924	0.0000
63	0.8699	0.0000
64	0.8001	0.0000
65	0.7922	0.0000
66	0.7890	0.0000
67	0.7853	0.0000
68	0.7816	0.0000
69	0.7695	0.0000
70	0.6807	0.0000
71	0.6538	0.0000
72	0.6477	0.0000
73	0.6389	0.0000
74	0.6309	0.0000
75	0.6251	0.0000
76	0.6011	0.0000
77	0.5999	0.0000
78	0.5899	0.0000
79	0.5717	0.0000
80	0.5483	0.0000
81	0.5405	0.0000
82	0.5358	0.0000
83	0.5318	0.0000
84	0.5302	0.0000
85	0.5191	0.0000
86	0.5171	0.0000
87	0.5151	0.0000
88	0.5143	0.0000
89	0.5127	0.0000
90	0.5122	0.0000
91	0.4998	0.0000
92	0.4915	0.0000

93	0.4862	0.0000
94	0.4794	0.0000
95	0.4792	0.0000
96	0.4776	0.0000
97	0.4759	0.0000
98	0.4742	0.0000
99	0.4718	0.0000
100	0.4713	0.0000
101	0.4629	0.0000
102	0.4608	0.0000
103	0.4584	0.0000
104	0.4566	0.0000
105	0.4561	0.0000
106	0.4511	0.0000
107	0.4364	0.0000
108	0.4317	0.0000
109	0.4305	0.0000
110	0.4285	0.0000
111	0.4277	0.0000
112	0.4236	0.0000
113	0.4222	0.0000
114	0.4218	0.0000
115	0.4216	0.0000
116	0.4151	0.0000
117	0.4072	0.0000
118	0.4033	0.0000
119	0.4024	0.0000
120	0.3992	0.0000
121	0.3940	0.0000
122	0.3919	0.0000
123	0.3911	0.0000
124	0.3872	0.0000
125	0.3469	0.0000
126	0.3465	0.0000
127	0.3445	0.0000
128	0.3440	0.0000
129	0.3351	0.0000
130	0.3348	0.0000
131	0.3297	0.0000
132	0.3228	0.0000
133	0.3213	0.0000
134	0.3139	0.0000
135	0.3138	0.0000
136	0.3138	0.0000
137	0.3066	0.0000
138	0.3054	0.0000
139	0.3020	0.0000
140	0.2963	0.0000
141	0.2907	0.0000
142	0.2892	0.0000
143	0.2844	0.0000
144	0.2815	0.0000
145	0.2794	0.0000
146	0.2564	0.0000
147	0.2530	0.0000
148	0.2527	0.0000
149	0.2494	0.0000

150	0.2290	0.0000
151	0.2219	0.0000
152	0.2188	0.0000
153	0.2150	0.0000
154	0.2027	0.0000
155	0.1985	0.0000
156	0.1609	0.0000
157	0.1552	0.0000
158	0.1521	0.0000

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.3472	19041	0	0	Pass
0.4239	9872	0	0	Pass
0.5005	5518	0	0	Pass
0.5772	3457	0	0	Pass
0.6539	2213	0	0	Pass
0.7305	1451	0	0	Pass
0.8072	1034	0	0	Pass
0.8838	745	0	0	Pass
0.9605	558	0	0	Pass
1.0371	456	0	0	Pass
1.1138	381	0	0	Pass
1.1904	332	0	0	Pass
1.2671	306	0	0	Pass
1.3437	275	0	0	Pass
1.4204	253	0	0	Pass
1.4971	230	0	0	Pass
1.5737	213	0	0	Pass
1.6504	197	0	0	Pass
1.7270	178	0	0	Pass
1.8037	161	0	0	Pass
1.8803	155	0	0	Pass
1.9570	146	0	0	Pass
2.0336	138	0	0	Pass
2.1103	134	0	0	Pass
2.1870	126	0	0	Pass
2.2636	119	0	0	Pass
2.3403	110	0	0	Pass
2.4169	105	0	0	Pass
2.4936	99	0	0	Pass
2.5702	95	0	0	Pass
2.6469	91	0	0	Pass
2.7235	89	0	0	Pass
2.8002	84	0	0	Pass
2.8768	83	0	0	Pass
2.9535	81	0	0	Pass
3.0302	78	0	0	Pass
3.1068	76	0	0	Pass
3.1835	72	0	0	Pass
3.2601	68	0	0	Pass

3.3368	66	0	0	Pass
3.4134	65	0	0	Pass
3.4901	62	0	0	Pass
3.5667	61	0	0	Pass
3.6434	58	0	0	Pass
3.7200	55	0	0	Pass
3.7967	55	0	0	Pass
3.8734	55	0	0	Pass
3.9500	52	0	0	Pass
4.0267	51	0	0	Pass
4.1033	48	0	0	Pass
4.1800	46	0	0	Pass
4.2566	43	0	0	Pass
4.3333	41	0	0	Pass
4.4099	37	0	0	Pass
4.4866	37	0	0	Pass
4.5633	34	0	0	Pass
4.6399	31	0	0	Pass
4.7166	28	0	0	Pass
4.7932	26	0	0	Pass
4.8699	25	0	0	Pass
4.9465	24	0	0	Pass
5.0232	24	0	0	Pass
5.0998	22	0	0	Pass
5.1765	22	0	0	Pass
5.2531	21	0	0	Pass
5.3298	18	0	0	Pass
5.4065	17	0	0	Pass
5.4831	17	0	0	Pass
5.5598	17	0	0	Pass
5.6364	17	0	0	Pass
5.7131	17	0	0	Pass
5.7897	17	0	0	Pass
5.8664	17	0	0	Pass
5.9430	17	0	0	Pass
6.0197	15	0	0	Pass
6.0963	15	0	0	Pass
6.1730	14	0	0	Pass
6.2497	11	0	0	Pass
6.3263	11	0	0	Pass
6.4030	11	0	0	Pass
6.4796	11	0	0	Pass
6.5563	11	0	0	Pass
6.6329	11	0	0	Pass
6.7096	11	0	0	Pass
6.7862	9	0	0	Pass
6.8629	9	0	0	Pass
6.9396	8	0	0	Pass
7.0162	8	0	0	Pass
7.0929	8	0	0	Pass
7.1695	8	0	0	Pass
7.2462	8	0	0	Pass
7.3228	8	0	0	Pass
7.3995	8	0	0	Pass
7.4761	8	0	0	Pass
7.5528	8	0	0	Pass
7.6294	8	0	0	Pass

7.7061	8	0	0	Pass
7.7828	8	0	0	Pass
7.8594	8	0	0	Pass
7.9361	8	0	0	Pass

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 7.31 **acre-feet**
On-line facility target flow: 4.0677 **cfs.**
Adjusted for 15 min: 4.0677 **cfs.**
Off-line facility target flow: 2.2884 **cfs.**
Adjusted for 15 min: 2.2884 **cfs.**

LID Report

LID Technique	Used for Water Quality	Total Volume Percent Treatment?	Volume Needs Treatment (ac-ft)	Infiltration Through Facility (ac-ft)	Cumulative Volume Infiltration (ac-ft.)	Comment
Trapezoidal Pond 3	POC	N	993535.27			N
100.00						
Total Volume Infiltrated			993535.27	0.00	0.00	
100.00	0.00	0%	No Treat. Credit			

Compliance with LID Standard 8
Duration Analysis Result = Passed

POC #2 was not reported because POC must exist in both scenarios and both scenarios must have been run. POC #3 was not reported because POC must exist in both scenarios and both scenarios must have been run.**Perlnd and Implnd Changes**
No changes have been made.

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APPENDIX D

Stormwater Design Calculations

Table 1. Wetpond Design Summary

Project No. 040010-016-01, CalPortland
Pioneer Aggregates South Parcel Project, DuPont, WA

Basin C WQ Pond										
Required Pond Volume	6.08	ac-ft								
Required Pond Volume	264844.8	cu ft								
Number of Ponds Wanted:	1									
Total Volume Required Per Pond:	264,845	cu ft								
Pond Design Based on Number of Pond Wanted:										
% Total Volume for Cell 1	0.3									
Total Volume for Cell 1	79,453	cu ft								
Depth Cell 1	6	ft	Length to Width Ratio:	3	Length:	162	ft	Total Bottom Area:	8,748	sq ft
Side Slopes XH:1V	3				Width:	54	ft	Total Top Area:	17,820	sq ft
								Volume Calculated:	79,704	Good? YES
Total Volume Required for Cell 2	185,391.4	cu ft								
Depth Cell 2	7	ft	Length to Width Ratio:	3.00	Length:	240	ft	Total Bottom Area:	19,200	sq ft
Side Slopes XH:1V	3				Width:	80	ft	Total Top Area:	34,404	sq ft
								Volume Calculated:	187,614	Good? YES
Basin D WQ Pond										
Required Pond Volume	8.55	ac-ft								
Required Pond Volume	372,438	cu ft								
Number of Ponds Wanted:	1									
Total Volume Required Per Pond:	372,438	cu ft								
Pond Design Based on Number of Pond Wanted:										
% Total Volume for Cell 1	0.3									
Total Volume for Cell 1	111,731	cu ft								
Depth Cell 1	6	ft	Length to Width Ratio:	3.03	Length:	200	ft	Total Bottom Area:	13,200	sq ft
Side Slopes XH:1V	3				Width:	66.0	ft	Total Top Area:	24,072	sq ft
								Volume Calculated:	111,816	Good? YES
Total Volume Required for Cell 2	260,706.6	cu ft								
Depth Cell 2	7	ft	Length to Width Ratio:	3.16	Length:	300	ft	Total Bottom Area:	28,500	sq ft
Side Slopes XH:1V	3				Width:	95	ft	Total Top Area:	46,854	sq ft
								Volume Calculated:	263,739	Good? YES

Notes

Yellow shading represents user input

Gray shading prepresents volume check for capacity

ac = acres, ac-ft = acre-feet, cu ft = cubic feet, ft = feet, sq ft = square feet

Table 2. Infiltration Calculations

Project No. 040010-016-01 CalPortland
Pioneer Aggregates South Parcel Project, DuPont,WA

Infiltration Pond C		Boring	15	15		18	18		
Original Ground Elevation	200	depth	168-178	178-188		168-778	178-188		
Existing Surface	25	D10	0.297	0.297		0.594	0.297		
Depth (bgs)	175	D60	12.7	9.525		12.7	4.75		
Analysis depth	12.5	D90	38.1	38.1		38.1	25.4		
		Fines	0.02	0.03		0.02	0.02		
	log (Ksat)		-1.35	-1.42		-0.79	-1.31		
	Ksat	cm/sec	0.04	0.04		0.16	0.05		
		in/hr	63.31	54.34		228.83	69.68		
			2.5 feet	10 feet		2.5	10		
		KsatAvg	55.92			KsatAvg	80.94		
	CFv	1	0.5	0.33	CFv	1	0.5	0.33	
	Correction Factor	0.36	0.18	0.1188		0.36	0.18	0.12	
	Ksat (in/hr)	20.132	10.066	6.644		29.140	14.570	9.62	8.13
								Ksat Final	8.1
Infiltration Pond D		Boring	8	8		7	7		
Original Ground Elevation	200	depth	168-178	178-188		168-180	180-185		
Existing Surface	25	D10	0.15	0.297		0.297	0.297		
Depth (bgs)	175	D60	4.75	12.7		9.525	12.7		
Analysis depth	12.5	D90	12.7	38.1		25.4	25.4		
		Fines	0.08	0.03		0.02	0.03		
	log (Ksat)		-1.53	-1.37		-1.23	-1.21		
	Ksat	cm/sec	0.03	0.04		0.06	0.06		
		in/hr	41.36	60.84		83.37	86.58		
		depth (ft)	2.5	10		5.0	7.5		
	KsatAvg	55.6033				KsatAvg	85.268		
	CFv	1	0.5	0.33	CFv	1	0.5	0.33	
	Correction Factor	0.36	0.18	0.1188		0.36	0.18	0.12	
	Ksat Design (in/hr)	20.02	10.01	6.61		30.70	15.35	10.13	8.37
								Ksat Final	8.2

Notes

Purple shading represents boring numbers

Pink shading represents Infiltration capacity calculations

bgs = below ground surface, cm/sec = centimeters per second, in/hr = inches per hour

Table 3. Infiltration Basin Design Summary

Project No. 040010-016-01, CalPortland
Pioneer Aggregates South Parcel Project, DuPont, WA

Basin C Designed Infiltration Pond:				
Length of bottom area (ft)	450			
Width of bottom area (ft)	113	Total Bottom Area:	50,762 sq ft	
Depth (ft)	5			
Side Slope X:1V	3	Total Top Area:	66,748 sq ft	(no freeboard - water surface)
Total Provided Volume (cu ft)	293,775			
Basin D Designed Infiltration Pond:				
Length of bottom area (ft)	1000			
Width of bottom area (ft)	37.7	Total Bottom Area:	37,655 sq ft	37655
Depth (ft)	5			
Side Slope X:1V	3	Total Top Area:	68,755 sq ft	(no freeboard - water surface)
Total Provided Volume (cu ft)	266,025			68755
Basin E Designed Infiltration Pond:				
Length of bottom area (ft)	600			
Width of bottom area (ft)	96.345	Total Bottom Area:	57,807 sq ft	
Depth (ft)	6			
Side Slope X:1V	3	Total Top Area:	82,120 sq ft	(no freeboard - water surface)
Total Provided Volume (cu ft)	419,781			

Attachment 1.b

#	Ord, 95 – 521 Condition	North Parcel Staff Report		Proposed Condition - South Parcel Project
1	(1) Excavation should be limited to that necessary to implement the high conveyor route/open cut alternative. The bluffs along Puget Sound and Sequalitchew Creek shall otherwise be retained. Excavation and clearing of the bluff above Puget Sound is permitted as necessary to bring the conveyor and access road down the bluff face to the shoreline. To protect steep slopes, to ensure visual and noise buffering, and to provide wildlife habitat, an undisturbed buffer shall otherwise be retained as required in the previous Site Plan Approval. (Condition 4, Ord. No. 485), Shoreline Approval (Condition 2, Ord. No. 486), and the 1995 Comprehensive Plan.	6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian confer with other signatories and will follow the procedures trail. The City will set forth in the Settlement Agreement regarding finalizing dedication of the easement.		Condition 1 of Ord 95-521 is Completed; No Change – No work is proposed on the bluffs or steep slopes along Puget Sound or Sequalitchew Creek.
	(2) The applicant must obtain a Sensitive Areas Permit for work within the bluff and its buffer; work must be undertaken in compliance with terms and conditions of that permit. In addition, the applicant must meet the City's development standards for work undertaken on hillsides of greater than 15% (but less than 40%) slope.	Not Applicable; no work proposed within the bluff and buffer		Condition 2 of Ord 95-521 is Completed; No Change - No work is proposed within the bluff and buffer
	(3) Appropriate erosion control facilities and procedures shall be implemented during construction to reduce the potential for soil erosion. Disturbed soil surfaces shall be revegetated within 14 days of completion of construction.	8. Appropriate erosion control facilities and procedures shall be implemented consistent with requirements of the NPDES Sand and Gravel General Permit and the approved reclamation plan.		Condition 3 of Ord 95-521 was Completed; No Change – Condition 8 from the North Parcel Staff Report will apply to the Expansion Area.
	(4) Topsoil removed from the access road and conveyor alignments shall be stockpiled for reuse as cover soil over disturbed areas.	Not Applicable		Topsoil from the access road and conveyor to the dock remain stockpiled as required by Condition 4 of Ord 95-521. No Change
	(5) Erosion of exposed cut slopes shall be reduced by engineering measures such as grading cut surfaces to appropriate slopes (1.5H:1V), planting vegetation, and placing armor (riprap rock or fabricated elements), as needed.	Addressed in DNR Reclamation Permit		Engineering measures to address erosion were implemented during construction of the plant and barge-loading dock as required by condition 5 of Ord. 95-521. Erosion of cut slopes within the South Parcel Project area will be addressed in an approved DNR Reclamation Permit.

	(6) The following slope stability measures will be required, and compliance will be verified as part of the grading permit process: (a) Proper geotechnical engineering, design, and construction of temporary and permanent cut and fill slopes shall be used to reduce the potential for adverse impacts due to slope failures. Failures most likely in the soil conditions at the site consist of stormwater erosion, surface raveling, and shallow surface slides. Permanent cut slopes exceeding the natural angle of repose shall not be constructed, to reduce the potential for initiating a progressive failure at the toe of the cut. Permanent cut slopes shall be no steeper than 1.5H:1V (67 percent). (b) Any stockpiled material from construction of the conveyor should be located a minimum of 150 feet back from the top of the existing slope for excavated slopes and outside the buffer area identified in the 1995 Comprehensive Plan to prevent it from acting as a surcharge that could tend to destabilize the slope. (c) The access road shall be constructed using methods such as fill-bench cut and end-hauling of excavated material to prevent the placement of loose material on the slope that could fail and be transported downslope. The access road surface shall be sloped inward, toward the slope, with a ditch to direct storm runoff away from the outside road shoulder and also to catch slope ravel and direct it back to the ditch line, thereby reducing maintenance and keeping the road clear of rocks. Check dams should be constructed at appropriate intervals (commonly 300 feet) in the ditch to control the amount and velocity of the water flow and erosion. (d) The access road shall be constructed on the "moderate" stability section of the slope and shall be as short as possible to lower the overall impact. Locating the road on the moderate portion of the slope will require a short-radius switch back to traverse the slope and stay within property boundaries. (e) Minor grade work at the toe of the slope would require some fill placement. Fills should be placed using appropriate geotechnical methods to improve stability and reduce the potential for raveling and slope failure. Inclined surfaces to receive fill would be cut with a series of benches as filling progressed to help "key in" the fill to the native soil. Fills would be placed using construction methods such as incremental lifts of appropriate thicknessess and compaction equipment and thoroughly compacted to a firm and unyielding condition.	Addressed in DNR Reclamation Permit		Engineering measures to address slope stability were implemented during construction of the plant and barge-loading dock as required by condition 6 of Ord. 95-521. Stability of cut slopes within the South Parcel Project area are addressed in the submittedland use application. Slopes will be graded and vegetated in accordance with approved DNR Reclamation Permit.

	(7) Concurrent clearing, mining and reclamation shall occur in maximum 40-acre increments. Mining shall follow the mining plan as approved by appropriate agencies. Restoration of the site will progress in increments and must include regrading, replacement of topsoil, and revegetation of the site as shown in the Pioneer Aggregates Mining and Reclamation Plan, a copy of which is included with the site plan application and transmitted herewith. The reclamation plan shall also be consistent with the City's landscape plan requirements. Any amendments to the reclamation plan required by the Department of Natural Resources (DNR) shall be communicated to the City, incorporated in the landscape plan, and shall be implemented by the applicant. Regrading and revegetation of each incremental mining area must be completed within two years of the completion of mining in that area. Any vegetation that dies within the first two years shall be replaced.	4. Mass clearing of the site shall not be permitted. Clearing, mining and reclamation of the site shall occur sequentially in approximate 40-acre segments. A maximum of approximately 120 acres may be in the process of being cleared, mined and reclaimed at any one time. Mining shall follow the mining plan as approved by DNR.		RCW 78.44.045 gives the Washington State Department of Natural Resources (DNR) the exclusive authority to regulate surface mine reclamation. Since the condition 7 of Ord 95-521 was written the policy and practices of the DNR has evolved. The DNR describes mine areas as "undisturbed", "disturbed", or "reclaimed", and requires disturbed areas associated with the mine to be covered by the mine reclamation permit. When the permit was written for the original mine, the processing area, the conveyor corridor, and the water treatment area were not included in the reclamation permit area. In 2009 DNR notified the Company that the reclamation permit must be revised to include these disturbed areas. The reclamation permit was revised and updated with the new application for the North Parcel mine area and approved by the DNR in 2014. This change substantially increased the number of disturbed acres covered under the reclamation permit over what was originally contemplated by the original mine reclamation plan. Because these areas are operational areas of the mine they will remain "disturbed" until the extraction is complete. The Surface Mining Act requires reclamation of all disturbed areas covered by the reclamation permit to be guaranteed by a bond. The DNR inspects the mine annually and adjusts the bond amount based on the number of disturbed acres remaining to be reclaimed. The amount of the bond is based on a formula designed to determine what it would cost the State to hire a contractor to reclaim the disturbed areas of the mine in the event that a permit holder fails to complete their reclamation obligation. Because of the assumptions made in the calculation, the amount of the bond is substantially higher than the actual costs the Company to complete reclamation on its own. The substantial cost of maintaining the

				reclamation bond is an incentive for the company to reclaim disturbed acres in an expeditious manner and work in a way that minimizes the number of disturbed acres. However, the pace of mining is determined by the market demand for aggregates and the pace of reclamation is dictated by the pace at which quality reclamation can be completed in a successful manner. Since the mine began operation, the Puget Sound region has experience unprecedented growth, and the region has sustained an unprecedented demand for construction aggregates as a result. At the same time, we have observed that some areas of the mine take longer to reclaim than others. For example, it is necessary to ensure that material placed where future development will occur is properly compacted and graded for drainage. Some material placed in these areas needs to be placed in shallow lifts during dry months of the year to achieve the required compaction levels. It takes more time to properly complete reclamation in these areas. The result is that, while reclamation continues at a steady pace consistent with requirements of the State Surface Mining Act and the mine reclamation permit, it has not always kept pace with the rate of extraction envisioned in condition 7 of Ord 95-521. The practical application of segmental mining and reclamation is that the pace of mining and reclamation depend on a variety of conditions and circumstances. The industry best practice is for reclamation to be completed expeditiously but at a pace that allows for quality successful reclamation. For this reason, we request that condition 7 of Ord 95-521 be revised to say: “(7) concurrent clearing, mining and reclamation shall occur in maximum 40-acre

				increments. Mining shall follow the mining plan as approved by appropriate agencies. Reclamation of the site will progress in increments and must include regrading, replacement of topsoil, and revegetation of the site as shown in the Pioneer Aggregates Mine Reclamation Plan approved by the Washington Department of Natural Resources.
	(8) During the first five mining increments, the applicant shall submit an annual report to the City evaluating implementation of the reclamation plan. The report shall be prepared by a qualified, independent consultant approved by the City. The report shall identify how restoration of the site compares to the approved reclamation plan and whether any corrective action is contemplated by the applicant or required by DNR.	Addressed in DNR Reclamation Permit		Completed; no changes.
	(9) The bluffs along Puget Sound and Sequalitchew Creek shall be retained. To protect steep slopes, to ensure visual and noise buffering, and to provide wildlife habitat, an undisturbed buffer a minimum of 65 feet in width shall be retained along Puget Sound and **100 feet along** Sequalitchew Creek. Based upon a field meeting of resource specialists of the applicable federal, state, and local wildlife resource officials, the **Puget Sound** buffer may be widened to a width not to exceed 100 feet, or as depicted in Appendix K, whichever is greater, depending upon the recommendations provided by the foregoing professionals. The buffer shall be measured from the top of the slope (i.e., the highest elevation of the bluff) to the limits of clearing for the conveyor and shall generally follow the alignment shown in the final EIS, Appendix K. The proposed buffer shown in Appendix K is greater than the 50-foot buffer required by the Sensitive Areas Ordinance and may vary from the widths depicted in the graphic.	6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.		The buffers required by condition 9 of Ord 95-521 along the Puget Sound Bluffs and Sequalitchew Creek ravine remain in place. A conservation easement and trail easement were executed for the 45-acre open spaces area as required by condition 6 of the North Parcel Staff Report. No Change.
	(10) The buffer along the bluff shall be maintained so as to reduce the potential for wind throw of trees. Trees that blow down shall be replaced. Existing open, degraded or damaged areas on the bluff shall be replanted with native species of substantial or mature size. The applicant shall submit a report to the City outlining any incidents of wind throw, evaluating the health of the buffer, and providing recommendations. The reports shall be prepared by an independent, qualified consultant, approved by the City. A report shall be submitted to the City in alternative years, beginning two years after operations begin.	6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.		Condition 10 of the Ord 95-521 has been fulfilled. A conservation easement and trail easement were executed for the 45-acre open spaces area. No Change.
	(11) No mining, construction or other activities shall occur in any portions of the Consent Decree area until authorized by the Department of Ecology.	Not Applicable		The Department of Ecology issued an Opinion letter under the Voluntary Cleanup Program dated February 2, 2021 regarding the Cleanup Action Plan prepared for the property and that addresses the Consent Decree area as well as the impacts of the Tacoma Smelter Plume. Ecology's Opinion Letter concluded that "cleanup of the

				property will reduce the concentrations of arsenic and lead to MTCA Method A cleanup levels for unrestricted land use," indicating that the land use restrictions of the Consent Decree would be eligible for being lifted following cleanup.
	(12) Engineering design shall reflect the presence of any geologically sensitive area(s). All structures, whether upland or marine, shall be designed and built in accordance with applicable building codes and regulations addressing slope stability, seismicity, environmental quality, and water quality.	No sensitive areas on site except for steep slope; buffer reduction per Condition No. 9		No geologically hazardous areas, are located within the Expansion Area. No Change.
	(13) The applicant shall pave the haul road, including the road shoulders, from the plant site to DuPont-Steilacoom Highway prior to commencing operations. During operation, this road will be swept and washed at least twice per week - and more frequently during summer months - to prevent dirt and dust accumulation. The City will monitor operations during the first summer of operation to determine the appropriate frequency of washing and/or sweeping; this could include multiple daily sweepings to mitigate dust impacts. Internal roads shall be sprayed with water or other dust-binding agents.	12. The applicant shall continue to implement its current operational best management practices to reduce air emissions, including but not limited to washing truck tires/wheels with a water-based cleaner before they exit the site, and washing and sweeping the haul road. The applicant shall operate the existing wheel wash in compliance with City and DOE requirements.		No Change
	(14) During construction and operation, truck tires/wheels shall be washed with a water-based cleaner before they exit the site to reduce dust emissions and to prevent exceedance of applicable quality standards.	12. The applicant shall continue to implement its current operational best management practices to reduce air emissions, including but not limited to washing truck tires/wheels with a water-based cleaner before they exit the site, and washing and sweeping the haul road. The applicant shall operate the existing wheel wash in compliance with City and DOE requirements.		No Change
	(15) Mining operations shall be operated in a manner designed to reduce dust emissions. This should include, but is not limited to, operational procedures that reduce the distance between the gravel loader and storage hoppers.	12. The applicant shall continue to implement its current operational best management practices to reduce air emissions, including but not limited to washing truck tires/wheels with a water-based cleaner before they exit the site, and washing and sweeping the haul road. The applicant shall operate the existing wheel wash in compliance with City and DOE requirements.		No Change
	(16) In accordance with PSAPCA regulations, "best available control technology" shall be used at the processing plant to ensure that no visible emissions occur. Such control measures shall be determined in compliance with PSAPCA standards and may include, but are not limited to, water spraying to prevent emissions at material transfer points and/or enclosing transfer points.	13. For logging and clearing operations, the applicant shall comply with PSCAA Regulation I, Section 9.15 regarding fugitive dust emissions, and shall implement reasonable precautions to prevent visible emissions as identified in that regulation.		No Change
	(17) The applicant shall maintain a high moisture content in sand and gravel material piles to minimize emissions of inhalable particulate matter. Periodic sampling may be required to verify that operations meet applicable particulate standards.	Existing conditions continue to apply to processing		No Change

	(18) Storm water runoff shall be controlled according to an approved storm water management plan, prepared consistent with the Department of Ecology Storm Water Management Manual for the Puget Sound Basin, that provides adequate retention/detention, promotes infiltration, and provides water quality treatment. The plan shall also incorporate the following elements: (a) Storm water runoff shall be directed to infiltration ponds located on-site. Ditches must be constructed on both sides of the main access road to collect runoff; ditches should be designed as biofiltration swales and shall be regularly and properly maintained. (b) No direct overland flow or discharge from the site to Sequalitchew Creek or the salt marsh shall occur. (c) Any runoff occurring in the mining area shall be routed to the lowest elevation, where it can infiltrate into the soil.	15. The applicant shall comply with all requirements of the NPDES Sand and Gravel General Permit and applicable regulations including preparation and implementation of a Stormwater Pollution Prevention Plan, an erosion and sediment control plan, monitoring stormwater, compliance with effluent limits, and implementation of applicable stormwater best management practices. 16. The applicant shall adopt and implement spill control and cleanup procedures and shall monitor stormwater consistent with NPDES permit requirements. The use of materials that could generate contaminants will be handled in accordance with best management practices and the site-specific spill prevention and response plan. 17. The mine's stormwater management system shall be designed consistent with City and DOE requirements. The applicant shall submit detailed engineering drawings to the City for review and approval. 18. Stormwater shall be infiltrated in stormwater in ponds located on the mine floor. Maintain a minimum vertical separation of 5 feet between the pond bottom and the seasonal high groundwater table, consistent with Ecology standards for infiltration ponds. The stormwater ponds shall be constructed, operated and maintained consistent with Ecology and City standards. 19. Runoff in the mine area shall be treated using two-celled wetponds constructed upstream of the infiltration ponds. The wetponds shall be constructed, operated and maintained consistent with Ecology and City standards.		Conditions 15 through 19 from the North Parcel Staff Report are applicable to management of stormwater runoff associated with the South Parcel Project. The South Parcel Project will also involve infiltration of groundwater collected at the toe of the eastern mine slopes, and managed by infiltration in a dedicated facility, separate from any stormwater infiltration ponds. The groundwater infiltration pond will be designed for the long-term infiltration of groundwater. Stormwater inputs to the groundwater infiltration pond will be minimized to the extent feasible, but may include stormwater from slopes above the groundwater collection system. A portion of the collected groundwater may also be directed through the mitigation wetland prior to infiltration. A minimum vertical separation of 5 feet between the bottom of the groundwater infiltration pond and the seasonal high groundwater table, will be maintained consistent with Ecology standards for infiltration ponds.“
	(19) Clearing, mining and reclamation shall occur in the phased and incremental manner identified in Condition 7 and environmental documents. No mass clearing/grading of the site shall occur.	4. Mass clearing of the site shall not be permitted. Clearing, mining and reclamation of the site shall occur sequentially in approximate 40-acre segments. A maximum of approximately 120 acres may be in the process of being cleared, mined and reclaimed at any one time. Mining shall follow the mining plan as approved by DNR.		Please see comments and proposed change to condition 7 of Ord. 95-521 above.
	(20) Activities associated with conversion of the Sequalitchew Creek narrow gauge rail line to a trail shall be limited to the dry season (July 1 through October 31). Crushed rock shall be used for the trail.	Not Applicable		Not Applicable
	(21) Access from the mining site to the Sequalitchew Creek trail shall minimize the need for clearing and grading; no excavation shall occur in the canyon.	Not Applicable		Not Applicable

	(22) To minimize disturbance and potential impacts to Sequalitchew Creek, the existing narrow gauge rail tracks shall be left in place. Gravel shall be placed between and adjacent to the tracks to make the trail usable for emergency vehicles and pedestrians.	Not Applicable		Not Applicable
	(23) Mining operations shall be conducted consistent with applicable Best Management Practices (BMPs) drafted by the Washington Department of Ecology. Mining BMPs applicable to the project that shall be implemented include the following: (a) Truck and equipment wash water shall be routed to approved retention and detention facilities equipped with oil-water separators prior to release to retention ponds; (b) Fuel handling facilities shall be located a minimum of fifty feet from the wash water retention facility; subject to fire department approval, fuel shall be stored above-ground in lined and bermed areas; run-off from these areas shall be routed to retention ponds for monitoring and clean-up in the event of a spill; (c) Internal drainage shall be used for recycling and to support groundwater recharge and minimize off-site discharges; (d) A fuel/hazardous waste management plan shall be prepared prior to occupancy; the plan shall be available on-site at all times and implemented; (e) Following any accidental spills, contaminated materials shall be removed and disposed of at an approved disposal site(s); (f) Excavation pits shall not be used as landfill disposal sites for unclassified or non-inert wastes; (g) If any underground storage tanks are hereafter approved for the facility, such tanks shall be double-walled to contain leaks; and (h) Any spills occurring at storage tank locations shall be contained by the use of concrete slabs and sumps.	15. The applicant shall comply with all requirements of the NPDES Sand and Gravel General Permit and applicable regulations including preparation and implementation of a Stormwater Pollution Prevention Plan, an erosion and sediment control plan, monitoring stormwater, compliance with effluent limits, and implementation of applicable stormwater best management practices.		No Change
	(24) A 25-foot separation shall be maintained between mining excavations and the seasonal high groundwater table except on slopes where a minimum 10-foot separation shall be maintained; vertical separation shall be shown on mining plan cross-sections. During mining, ongoing groundwater depth/elevation data, such as measurements from temporary piezometers, shall be generated and evaluated to guide planned mining activities. A groundwater elevation monitoring program, as described in the Final EIS Appendix E, shall be implemented. Groundwater elevations shall also be measured in on-site monitoring wells to detect any changes in vertical and/or horizontal groundwater flows. Operations in mining areas that are close to the seasonal groundwater table should reflect this proximity; procedures shall include such measures as moving vehicles that are not being used to other locations, not storing maintenance materials, and conducting maintenance activities in other locations.	Mine floor at 25 feet (29NGVD) to maintain a 10 ft separation from seasonal high groundwater table. Added requirement for test pits prior to mining each segment to confirm groundwater elevation. 14. Mining shall occur above the seasonal high groundwater table. The seasonal high groundwater elevation is estimated at 10 to 12 feet; the mine floor shall be established at an elevation of 25 feet (NGVD 29) to maintain a minimum vertical separation and a soil buffer between the mine floor and groundwater of 10 feet. Operations in mining areas that are close to the seasonal groundwater table shall not involve storage of maintenance materials or conduct of maintenance activities, and should avoid parking of vehicles that are not being used in operations. Note: Ordinance 95-521, adopting conditions of approval for the Pioneer		This condition will need to be updated to reflect dewatering proposed for the South Parcel Project. Outside of the South Parcel Project area, no changes are needed to the conditions requiring a 10 ft separation from seasonal high groundwater table.

		Aggregates mining project, requires a 25-foot separation from the seasonal high groundwater table and 10 feet on slopes (Condition No. 24). Staff notes that the source of the 25-foot requirement has not been identified in the 1993 Pioneer Aggregates Final EIS or associated technical reports. It is possible that a 25-foot mine floor elevation was misinterpreted as a recommended vertical separation.		
	(25) Water levels in existing and future wells on the site shall be monitored for the life of the project. The applicant shall prepare a monitoring program which shall be submitted to the Department of Ecology for review and approval. The program shall identify necessary actions if any significant impacts are detected, including but not limited to, modification of pumping rates. Lone Star Northwest proposes to pump groundwater from the deep aquifer, using test well TW-1 as a production well. (See Final EIS, page 117 and Figure 26 at page 110.) Subsequent to 25 years of operation of the gravel mining facility, or upon completion of the mining, whichever	Existing DOE – approved monitoring program for supply well at processing plant would continue to apply		No Change
	(26) The applicant shall, on an annual basis, monitor groundwater quality for chloride to detect chemical trends and the possibility of saltwater intrusion. Monitoring shall be consistent with the program attached to this report as Attachment 3.	Existing DOE – approved monitoring water quality monitoring program would continue to apply.		No Change
	(27) A water clarifying process shall be implemented to help reduce water consumed in processing through recycling.	Existing conditions continue to apply to processing		No Change
	(28) All facilities and activities shall be located, constructed and/or conducted in accordance with adopted federal, state and local regulations and guidelines to reduce the likelihood of spills of lubricants, fuels and chemicals employed in the processing and manufacturing processes proposed for the site.	15. The applicant shall comply with all requirements of the NPDES Sand and Gravel General Permit and applicable regulations including preparation and implementation of a Stormwater Pollution Prevention Plan, an erosion and sediment control plan, monitoring stormwater, compliance with effluent limits, and implementation of applicable stormwater best management practices.		No Change
	(29) To reduce the potential for groundwater contamination, the design of areas used for fueling, maintenance and washing equipment or vehicles shall include pavement aprons, retention systems and oil-water separators. A specified area for washing trucks shall be designated and shall be designed so as to contain wash water and prevent it from infiltrating to groundwater. Water-based cleaners shall be used.	Existing conditions continue to apply to processing		No Change
	(30) A long-term groundwater monitoring program, addressing water quality and quantity, shall be developed as required by the Department of Ecology in the context of water permitting.	Existing DOE-approved water quality monitoring program would continue to apply.		No Change
	(31) Pump tests shall be conducted if any additional wells are proposed to be developed. If the Delta aquifer is pursued as a water alternative, a groundwater monitoring program meeting Department of Ecology requirements, shall be developed.	Not Applicable		No Change – Not Applicable
	(32) As an interim measure, sanitary wastes shall be collected and hauled off-site. At such time as connection to the public sewer system is feasible, the project shall connect to the public system. The applicant shall construct all improvements necessary to connect to the public system according to City and Pierce County specifications.	Not Applicable		The project is connected to the public sewer system; Not Applicable
	Environmental Health			

	(33) On-shore and marine structures shall be designed and constructed in accordance with applicable building codes and regulations addressing slope stability and water quality.	7. Earthwork for excavation and reclamation shall be in accordance with the U.S. Mine Safety and Health Act and the Washington Surface Mining Act. Reclaimed slopes shall be no greater than 2:1 (a ratio of 2 horizontal to 1 vertical). Working slopes shall be at the angle of repose.		No Change
	(34) Storm water runoff shall be controlled according to an approved storm water management plan, prepared consistent with the Department of Ecology Storm Water Management Manual for the Puget Sound Basin, that provides adequate retention/detention, promotes infiltration, and provides water quality treatment.	17. The mine's stormwater management system shall be designed consistent with City and DOE requirements. The applicant shall submit detailed engineering drawings to the City for review and approval.		No Change
	(35) The over-water portion of the conveyor shall be enclosed to prevent spillage of gravel.	Existing Conditions Continue to Apply to the dock		No Change
	(36) To prevent contamination of marine waters, the following measures shall be required: **(a) No fueling shall occur at the dock; no supplies, chemical or other materials shall be delivered to the site by water;** **(b) An emergency spill response plan for the facility shall be approved by the Department of Ecology prior to occupancy and implemented by the applicant; any amendments to the plan attached herein shall be transmitted to the City (see also Condition 42, below);** **(c) The applicant shall prepare information, in the form of a handout, advising its customers and tug companies that Coast Guard regulations prohibit the discharge of sanitary sewage, ballast tanks and bilge water from tugboats in the Nisqually Reach/Delta. These handouts shall be provided to customers with invoices and/or bills of lading;** **(d) Sanitary wastes shall be collected and hauled off-site;** **(e) Condition 38 below, required to mitigate impacts to marine sediments, shall also serve to identify the extent of gravel spillage in marine waters and to identify the need for corrective action, if any; and** **(f) The applicant shall develop for the Department of Ecology a water quality monitoring program for marine waters extending the life of the project. Numerical monitoring may conclude at a time agreed upon in the report if results demonstrate no project-related water quality exceedences. The report shall contain the following information: reporting requirements; recommended frequency of monitoring; water quality parameters to be evaluated; and remedial actions to be followed if appropriate. The program shall be prepared by a qualified consultant and shall incorporate additional information or criteria required by adopted Department of Ecology guidelines.**	Existing Conditions Continue to Apply to the dock		No Change

	(37) The applicant shall in good faith cooperate with any program implemented by state or federal agencies or the Nisqually Tribe to increase flows in Sequalitchew Creek.	Addressed in 2011 (2012) Settlement Agreement		No Change
	(38) The applicant shall sound water depths in the berth area and its approaches to monitor any impacts from aggregate spillage, or the effects of natural accretion. Such soundings shall be performed annually and documented in a report submitted to the City. The report shall be prepared by a qualified consultant.	Existing Conditions Continue to Apply to the dock		No Change
	(39) The applicant shall require tugs using the dock loading facility to use lower power settings during docking to reduce the potential for propeller scour of sediments.	Existing Conditions Continue to Apply to the dock		No change
	(40) Dust emissions shall be regulated during construction by PSAPCA Regulation 1, Section 15, requiring contractors to take all reasonable means to minimize dust emissions.	12. The applicant shall continue to implement its current operational best management practices to reduce air emissions, including but not limited to washing truck tires/wheels with a water-based cleaner before they exit the site, and washing and sweeping the haul road. The applicant shall operate the existing wheel wash in compliance with City and DOE requirements.		No Change
	(41) If any suspected contaminants or suspicious waste materials are discovered during clearing or construction, activity shall cease, Ecology and City of DuPont representatives shall be notified, and appropriate corrective actions shall be taken.	10. Topsoil/Tacoma Smelter Plume. The site is within the Tacoma Smelter Plume (TSP) and potentially contains soils that are contaminated and require clean-up. The following conditions respond to comments on the proposal from the Department of Ecology (Final EIS, Chapter 8) and shall be implemented by the applicant. a. The applicant shall operate the facility to meet health and safety requirements and to limit worker exposure to potentially contaminated soils. The applicant shall notify operators, employees and construction workers that the property is located within the Tacoma Smelter Plume (TSP) and may contain contaminated soils and duff. b. Before undertaking any topsoil removal, the applicant shall enter into a Voluntary Cleanup Program (VCP) with the Department of Ecology pursuant to the Model Toxics Control Act (MTCA) RCW 70.105D and WAC 173-340. c. The applicant shall develop a cleanup action plan for the disturbed area of the property consistent with Ecology requirements, and will include compliance sampling and a remediation plan for area of the property, approximately 20 acres, that are not proposed for mining or open space. The cleanup action plan will acknowledge that the 45-acre open space area will be addressed in the Settlement Agreement process. The cleanup action plan will also include d. Prior to initiating topsoil removal, the applicant shall obtain an opinion letter from Ecology for property areas outside of the open space area. The opinion letter will state that the proposed duff and soil remediation, and the human health and environmental protections, will likely result in no further action under MTCA. The opinion letter will also acknowledge that the open space area will be addressed later as part of the Settlement Agreement process.		Please see the Opinion Letter from Ecology VCP program dated February 2, 2021 regarding the Cleanup Action Plan for the Property.

		e. City-permitted site development plans shall be consistent with the plans that Ecology reviewed and deemed consistent with MTCA. f. Because the soil and duff may be contaminated, appropriate best management practices (BMPs) shall be installed to avoid escaping dust, soil erosion and water pollution during clearing and grading activities. g. If contamination is left on the property, the applicant shall record a notice on title about the contamination to notify future buyers. The notice on title shall be recorded prior to any public access to the property, including the open space area. h. Prior to the public gaining any access to the property, including the open space area and any un-mined areas, the property owner shall obtain a "No Further Action" determination from Ecology indicating that the remediation plan and protections for human health and the environment were successfully implemented under MTCA. i. Any imported soil shall follow the Tacoma Smelter Plume Model Remedies Guidance, Chapter 9: Imported Soil Sampling.		
	(42) A final, site-specific emergency spill prevention and response plan shall be developed and submitted to the Department of Ecology when the final design of the facility has been determined but prior to occupancy. The plan shall cover all elements and operations of the facility (marine and upland). Appropriate oil spill containment equipment shall be available at the dock site.	15. The applicant shall comply with all requirements of the NPDES Sand and Gravel General Permit and applicable regulations including preparation and implementation of a Stormwater Pollution Prevention Plan, an erosion and sediment control plan, monitoring stormwater, compliance with effluent limits, and implementation of applicable stormwater best management practices.		No Change
	(43) During construction and operation of the facility, spills or releases of oils, hydraulic fluids, fuels and other petroleum products, paints, solvents, and other potentially deleterious materials shall be contained and reported immediately to Ecology and the City of DuPont. Spills in marine waters shall be reported immediately to the Nisqually Wildlife Refuge and/or other agencies with jurisdiction. Removal shall occur in a manner that will minimize potential contamination of land, ground or surface water, or Puget Sound.	15. The applicant shall comply with all requirements of the NPDES Sand and Gravel General Permit and applicable regulations including preparation and implementation of a Stormwater Pollution Prevention Plan, an erosion and sediment control plan, monitoring stormwater, compliance with effluent limits, and implementation of applicable stormwater best management practices. 16. The applicant shall adopt and implement spill control and cleanup procedures and shall monitor stormwater consistent NPDES permit requirements. The use of materials that could generate contaminants will be handled in accordance with best management practices and the site-specific spill prevention and response plan.		No Change

	(44) **To reduce the potential for spills of petroleum products into marine waters, no refueling of tugboats shall occur at the site. The applicant shall advise tug operations periodically of applicable vessel safety and overboard discharge regulations by providing handouts. Instructive information about special handling and best management practices for sewage, ballast tanks and bilge water shall be posted on the loading dock. Additionally, workers associated with the barging facility as well as tug/barge operators shall be advised of such information quarterly.**	Existing Conditions Continue to Apply to the dock		No Change
	(45) The kettle wetland located in the eastern portion of the site shall be preserved. Impacts to the wetlands from mining activities shall be avoided. A 200-foot buffer (greater than 200-feet between the wetland edge and the eastern property boundary) shall be established around the wetland. The wetland and buffer shall be placed in a separate tract and protected by execution of a covenant or other technique acceptable to the City.	Not Applicable		The proposed project will remove and mitigate the kettle wetland and its buffer as described in the critical areas report and wetland mitigation report.
	(46) If the applicant pursues development of the Delta aquifer as an alternative water source, a wetland monitoring and contingency plan shall be prepared. The plans shall be prepared by a qualified independent consultant approved by the City. The plan shall follow the guidelines and contain the information required in the Sensitive Areas Ordinance.	Not Applicable		No Change – Not Applicable
	(47) If any enhancement of the salt marsh is proposed as part of the wildlife management plan required in Condition 54, a monitoring and contingency plan shall be prepared according to the requirements of the Sensitive Areas Ordinance.	Not Applicable		No Change
	(48) Pursuant to the Consent Decree entered under the Model Toxics Control Act, no portion of the site within the former black powder area within the Consent Decree area shall be mined, altered, or used until any known hazardous substances have been removed. The alternative mining sequence, identified in the Final EIS as Figure 4, shall be implemented unless mining in the Consent Decree area is permitted by the Department of Ecology.	Not Applicable		Please see opinion letter from Ecology VCP program dated February 2, 2021 regarding the Cleanup Action Plan for the property.
	(49) If any suspected contaminants or suspicious waste materials are discovered during clearing, construction or mining, activity shall cease, Ecology and City of DuPont representatives shall be notified and appropriate corrective actions shall be taken.	Program for Tacoma Smelter Plume (TSP) included in Condition No. 10		Please see opinion letter from Ecology VCP program dated February 2, 2021 regarding the Cleanup Action Plan for the property.
	(50) Above ground facilities for the storage or handling of fuel, petroleum products or chemicals shall be designed, constructed and managed in accordance with applicable federal, state and local regulations to reduce the risk of spills, fire or explosion.	Existing Conditions Continue to Apply to processing facility and dock		No Change
	(51) The storm water control plan shall include catch basins and oil-water separators at fuel handling areas.	19. Runoff in the mine area shall be treated using two-celled wetponds constructed upstream of the infiltration ponds. The wetponds shall be constructed, operated and maintained consistent with Ecology and City standards.		No Change
	(52) The area used for washing trucks shall be concrete and designed to prevent infiltration of wash water.	Existing Conditions Continue to Apply to processing facility		No Change
	(53) The tank for the proposed process water clarifying system shall be lined to prevent infiltration.	Existing Conditions Continue to Apply to processing facility		No Change
	Habitat			

	(54) A wildlife management plan shall be prepared for the site. The plan shall be prepared by a qualified independent consultant and shall be submitted prior to issuance of any permits for construction. The consultant shall confer with the Washington Department of Wildlife and U.S. Fish and Wildlife Service. Wildlife management techniques identified in the plan and implemented on the site shall include, but are not limited to, the following: **- installation of eagle perch poles in appropriate locations;** **- retention of trees and snags along the bluff;** **- placement of bird nesting boxes off-site;** **- connection of on-site and off-site habitat if feasible, or planting of trees that provide substitute habitat for relevant species; and** **- enhancement of degraded portions to increase visual screening and improve habitat.**	No impacts; management plan/techniques not necessary. Condition 23 requires coordination with WDFW		No Change
	(55) To reduce disturbances to wildlife, coniferous and deciduous trees shall be planted in openings on either side of the conveyor facilities to help screen or reduce noise and glare from lighting.	Existing Conditions Continue to Apply to dock		No Change
	(56) Dock repairs, pile driving and other in-water construction shall be timed to avoid impacts to juvenile salmon and local Treaty Fisheries and shall be limited to the period identified by the Washington Department of Fisheries.	Existing Conditions Continue to Apply to dock		No Change
	(57) Pilings shall be of non-creosote material.	Existing Conditions Continue to Apply to dock		No Change
	(58) Grated decking shall be used in the near-shore environment to minimize impacts from shading.	Existing Conditions Continue to Apply to dock		No Change
	(59) To minimize light reaching the water, the minimum levels of lighting possible on the dock shall be used consistent with interests of safety and the requirements of applicable laws. A lighting plan shall be prepared in accordance with Condition 73 below. Conveyor lighting shall be shaded or muted and would be directional and of the lowest intensity possible. *See also* Condition 74, below.	Existing Conditions Continue to Apply to dock Condition No. 26 addresses conveyor lighting 26. The vegetated area along the Puget Sound bluff, west of the proposed mining area, screens the site from off-site views and shall be maintained consistent with Recommendation No. 6.		No Change
	(60) An undisturbed natural buffer shall be retained on the bluffs along Puget Sound and Sequalitchew Creek to provide wildlife habitat, protection of steep slopes, and visual and noise screening. The size and alignment of the buffer shall be as described in Condition 9 above.	6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.		No Change
	(61) Clearing, mining and reclamation shall occur in a phased, incremental manner and sequence as described in Condition 7 above. Tree planting, monitoring and maintenance of plantings shall occur consistent with the reclamation plan and conditions 7 and 10. The reclamation plan shall include a corridor from Sequalitchew Creek to other forested areas.	4. Mass clearing of the site shall not be permitted. Clearing, mining and reclamation of the site shall occur sequentially in approximate 40-acre segments. A maximum of approximately 120 acres may be in the process of being cleared, mined and reclaimed at any		Please see comments and recommended change to condition 7 above.

		one time. Mining shall follow the mining plan as approved by DNR.		
	(62) Trees within the buffers shall be maintained as described in Condition **10**.	6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.		No Change
	(63) Trees and snags along the bluff shall be retained to provide habitat.	6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.		No Change
	(64) Yew trees harvested from the site shall be made available for medical research.	Not Applicable		Not Applicable
	(65) Sightings of eagles or peregrine falcons shall be documented and reported to the Washington Department of Wildlife.	24. The project proponent shall continue to coordinate with the Washington Department of Fish and Wildlife through the field season (July 1 – October 1) as appropriate to evaluate and document the presence/absence of Western gray squirrels prior to removing Douglas fir forest habitat in the North Parcel Project Area.		Not Applicable
	(66) Dust control measures identified in Conditions **13** through **17** shall be implemented to avoid indirect effects to white-topped aster.	Not Applicable		Not Applicable
	Noise			
	(67) Construction and operation of the facility shall comply with City noise standards, as contained in the City of DuPont Noise Ordinance.	24. The project proponent shall continue to coordinate with the Washington Department of Fish and Wildlife through the field season (July 1 – October 1) as appropriate to evaluate and document the presence/absence of Western gray squirrels prior to removing Douglas fir forest habitat in the North Parcel Project Area.		Not Applicable

	(68) Pursuant to the terms of the Settlement Agreement, the Revised Project shall not cause an increase of more than 5 dBA over the existing measured Ldn (i.e. 24-hour noise level) at the eastern shore of Anderson Island. This standard shall be referred to as the Settlement Agreement Noise Standard. The existing baseline noise level Ldn at Cole Point on Anderson Island has been measured and is established as 53.5 dBA. The City and the applicant are members of a Cooperative Noise Compliance Committee ("CNCC") established under the Settlement Agreement. Compliance with the Settlement Agreement Noise Standard shall be determined pursuant to a Monitoring and Compliance Program to be developed by the CNCC and shall be measured against the adopted baseline. The applicant shall abide by the terms and process established in the Settlement Agreement for assurance that the Settlement Agreement Noise Standard is met.	Noise Monitoring and Compliance Program is associated with the dock and would continue		No Change
	(69) During barge loading, the end of the loading conveyor shall be lowered to within five feet of the deck of the barge to reduce noise attributable to falling aggregates.	Existing Conditions Continue to Apply to dock		No Change
	(70) Noise from the site shall be further mitigated through site planning and operational considerations, including but not limited to, the following: **- All equipment shall be properly maintained;** **- Implement measures to mitigate pile driver noise by enclosing the driver, applying damping compound to steel pipes, shrouding the hammer, or muffling gas pulses from diesel hammers; and** **- Rubber or synthetic-coated screens and resilient pads shall be installed at transfer points along the conveyor route.**	24. The project proponent shall continue to coordinate with the Washington Department of Fish and Wildlife through the field season (July 1 – October 1) as appropriate to evaluate and document the presence/absence of Western gray squirrels prior to removing Douglas fir forest habitat in the North Parcel Project Area.		No Change
	(71) State and City noise standards, as contained in WAC 173-60-040 and the City of DuPont Noise Ordinance, respectively, shall be met during construction and operation of the facility. Noise shall be limited accordingly. A noise monitoring, compliance and enforcement program, contained in Attachment 4 of Ord. No. 485, shall be implemented. The applicant shall comply with all procedures set forth in this program. Operating hours shall be limited or operations curtailed in the event of violations of the program.	24. The project proponent shall continue to coordinate with the Washington Department of Fish and Wildlife through the field season (July 1 – October 1) as appropriate to evaluate and document the presence/absence of Western gray squirrels prior to removing Douglas fir forest habitat in the North Parcel Project Area.		No Change
	(72) An undisturbed buffer of natural vegetation shall be retained around the perimeter of the site, consistent with Condition 9 and enhanced where degrated to reduce off-site noise impacts and screen operations.	Not Applicable		The condition will be updated consistent with Noise mitigation measures for the South Parcel Project.
	Lighting/Aesthetics			
	(73) A lighting plan shall be prepared and submitted to the City for review prior to building permit approval for the dock. The plan shall indicate the number, height, intensity and location of all lighting proposed for the dock and associated barge-loading facilities. The plan shall also include a discussion of effects of varying the height and number of lights as viewed from off-site locations. The plan should also specify operational measures, including but not limited to, directing light downward, using cut-off type lighting fixtures, turning off lights when facilities are not operating, and using the minimum lighting levels possible.	Existing Conditions Continue to Apply to dock		No Change
	(74) The lowest level of lighting consistent with safety and applicable regulations shall be used during dock operations. If permitted by federal regulations, dock lights shall be turned off when not needed for loading activities. Light reaching the water should be minimized. All light fixtures shall be directed downward and away from adjacent land uses.	Existing Conditions Continue to Apply to dock		No Change

	(75) The conveyor shall be lighted only at transfer points and only when the conveyor is operating or being maintained. The minimum levels of lighting permitted shall be used on the over-water section of the conveyor.	26. The vegetated area along the Puget Sound bluff, west of the proposed mining area, screens the site from off-site views and shall be maintained consistent with Recommendation No. 6.		No Change
	(76) A landscaping plan incorporating the measures identified in Conditions 77-82 shall be submitted as part of building permit applications. It should contain provisions for monitoring success of the plan and identify contingencies for responding to failure of any measures.	Reclamation Plan		Condition 76 of Ord. 95-521 was fulfilled at the time of plant and dock construction Reclamation will be completed in accordance with the DNR approved reclamation plan
	(77) To mitigate impacts to aesthetics and wildlife, existing trees surrounding cut areas shall be preserved and disturbed cut and fill areas replanted with native vegetation. The new plantings should be vigorous and mimic the character of the existing bank. The initial plantings should consist primarily of aggressive "pioneer" plant species and evolve into relatively stable plant communities that are similar to the surrounding existing vegetation.	Site is proposed to be logged prior to mining		Condition 77 of Ord. 95-521 was fulfilled at the time of plant and dock construction. Trees in buffer areas will be retained as described in the Tree Report. Revegetation of mined areas including tree planting will be completed as prescribed in a Reclamation Plan approved by DNR.
	(78) The ground surface and soil shall be prepared by grading slopes no greater than 1.5H:1V (horizontal:vertical), with intermediate benches at least every 25 feet of vertical elevation. The alignment of the terraces should be somewhat irregular and random so as not to create long linear and unnatural-appearing bench lines in the landscape.	7. Earthwork for excavation and reclamation shall be in accordance with the U.S. Mine Safety and Health Act and the Washington Surface Mining Act. Reclaimed slopes shall be no greater than 2:1 (a ratio of 2 horizontal to 1 vertical). Working slopes shall be at the angle of repose.		Reclamation pursuant to DN- approved Reclamation Plan.
	(79) Seeding, consisting primarily of grasses, woody groundcovers, shrubs and trees should be applied to the ground surface within two weeks of completion of construction by hydroseeding or similar means. The hydroseed mix should contain suitable fertilizers, mulch and binding agents. Grasses should be primarily low-profile rye and fescue - which can establish quickly and allow future development into native species groundcovers. Woody plant species should be a mix of natives, such as salal, Douglas fir, and big-leaf maple.	11 Revegetation would occur pursuant to DNR approved Reclamation Plan		Reclamation pursuant to DNR-approved Reclamation Plan.
	(80) Deciduous seedlings (1-2 years old) and conifer seedlings (3-4 years old) shall be planted after the seeding is established. Salvaging and transplanting existing plant material should be used if more cost effective than using imported nursery stock. Transplant stock may include Western Red Cedar, Indian Plum, Oceanspray, Pacific Dogwood, Red Alder, Amelanchier, Doughlas Fir, and Red Osier Dogwood.	11 Revegetation would occur pursuant to DNR approved Reclamation Plan 11. Subject to the procedures in Recommendation 10, topsoil shall be stockpiled and used for reclamation of mined areas, subject to the procedures in Recommendation 10. After application of topsoil, slopes shall be re-vegetated by plantings consistent with the requirements of the revised reclamation plan. Following the completion of reclamation, heavy equipment shall not operate on reclaimed slopes except for the construction or maintenance of pedestrian paths, access roads and other permitted facilities.		Reclamation pursuant to DNR-approved Reclamation Plan. Topsoil quality will be managed in accordance with the Cleanup Action Plan reviewed by the Washington Department of Ecology prior to their issuance of an Opinion Letter for the property.

	(81) Seeding shall be undertaken to germinate within six weeks and provide a green cover over the slopes. Some taller and broader trees shall be transplanted to provide greater cover and screening of the slopes at the top of the bank. The majority of transplanted trees should be at the top of the bank and should be 10-12 feet tall; the balance shall be no less than 3 feet at planting. Transplanted trees should be planted at a density of 75 trees per acre to provide a good screen upon initial planting. Trees selected for transplant should be those which will mature to significantly cover the view in five to ten years. All transplanted material shall be maintained and replaced if it dies within a two year growing period.	11 Revegetation would occur pursuant to DNR approved Reclamation Plan; no transplanting required. 11. Subject to the procedures in Recommendation 10, topsoil shall be stockpiled and used for reclamation of mined areas, subject to the procedures in Recommendation 10. After application of topsoil, slopes shall be re-vegetated by plantings consistent with the requirements of the revised reclamation plan. Following the completion of reclamation, heavy equipment shall not operate on reclaimed slopes except for the construction or maintenance of pedestrian paths, access roads and other permitted facilities.		Reclamation pursuant to DNR-approved Reclamation Plan. Topsoil quality will be managed in accordance with the Cleanup Action Plan reviewed by the Washington Department of Ecology prior to their issuance of an Opinion Letter for the property.
	(82) Seeding and planting should be accomplished in early September to late October, or early March to late April. This would allow relatively warm temperatures to germinate the seed, followed by periods of natural rainfall. In order to plant during these windows, finished grading should be planned to precede these periods as closely as possible. The barren-prepared slopes should be seeded within fourteen days of finished grading.	11 Revegetation would occur pursuant to DNR approved Reclamation Plan 11. Subject to the procedures in Recommendation 10, topsoil shall be stockpiled and used for reclamation of mined areas, subject to the procedures in Recommendation 10. After application of topsoil, slopes shall be re-vegetated by plantings consistent with the requirements of the revised reclamation plan. Following the completion of reclamation, heavy equipment shall not operate on reclaimed slopes except for the construction or maintenance of pedestrian paths, access roads and other permitted facilities.		Reclamation pursuant to DNR-approved Reclamation Plan. Topsoil quality will be managed in accordance with the Cleanup Action Plan reviewed by the Washington Department of Ecology prior to their issuance of an Opinion Letter for the property.
	(83) All structures within 25-35 feet of MHHW shall be painted a light blue-gray hue that is a flat (low reflective) color. This color is similar to a hue that varies with the atmosphere and the water on Puget Sound and would significantly minimize the contrast of the facilities with their surroundings. Higher structures should be painted an olive gray green, dark charcoal, or a combination of the two to blend in with the background.	Existing conditions continue to apply to the dock		No Change
	Historic			
	(84) The applicant shall be subject to the procedures set forth in the Memorandum of Agreement (MOA) between the Nisqually Tribe and the Weyerhaeuser Real Estate Company. Any skeletal remains inadvertently unearthed during construction or mining shall be treated in accordance with the MOA.	27. The dock conveyor shall be lighted only at transfer points and only when the conveyor is operating or being maintained. 28. The Applicant shall notify the cultural resources representative for the Nisqually Indian Tribe tribe at least 14 days prior to initiating any clearing or topsoil stripping in each mine segment. The Applicant shall make reasonable accommodations for the tribal Archaeologist, to observe all clearing and topsoil removal, and hire the tribal to write a closing report to the City and State Office of Archaeology and Historic Preservation documenting any contact with the Nisqually Indian Tribe and observed conditions.		No Change

	(85) Construction activities shall be monitored to identify any historic resources. Any resources discovered shall be treated according to state historic preservation requirements; appropriate agency personnel shall be notified.	27. The dock conveyor shall be lighted only at transfer points and only when the conveyor is operating or being maintained		Not Applicable
	Transportation			
	(86) Lone Star shall require proof of insurance for towing contractors using the DuPont facility. Tug operators shall be advised annually prior to the drift net fishing	Existing conditions continue to apply to dock and barge transport		No Change
	(87) Vehicular use of the access road shall be limited to personnel needed for barge loading, operation, maintenance and emergencies.	Existing conditions continue to apply		No Change
	(88) The following procedures shall be implemented to address conflicts with tribal and recreational fishing: (a) Incidents of conflicts between tugs/barges and tribal and recreational fishermen shall be recorded and reported to the City as they occur. (b) The City shall confer with agencies with jurisdiction and determine if the frequency of conflicts warrants further corrective action. Such action could include construction of a lighted sign system to notify boaters of high fishing activity, and/or scheduling of maximum barge loading during daylight hours during the drift gill net fishing season.	Existing conditions continue to apply to dock and barge transport		No Change
	(89) Lone Star Northwest shall assume the cost for construction of a rail crossing for the access road to reach the barge dock facility if deemed necessary by Burlington Northern Railways. The final determination will be made by the Tacoma Road Master's Office once Lone Star submits the required documentation at the Burlington Northern permit office.	Existing conditions continue to apply to dock		No Change
	(90) The mooring dolphin location shall be north of the barge loading facility and shall not conflict with the normal navigational channel.	Existing conditions continue to apply to dock and barge transport		No Change
	(91) The haul road, from the processing plant to DuPont-Steilacoom Road, shall be paved and maintained by the applicant.	Completed		Several commercial properties have been developed since Ord 95-521 was written that rely upon Wharf Rd. for access. Currently the property owners are working on a maintenance agreement for Wharf Rd. that will supersede the maintenance obligations in this condition.
	(92) Lone Star Northwest shall participate in near-term road improvements necessitated by its project. These shall include the following: (a) Changing the striping of the lanes on Barksdale Avenue between Wilmington and the I-5 southbound ramps to two lanes northbound (one left-turn/through lane and one right-turn-only lane), and two lanes southbound (one through lane and one right-turn-only lane). (b) Providing a right-turn-only lane on the Fort Lewis leg of the Barksdale/I-5 northbound ramp intersection. (c) Extending the left-turn lane on southwest-bound DuPont Steilacoom Road for vehicles headed for I-5 or Fort Lewis.	No impact identified		Road improvements required by condition 92 of Ord. 95-521 were completed. A Traffic Impact Assessment dated January 26, 2021 and submitted with the applications for the proposed project evaluated the potential transportation impacts associated with the South Parcel Project and compared those to impacts previously evaluated in the 2013 FEIS completed for the North Parcel Expansion. That assessment concluded that

	(d) Installing a traffic signal at the Barksdale/I-5 north-bound ramp intersection. (e) Interconnecting the three signals on Barksdale. Lone Star's share of these improvements, based on traffic generated, would have been eleven(11) percent. The cost of these improvements was estimated at $180,000 if ramp metering is not required. The estimate was made prior to elimination of the concrete and asphalt plants. Based on the estimate, the applicant's share would be $19,800. The applicant may submit revised estimates showing percentages without the eliminated plants, prior to building permit issuance. All funds shall be collected and administered according to state law.			the FEIS statement that the South Parcel Project would not adversely affect traffic operations in the site vicinity is still reasonable. Therefore, the South Parcel Project is not expected to exacerbate transportation conditions in the study area and additional traffic mitigation is not warranted
	(93) Lone Star shall implement the conditions imposed by Pierce County relating to improvements to the County road system necessitated by the proposal, and if deemed necessary by Pierce County, Lone Star shall construct an extra southbound lane on DuPont-Steilacoom from the mining road entry to Davis Place.	Not Applicable		Not Applicable
	(94) The applicant shall document and report to the City annually regarding the relative proportion of material shipped by barge and by truck. If the proportion of truck shipments to total shipments in any consecutive two-year period is twenty-five percent or greater, an updated traffic report shall be submitted to the City. The report shall be prepared by a qualified independent consultant approved by the City. The report shall evaluate any additional traffic improvements necessitated in whole or part by the increase in truck traffic relative to total traffic attributable to the operation. Prior to building permit issuance, the applicant shall also submit a report verifying the number of truck trips from the Steilacoom site currently passing through Steilacoom.	31. In planning for future public access to the 45-acre open space area, the City, in cooperation with other parties to the 2011 Settlement Agreement, will consider potential impacts to the old mining area (Site 1494-1(H)).		No Change
	(95) Lone Star shall participate in City-sponsored traffic planning to identify lone-term improvements to the road system. If reconstruction of the I-5 interchange is required, Lone Star shall contribute its fair share of this improvement. Lone Star's contribution shall be calculated as its proportionate share of traffic generated to the intersection (using passenger vehicle equivalents or other agreed upon methods).	Not Applicable		Not Applicable. See Response to Condition 92 above.
	Public Safety			
	(96) A fire protection plan, covering all project facilities and operations, shall be prepared. The plan shall be submitted to the Fire Department for City approval prior to building permit issuance.	Existing conditions continue to apply to dock and processing facility		Existing conditions continue to apply to dock and processing facility
	(97) Fire suppression systems meeting City requirements shall be installed at the loading dock.	Existing conditions continue to apply to dock		Existing conditions continue to apply to dock and processing facility
	(98) If the emergency access road to the dock is secured to restrict entry of non-authorized personnel, the City shall be provided with a key to permit entry.	Existing conditions continue to apply to dock		Existing conditions continue to apply to dock and processing facility
	(99) On-site security shall include fencing, lighting and an entry gate.	Complete; Existing conditions continue to apply		Complete; Existing condition continue to apply
	(100) Fire suppression systems meeting City requirements shall be installed at the processing plant. Fire alarms and sprinkler systems meeting Fire Code specifications shall be installed.	Existing conditions continue to apply processing facility		Complete; Existing condition continue to apply
	(101) If underground storage tanks are proposed or required, the applicant shall comply with applicable construction, safety and monitoring provisions.	Existing conditions continue to apply to processing facility		Complete; Existing condition continue to apply
	Public Access			

	(102) Public access shall be provided along the narrow gauge railway north of Sequalitchew Creek to the Puget Sound shoreline. The applicant shall in good faith cooperate and support in a non-financial way, the City's efforts to retain only the curved portion, extending approximately 100 feet from the shoreline, of the existing dock at the mouth of Sequalitchew Creek.	Completed; Not Applicable		Completed; Not Applicable
	(103) Under the Settlement Agreement, WRECO has agreed to dedicate to the City an area for public trail access along the existing narrow gauge rail on the north side of Sequalitchew Creek to the Puget Sound shoreline in the vicinity of the existing dock. Other improvements provided in connection with public access shall include the following: (a) A cleared public parking area shall be provided in the general location shown in the Final EIS on Figure 22. An easement necessary to provide access shall be obtained from the Weyerhaeuser Company. (b) Educational signs shall be installed at intervals along the trail to notify the public of the sensitivity of this environment, particularly at and near the salt marsh. The existing buffer of the salt marsh along the Sequalitchew Creek shall be maintained. Prior to building permit approval, the applicant shall submit a plan that maintains visual access to the salt marsh but prevents intrusion by pedestrians through signs, plantings and other appropriate means. The City shall review and approve the design and location of all signs. Additional native plantings shall also be provided to discourage intrusion into the salt marsh. (c) To minimize disturbance and potential impacts to Sequalitchew Creek, the existing narrow gauge rail tracks shall be left in place. (d) The applicant shall provide picnic tables and trash cans for local use at two locations along the shoreline. Such locations shall be identified by the City.	Completed; 2011 (2012) Settlement Agreement and 6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.		Completed; Not Applicable
	(104) Until development is permitted in the Consent Decree area, or public access to the shoreline can be provided via the Sequalitchew Creek road, the applicant shall maintain the existing access down the bluff from the Longshoreman's trail and parking area.	Not Applicable		Not Applicable
	(105) Lone Star Northwest, in cooperation with Weyerhaeuser, shall submit a plan to the City prior to building permit issuance identifying areas to be dedicated to the public as parts of the open space and trails system. The plan shall include a schedule and any proposed conditions of education to meet the intent of Z/OPE 030.010.000. Pursuant to the foregoing section, Lone Star Northwest shall be required to dedicate to the City one-half of the buffer area for open space or trail purposes, to mitigate the potential impacts of development of the City's natural and recreational resources and to promote the public health, safety and welfare.	6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.		Completed

	Sewer & Water			
	(106) Lone Star shall purchase potable water for domestic use (8 up to 109 gpm) from the City water system. The applicant shall construct all on-site and off-site improvements necessary to connect to the City system.	Existing conditions continue to apply		Existing conditions continue to apply
	(107) As an interim measure, sanitary wastes shall be collected on-site and trucked to the Chambers Creek Treatment Plant. Lone Star shall connect to the public sewer system when such connection is feasible as determined by Pierce County. The applicant shall construct all on-site and off-site improvements necessary to connect to the public system.	Not Applicable		Not Applicable
	(108) Water conserving fixtures shall be installed in wash rooms.	Existing conditions continue to apply to processing facility and office		Existing conditions continue to apply to processing facility and office
	(109) All on-site facilities shall be designed to reduce fire flow requirements through use of alarms and sprinklers.	Existing conditions continue to apply to processing facility and office		Existing conditions continue to apply to processing facility and office
	Solid Waste			
	(110) The applicant shall encourage recycling of paper, metal and used old wastes.	Existing conditions continue to apply		Existing conditions continue to apply
	(111) Proposed methods of storing and disposing of fines (i.e. sand) shall be submitted to the City prior to building permit issuance. If possible, accumulated fines from the clarifier should be mixed with topsoil and used in reclamation.	Existing conditions continue to apply		Existing conditions continue to apply
	Assurances & Enforcement			
	(112) Lone Star Northwest shall post a bond, letter of credit, or other assurance device in the amount of five million dollars ($5,000,000) in favor of the City. This shall be in addition to bonds of assurances required by any other conditions of approval of the project. The assurance device or security shall be in a form acceptable to, and shall be approved by, the City Attorney. In the event of default or non-compliance with any terms or conditions of this site plan approval, the Shoreline Substantial Development Permit, or the Conditional Use Permit, the City may apply the proceeds of the bond or other assurance device to enforce such terms or conditions.	34. The bonding requirements of Ordinance 95-521, Condition 112, shall continue in effect to ensure performance of and compliance with all conditions of approval applicable to North Parcel mining. The amount of bond may be reduced at the discretion of the City.		The amount of the bond should be adjusted to match the amount of a calculable expense the City can potentially foresee resulting from the project.
	(113) The applicant shall pay the cost of all plans, reports and monitoring programs required by these conditions of approval and for the time required by City staff to review such plans, reports and programs. These plans, reports and programs include the following: (a) Reclamation plan implementation (first 5 mining increments); (b) Temporary erosion and sedimentation control plan; (c) Forest management reports in alternative years; (d) Monitoring to determine road sweeping/washing frequency; (e) Amendments to emergency spill response plan, (f) Water quality monitoring program (life of project); (g) Groundwater elevation monitoring program; (h) Wildlife management plan; (i) Noise monitoring program/reports; (j) Lighting plan; (k) Mode split report; (l) Fire protection plan; and (m) Open space plan. City officials and representatives of Lone Star Northwest shall meet prior to issuance of any building permit and reanalyze the fiscal impacts of this site plan approval on all City Departments and the City's provision of municipal services. If there are negative fiscal impacts evident as a result of such meeting and analysis, then Lone Star Northwest shall meet with City of DuPont officials to discuss additional fiscal contributions to mitigate such unforeseen fiscal impacts.	35. The applicant shall pay the cost of all plans, reports and monitoring programs required by these conditions of approval and for the time required by City staff to review such plans, reports and programs		The applicant shall pay the cost of all plans, reports and monitoring programs required by these conditions of approval and for the time required by City staff to review such plans, reports and programs

	(114) Any changes to mitigating measures, the terms and conditions of the approval, and the scope of the project may be approved only by the City Council, and not by any other City official, during the entire term or duration of this permit or approval.	Not Applicable; City changed to Hearing Examiner process		Any changes to these , conditions shall be reviewed and approved through the City's' current regulatory approval process .

Attachment 1.c

Description of Proposal

The Pioneer Aggregates South Parcel Project ("South Parcel Project") includes horizontal expansion of mining into approximately 188 acres previously undisturbed by mining, and vertical expansion of approximately 125 acres where re-mining will deepen a portion of the existing mine. The South Parcel Project would extend mining at the current rate for approximately 14 additional years.

This is an overview of the project elements. For a more complete description please refer to the Stormwater Management Report and Plan Set included in this application package.

Project Location

The proposed South Parcel Project activities will be focused southeast of the existing Pioneer Aggregates Mine in the City of DuPont, southwestern Pierce County, sections 22, 23, and 26, Township 19 North, Range 1 East of the Willamette Meridian (see Figure 1 attached). The South Parcel Project is bordered to the north and west by the existing Pioneer Aggregates mine; to the east by industrial/distribution facilities including Amazon, Dania, Pier 1 Imports, and FedEx; and to the south by Sequalitchew Creek and the Creekside Village residential development. The South Parcel Project would occur on lands owned by Weyerhaeuser Company and leased to CalPortland.

The South Parcel Project include mining within areas previously undisturbed by mining (termed the "Expansion Area") and mining deeper within a portion of existing mine, referred to as the "Re-Mine Area". The Expansion Area is approximately 188 acres and is comprised of three subareas (see Figure 2 attached). The Kettle Area is a 10.8-acre previously undisturbed area. The 9.2-acre Buffer Strip is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the South Parcel. The South Parcel is 168 acres located southeast of the original mine and inside the Mineral Resource Overlay in the City of DuPont's adopted Comprehensive Plan.

The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where groundwater limits the depth of current mining activities.

Project History

Since the 1980s, the site, which encompasses the existing mine and the expansion area, has been known to contain considerable deposits of high-quality aggregate materials. Glacier Northwest (then Lone Star Northwest) initiated the process of environmental review for the existing mine site in 1992, with the publication of the Pioneer Aggregates Mining Facility and Reclamation Plan EIS. Subsequent environmental review was completed for a new barge loading facility in 1995.

Due to water quality and treatment concerns, Glacier Northwest ("Glacier") did not pursue mining in the expansion area at that time. Following the remediation of the area in 1992, the expansion area was removed from the National Priorities List, and the area was deemed technically feasible for mining.

Additionally, portions of the existing mine site and the proposed expansion area were part of the Washington State Model Toxics Control Act ("MTCA") cleanup site known as the Former DuPont Works Site, associated with an industrial explosives production facility that operated

between 1909 and 1976. Following clean-up activities in 1993 to 1996, Parcel 2 of the Former DuPont Works Site, which includes portions of the existing mine and the expansion area, was deemed by the Washington State Department of Ecology ("Ecology") to require no further remediation activities except for institutional controls to maintain the industrial use. The area was then removed from the original Consent Decree. Glacier then began mining the materials from the existing 355-acre mine site in 1997.

Parcel 1 of the Former DuPont Works Site included approximately 16 acres of the South Parcel mine expansion area. Clean-up activities on Parcel 1 were conducted between 2000 and 2007. Ecology issued a certification of completion of the active cleanup elements for the Former DuPont Works Site in April 2007.

The Former DuPont Works Site is under a restrictive covenant that limits development to industrial use within Parcels 1 and 2. Ecology conducts periodic reviews of both Parcel 1 and Parcel 2 every five years to ensure continued protectiveness of the completed cleanup action and compliance with the restrictive covenant.

The Expansion Area is also located within the Asarco Tacoma Smelter Site and in an area where surface soils are likely to have elevated concentrations of arsenic and lead associated with air pollution from the former copper smelter in Tacoma.

Glacier submitted a cleanup action plan (CAP) that addresses potential contamination on the property to the Washington Department of Ecology and requested an opinion under the Voluntary Cleanup Program (VCP). Ecology issued its opinion on February 2, 2021. In that letter, Ecology stated:

> *"The cleanup of the Property will reduce the concentrations of arsenic and lead to MTCA Method A cleanup levels for unrestricted land use. The need for the existing Former DuPont Works Site restrictive covenants, limiting the development to industrial uses because of residual arsenic and lead contamination, will no longer be needed within the Property after the successful cleanup."*

Settlement Agreement

In 2006, as part of its annual Comprehensive Plan amendment process to comply with the state Growth Management Act, the City of DuPont approved CalPortland's application to expand the City's Mineral Resource Overlay to include an approximately 200-acre area leased by CalPortland southeast of the Existing Mine ("South Parcel") and an approximately 201-acre area located north of the existing mine ("North Parcel'). After the City issued a project-specific EIS for the South Parcel in 2007, CalPortland then submitted permit applications to mine the South Parcel. After the City issued a staff report in January 2009, a group of environmental and conservation organizations invoked a dispute resolution process with regard to the South Parcel activities and mitigation measures proposed at the time. This dispute resolution process resulted in a "Settlement Agreement for DuPont Mine, Restoration of Sequalitchew Creek Watershed, and Preservation of Puget Sound Shorelands and Adjacent Open Space," signed by CalPortland, the Nisqually Delta Association, the Black Hills Audubon Society, the Tahoma Audubon Society, the Seattle Audubon Society, the Anderson Island Quality of Life Committee, the Washington Environmental Council, People for

Puget Sound, the Washington Department of Ecology, and the City of DuPont, with an effective date of February 2012.

The Settlement Agreement set forth a process for the submittal and review of permit applications (including SEPA review) for the North Parcel first, and then the South Parcel. As a preferred alternative to the mitigation CalPortland had originally proposed in 2007 for the South Parcel, the Settlement Agreement also prescribed the process for the development, funding, and implementation of a Sequalitchew Creek Restoration Plan to help restore and enhance the Sequalitchew Creek watershed, including flows along the length of the Sequalitchew Creek, as long desired by the City and conservation groups. Further, the Agreement ensured that buffers along Puget Sound and Sequalitchew Creek would be maintained at a prescribed distance. To achieve these goals, the Agreement set forth a detailed series of mining and restoration actions to occur in a prescribed sequence over the next several years.

Current Mining Activity

CalPortland's original sand and gravel mine was permitted in 1997 (355 acres). As provided under the Settlement Agreement, CalPortland applied for permits in 2013 for the North Parcel Mine Expansion to allow mining of approximately 142 acres within the North Parcel. Following the publication of a Final EIS in June 2013, the North Parcel mining expansion was permitted in 2014.

Mining activities at the existing site include mining, processing, transport of sand and gravel, and manufacturing of concrete. The processing area is located adjacent to the mine site on a 52-acre parcel owned by Glacier. Sand and gravel is removed from the mine by bull dozers and wheel loaders and transferred to the processing area by conveyor belts. At the processing facility, the material from the mine is crushed, washed, and separated into different size gradations. Aggregate products are stored in stockpiles in the processing area for distribution.

After completion of the production process, the majority of the finished aggregate products are transported from the plant area by conveyors and placed onto barges (approximately 80 percent) at Glacier's dock and barge-loading facility at Tatsolo Point. The remainder (approximately 20 percent) is sold as aggregate or used to make concrete on-site; in both cases it is transported by truck.

Water used to wash gravel during processing is recycled through a clarifying process to remove silt and clay. This fine material is then run through a belt press to remove excess water and transported by truck and placed in holding cells in the mine where it is allowed to dry for up to three years. After drying, fines may be used to raise the floor of the mine by placing the material in cells separated by rock curtains to facilitate drainage. The material is placed in approximately 6-inch lifts and compacted to a material dry density of 90% (ASTM:D-1557) or greater. Once filled to the desired height with fines from the belt press in this manner, a gravel cap of not less than 10 feet is placed over the compacted fines to mitigate potential for settlement and facilitate drainage.

Proposed Project

The proposed South Parcel Project includes expansion of the mine footprint by approximately 188 acres and extension of the existing rate of mining for an additional approximate 14-year period (depending on market conditions), increasing the available sand and gravel resources by 30 to 40 million tons. The expansion area is located within a Mineral Resource Overlay applied by the City of DuPont's Comprehensive Plan. The purpose of the overlay is to conserve mineral resources of long-term commercial significance, as required by the Grown Management Act.

The South Parcel Project would involve six primary activities: logging, clearing and topsoil removal, groundwater management, mining, processing & transport, and reclamation. These activities would overlap, with multiple actions occurring at any one time.

Logging. Timber was logged from the South Parcel several years ago, but tree cutting would still be needed prior to clearing and mining in the Expansion Area. A substantial portion of the proposed mining would occur within previously reclaimed areas of the existing mine (i.e., the Re-Mine Area) or in previously unmined areas where Scot's broom shrub dominates the landscape. The Expansion Area would be logged at a single time prior to initiating mining.

Clearing and Topsoil Removal. Prior to mining, excavators would be used to remove stumps and vegetation. This material would then be processed through a portable tub grinder and used to amend topsoil for use in reclamation. Clearing and topsoil removal would occur in the mine area, in segments as mining advances into the Expansion Area, over the life of the project.

The Expansion Area is located downwind of the former Asarco copper smelter and refinery in Ruston, Washington. Airborne pollution emitted from the former smelter has resulted in a 1,000-square-mile, area-wide plume of arsenic- and lead-contaminated soil known as the Tacoma Smelter Plume ("TSP"). Surficial soils in the Expansion Area that have been undisturbed since the mid-1980s may contain arsenic and lead at concentrations above cleanup levels. These soils would be cleaned up under an approved plan developed in consultation with Ecology through the Voluntary Cleanup Program ("VCP"). The plan will incorporate the same process that is being successfully implemented on the North Parcel.

Groundwater Management. An existing aquifer is present in the sands and gravels to be mined under the South Parcel Project. Wells will be installed and pumped in advance of mining to intercept groundwater and dry out the gravels for mining. The purpose of mining a trough is to minimize the amount of time that active dewatering by pumping wells is required. Once mining of each section of trough is completed, the adjacent wells can be turned off, allowing groundwater to passively seep from the stable mine slope and flow by gravity to an infiltration facility on the floor of the existing mine. After mining the trough along the perimeter, gravel will be extracted from the interior area.

A detailed dewatering plan has been developed and is described in detail in the Monitoring Plan. The dewatering plan involves four steps, occurring over very different time scales. The four steps are:

The initial step is a 60-day pumping test that is completely reversible (i.e., no gravel would be extracted during the test). The results of that test would be analyzed to confirm predictions from the groundwater drawdown model, and used to adjust the dewatering plan (well spacing, well screening, etc.) as necessary prior to commencing the next phase.

The second step involves installing and pumping additional dewatering wells to lower water levels in the first mine segment in preparation for mining. This step would last about six months and functions as a greatly expanded pumping test. As with the initial step, it is also completely reversible. Groundwater observations during pumping would be compared to model predictions in order to confirm that actual changes in groundwater are within the range predicted during project planning, when potential impacts from the project are evaluated. This step will confirm model predictions before any gravel is removed from the Expansion Area.

The third step – active dewatering during mining – involves mining the trough described above. Additional dewatering wells will be installed and pumped as mining progresses. Mining would begin at the location farthest from the Edmond Marsh and Sequalitchew Creek and proceed slowly south. Completing the trough would require five to eight years depending on market conditions and the success in meeting predicted groundwater levels. The potential impact on groundwater levels builds slowly over time as wells are added and mining progresses south. This allows ample opportunity to monitor, confirm model predictions, and adapt to the conditions observed before mining proceeds into each dewatered segment.

The final step – passive dewatering – begins when mining of the trough described above is complete and the last dewatering well is turned off. Passive dewatering represents the groundwater condition that will continue in perpetuity. Groundwater, no longer intercepted by wells, would form seeps at the toe of the eastern mine slope. It would flow by gravity through a conveyance ditch to newly created wetlands on the bottom of the existing mine and eventually to an infiltration pond. Once this step has begun, further mining activities in the interior of the South Parcel would not affect groundwater.

Mining. Mining under the South Parcel Project will proceed slowly from the north to the south over a period of five to eight years, extracting gravel to create a broad trough along the eastern property boundary. The method of mining will be identical to that currently used in the permitted mine area. A dozer would push excavated material from the top of the mine face to two front-end loaders working on the mine floor. The front-end loaders would scoop-up the sand and gravel and dump it into portable hoppers that feed conveyors leading to the processing area.

The mine face of each sequence area will be a maximum of 80 feet high and will decrease as reclamation activities progress. During reclamation, the graded side slopes and mine areas will be revegetated and stabilized in accordance with the mine reclamation plan.

A conveyor will start at the north end of the Expansion Area and will be extended south as mining progresses. The conveyor is comprised of a 48-inch-wide rubberized belt that is supported by a series of rollers, called idlers, mounted on steel framed segments that support the conveyor about five feet off the ground.

As mentioned above, clearing of the expansion area will occur in sequences lasting approximately one year, in coordination with mining and construction activities. Mass clearing of the site will not occur.

A 20-foot-high noise berm would be constructed along the southern boundary of the South Parcel would be located behind retained vegetation and would help reduce potential noise associated with mining for adjacent land uses. The berm will be constructed prior to clearing in the adjacent portion of the South Parcel.

The project will directly impact an approximately 1.78-acre kettle wetland located within the existing mine just west of the South Parcel. The kettle wetland will be impacted by dewatering in preparation for mining, then removed during the initial phases of mining of the South Parcel Project. Impacts to the kettle wetland will be mitigated by creation of a larger wetland within the existing mine. Detailed analysis of the wetland impacts and mitigation are described in the wetland mitigation plan.

Processing & Transport. Material mined under the South Parcel Project would be conveyed from the mine to the existing processing facility and would be processed in the same general manner as at present. The material extracted under the South Parcel Project is anticipated to have a higher moisture content and fines content than the aggregate currently being extracted. As a result, there may be minor adjustments to some of the equipment used in the processing area, but the overall process and most of the equipment would remain unchanged.

Water is used to wash the raw material conveyed from the mine to remove silt and clay. Sand and gravel smaller than 1.5 inches pass through a screening and classifying process that separates and conveys the material to a series of stockpiles sorted by size and stacked on the south side of the processing plant. Stones larger than 1.5 inches are crushed, sorted by size and conveyed to a series of crushed-rock stockpiles sorted by size north of the processing plant. Screening equipment, rock crushers and other processing equipment are located between the stockpiles of sorted rock products. Custom blended rock products are also made to customer specifications.

More than 95 percent of water used to process the mined material is recycled through a treatment system where silt and clay is removed so the water can be reused to process more raw material from the mine.

The mode and extent of transporting aggregate products from the site would not change relative to existing operations. Approximately 80 percent of the product would be loaded onto barges at the existing dock at Tatsolo Point and transported to the Puget Sound regional market by barges. Approximately 20 percent of the product would be transported to the local market by truck. Some material would continue to be incorporated into concrete at the existing on-site concrete batch plant serving the local market.

Reclamation. As mining progresses, completed mine segments would be reclaimed. The reclamation plan will be reviewed by the Washington State Department of Natural Resources ("DNR") for consistency with the Surface Mining Act (RCW 78.44). In general, reclamation will consist of regrading, replacement of topsoil, and revegetation, Glacier is in the process of preparing an application to revise the existing reclamation plan incorporated into the surface mining permit. The DNR cannot approve the revised reclamation plan until after the City's permits are issued. The proposed reclamation plan will be similar to the plan approved by the DNR for the existing mine.

Estimated Volume and Extraction Rates

Estimated mining quantities are shown in Table 1. Based on past market demand, material would be extracted at an average rate of approximately 2.8 million cubic yards per year. An estimated 30 to 40 million cubic yards of material would be extracted as part of the South Parcel Project, which would extend the life of the current operation by about 14 years. The actual extraction rate and life of the mine will depend on the market demand for materials.

Table 1 – Estimated Annual Quantities and Timing of Aggregate Mining

Timing	Existing Mine[1]	South Parcel Project
Years 1 through 14	1.4 million cy	1.4 million cy
Years 15 through 19	0	2.8 million cy

Notes: cy is cubic yards.
1) Existing mine includes North Parcel.

Assessor's Parcel Numbers

The proposed South Parcel Project would include activities in the following parcels:

South Parcel: 0119233011, 0119233014, 0119233015, 0119233016, 0119233017, 0119262015, and 0119262016

Existing Mine (Re-mine Area, mitigation wetland, stormwater/groundwater conveyances and ponds): 0119233013, 0119224009, 0119233012, 0119224008, 0119224005, 0119224006, 0119224007, 0119233010, 0119232012, 0119221010, 0119221011, 0 119221015, 0119232011, 0119232010, 0119232009, 0119232008, 0119221014, 0119221013, 0119221004 and 0119232006.

LEGEND:

- South Parcel Expansion Area (188 ac)
- South Parcel Mineral Resource Area Expansion
- Mining Limits (existing and proposed, 620 ac)
- Pioneer Aggregates Property (791 ac)
- Kettle Wetland
- Sequalitchew Creek

NOTES:
Imagery: 2017 USDA NAIP

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Feet

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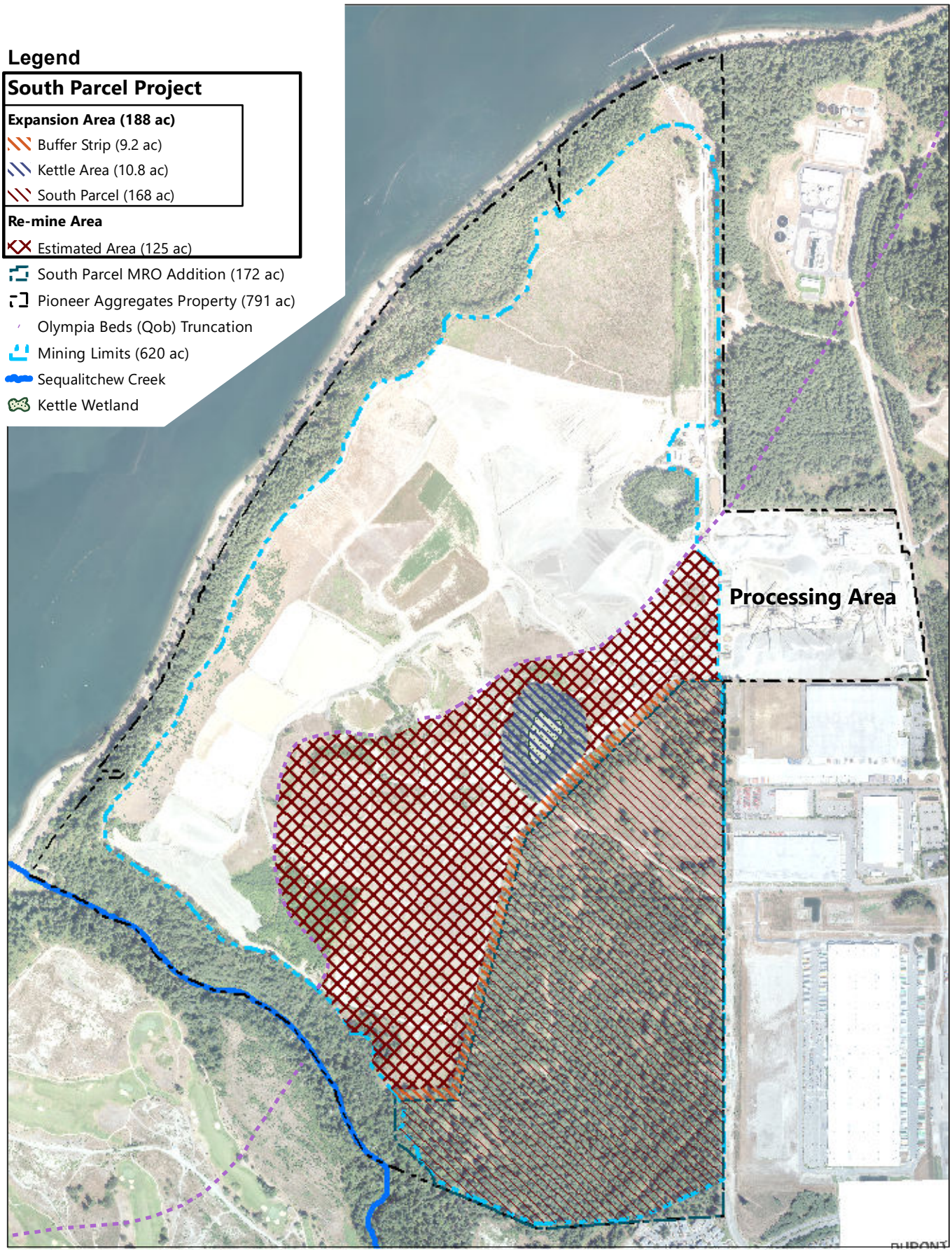
ANCHOR QEA

Figure 1
Vicinity Map
Project Description
Pioneer Aggregates South Parcel Project



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Filepath: \\orcas\GIS\Jobs\CalPortland_0217\DupontAggregate_SouthParcel\Map\2021_01_UpdatedFigs\DuPontAgg-PD-Fig2v3.mxd

ANCHOR QEA

Figure 2
Site Map
Project Description
Pioneer Aggregates South Parcel Project

201403270332 MMCKENZ 23 PGS
03/27/2014 01:11:09 PM $94.00
AUDITOR, Pierce County, WASHINGTON

After Recording Return To:
City of DuPont
Attn: Erin Larsen
303 Barksdale Avenue
DuPont , WA 98327

Unofficial Document

For reference only, not for re-sale.

Document Title(s) (or transactions contained therein)

1. **Grant Deed of Conservation Easement**

Grantor(s) (Last name first, then first name and initials)

1. Northwest Aggregates Company

☐ Additional names on page _____ of document.

Grantee(s) (Last name first, then first name and initials)

1. City of DuPont

☐ Additional names on page _____ of document.

Legal description (abbreviated: i.e. lot, block, plat or section, township, range, qtr./qtr.)

Portions of Sections 14, 15, and 22, Township 19 North, Range 01 East, W.M.

☐ Additional legal is on page(s) _____ of document.

Reference Number(s) of Documents assigned or released:

1. None.

☐ Additional numbers on page _____ of document.

Assessor's Tax Parcel/ Account Number(s)

☒ Property Tax Parcel ID is not yet assigned
☐ Additional parcel numbers on page 15 of document.

The Auditor/Recorder will rely on information provided on the form. The staff will not read the document to verify the accuracy or completeness of the indexing information.

EXCISE TAX EXEMPT DATE 03-27-14
Pierce County

By M. McKenzie Auth. Sig

For reference only, not for re-sale.

GRANT DEED OF CONSERVATION EASEMENT

THIS GRANT DEED OF CONSERVATION EASEMENT is made this 7th day of February, 2014 by and between **NORTHWEST AGGREGATES CO.**, an Oregon corporation and wholly-owned subsidiary of Glacier Northwest, Inc. ("Grantor") and the **CITY OF DUPONT**, a Washington municipal corporation ("Grantee").

I. RECITALS

A. Grantor is the owner in fee simple of that certain real property (hereinafter the "Protected Property") in the City of DuPont, Washington, more particularly described in **EXHIBIT A**, which is attached hereto and incorporated herein by this reference.

B. Grantee is an entity authorized under RCW 64.04.130 to hold a conservation easement.

C. The Protected Property in its present natural condition possesses natural, scenic, recreational, and ecological values of great importance to Grantee, the people of the City of DuPont, and the people of the State of Washington. The people of the State of Washington have recognized the benefit of providing for preservation and protection of land for open space purposes by enacting RCW 64.04.130 to provide for and encourage the limitation and restriction of development and use of real property through conservation easements.

D. Grantor and Grantee are parties to a Settlement Agreement dated December 25, 1994 and a related Settlement Agreement with an effective date of February 2, 2012 ("2012 Settlement Agreement"), along with the Washington Department of Ecology, the Nisqually Delta Association, the Black Hills Audubon Society, the Washington Environmental Council, People for Puget Sound, the Tahoma Audubon Society, the Seattle Audubon Society, and Anderson Island Quality of Life Committee (the "Environmental Caucus"). Following review under the State Environmental Policy Act, the City of DuPont Hearing Examiner granted site plan approval ("Permit"), to allow Grantor to conduct surface mining on property immediately east of the Protected Property. This conservation easement is executed pursuant to and in fulfillment of paragraph 3.5.2 of the 2012 Settlement Agreement, and is consistent with the terms of the Permit.

E. Grantor intends that the Protected Property be preserved and maintained as open space in accordance with the purposes as set forth in Section III herein.

II. CONVEYANCE AND CONSIDERATION

A. For the reasons stated above, and in consideration of the mutual covenants, terms, conditions, and restrictions contained herein and the 2012 Settlement Agreement, Grantor hereby grants, conveys, and warrants to Grantee a conservation easement in perpetuity over the Protected Property, consisting of the rights in the Protected Property, hereinafter enumerated, subject only to the restrictions set forth herein ("Easement").

B. This conveyance is a conveyance of an interest in real property under the provisions of RCW 64.04.130 subject only to the mutual covenants and terms, conditions, and restrictions set forth herein and the 2012 Settlement Agreement, and for no other consideration whatsoever.

C. Grantor expressly intends that this Easement run with the land and that this Easement shall be binding upon Grantor's personal representatives, heirs, successors, and assigns.

III. PURPOSE

It is the purpose of this Easement to assure that the Protected Property will be retained forever predominantly in its natural, scenic, open space, and/or forested condition, preserving in their current natural state shoreline and tidelands, riparian, and upland features and other natural communities, and to prevent any use of the Protected Property that will significantly impair or interfere with the preservation and conservation of the Protected Property as undisturbed open space. Grantor intends that this Easement will confine the use of the Protected Property to such activities that are consistent with this purpose, provided that nothing herein is intended to limit or restrict otherwise legal use of the property or facilities Grantor owns or leases adjacent to the Protected Property.

IV. RIGHTS CONVEYED TO GRANTEE

To accomplish the purpose of this Easement the following rights are conveyed to Grantee by this Easement:

A. Identification and Protection. To identify, preserve and protect in perpetuity the Protected Property as open space;

B. Access.

1. To annually enter upon the Protected Property at a mutually agreeable time and upon prior written notice to the Grantor, for the purpose of making a general inspection to assure compliance with this Easement.

2. To enter upon the Protected Property at such other mutually agreeable times as are necessary if there is reason to believe that a violation of the Easement is occurring, for the purposes of enforcing the provisions of this Easement. Grantee shall provide prior written notice to Grantor of the reasons it wishes to enter upon the Protected Property.

C. Scientific/Educational Use. For the benefit of the public, to allow persons or groups to enter upon the Protected Property for educational, scientific, and biological purposes to observe and study on the Protected Property; provided that any such persons or groups make prior arrangements with the Grantor, agree to provide the Grantor with copies of any data or

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reports resulting from such research, and agree to abide by any reasonable restrictions on access set forth by the Grantor.

D. Injunction and Restoration. To enjoin any activity on, or use of, the Protected Property which is inconsistent with this Conservation Easement, including trespasses by members of the public, and to undertake or cause to be undertaken the restoration of such areas or features of the Protected Property as may be damaged by activities contrary to the provisions hereof, all in accordance with Section IX.

E. Pedestrian Trail. To construct a pedestrian trail for public and vehicular access as set forth in paragraph 3.5.3 of the 2012 Settlement Agreement. The precise location of the pedestrian trail shall be set forth in a separate easement document.

F. Assignment. To assign, convey, or otherwise transfer Grantee's interest in the Protected Property in accordance with Section XIV herein.

V. PROHIBITED USES

A. General. Any use of, or activity on, the Protected Property inconsistent with the purposes of the Easement is prohibited, and Grantor acknowledges and agrees that it will not conduct, engage in or authorize any such use or activity. Without limiting the generality of the foregoing, the following uses of, or activities on, the Protected Property, though not an exhaustive list of inconsistent uses or activities, are inconsistent with the purposes of this Easement and shall be prohibited, except as necessarily incident to the uses permitted in Section VI below, including the allowance for the pedestrian trail set forth in that section VI:

B. Subdivision. The legal or "de facto" subdivision of the Protected Property.

C. Construction. The placement or construction of any buildings, structures, or other improvements of any kind (including, without limitation, fences, roads, docks, floats and parking lots) on the Protected Property except for the pedestrian trail as set forth herein and fences if required by other governmental agencies to limit public access.

D. Alteration of Land. The alteration of the surface of the land, including, without limitation, the excavation or removal of soil, sand, gravel, rock, peat, or sod except for: (i) the pedestrian trail as set forth herein, and (ii) any reclamation activities performed under the requirements and conditions of Surface Mining Reclamation Permit No. 70-012668.

E. Erosion or Water Pollution. Any use or activity that causes or is likely to cause significant soil degradation or erosion or significant pollution of any surface or subsurface waters of the Protected Property.

F. Alteration of Water Courses. The draining, filling, dredging, ditching, or diking of wetland areas, the alteration or manipulation of ponds and water courses, or the creation of new wetlands, water impoundments, or water courses.

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G. Removal of Trees and Other Vegetation. The pruning, cutting down, or other destruction or removal of live and dead trees and other vegetation located in the Protected Property, except as deemed necessary for construction of the pedestrian trail by Grantee or to preserve or protect the ecological values of the Protected Property, such as the removal of invasive exotic (non-native) plant species, or to conduct educational or research activities consistent with the purpose of the Easement.

H. Waste Disposal. The disposal or storage of rubbish, garbage, debris, unregistered vehicles, abandoned equipment, parts thereof, or other unsightly offensive, or hazardous waste or material on the Protected Property.

I. Utilities. The above or below ground installation of new utility systems or extensions of existing utility systems, including, without limitation, water, sewer, power, fuel, and communication lines and related facilities on the Protected Property.

J. Signs. The placement of commercial signs, billboards, or other advertising material on the Protected Property.

K. Hunting. Hunting or trapping.

L. Mining. The exploration for, or development and extraction of minerals and hydrocarbons on or below the surface of the Protected Property.

M. Wildlife Disruption. Activities on the Protected Property that disrupt wildlife breeding and nesting activities on the Protected Property.

N. Domestic Animals. The keeping of domestic animals on the Protected Property.

O. Introduced Vegetation. The intentional seeding or planting of vegetation, including nonnative plants and nonnative invasive species on the Protected Property, except as part of any reclamation activities performed under the requirements and conditions of Surface Mining Reclamation Permit No. 70-012668, or as deemed necessary by the Grantee to enhance the ecological values of the Protected Property.

P. Harvesting of Native Plants. The gathering, picking, taking, or harvesting of native plants on the Protected Property.

Q. Motorized Vehicles and Excessive Noise. The operation of motorcycles, dune buggies, snowmobiles, or other type of off-road motorized recreational vehicles, the launching or beaching of motorized watercraft, or the operation of other sources of excessive noise pollution on the Protected Property.

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VI. PERMITTED USES

A. General. Grantor reserves for itself and its heirs, successors, and assigns, any use of, or activity on, the Protected Property which is not inconsistent with the purposes of the Easement and which is not prohibited herein, subject to the Notice and Approval conditions set forth in Section VII of this Easement. Without limiting the generality of the foregoing, Grantor specifically reserves for itself and its heirs, successors, and assigns, the following uses and activities:

B. Recreational. To conduct passive recreational activities such as nature enjoyment, bird watching, educational walks, etc. on the Protected Property, provided that such activities are conducted in a manner and intensity that does not adversely impact plant and wildlife habitat on the Protected Property. No motorized vehicles or other activities that could disrupt the wildlife or destroy essential habitat are allowed in the Protected Property.

C. Pedestrian Trail. Grantor shall grant to Grantee by separate conveyance an easement to construct and maintain a pedestrian trail on the Protected Property, 15 feet wide, for use by the public and for vehicular access for maintenance purposes, consistent with paragraph 3.5.3 of the 2012 Settlement Agreement.

D. Signage. To place signs on the Protected Property to state the conditions of access to the Protected Property, history of the Protected Property, and interpretive information, provided that such signs are located to preserve, as much as possible, the Protected Property as undisturbed open space.

E. Environmental Remediation. The parties recognize that the Protected Property is downwind of the former Asarco smelter and refinery in Ruston, Washington, and therefore is within an area known as the Tacoma Smelter Plume, which comprises a total area of approximately 1,000 square miles. Grantor may conduct investigative, protective, or remedial actions related to its efforts to obtain a No Further Action determination from the Washington Department of Ecology for the Protected Property and other property owned or leased by Grantor in the City, in accordance with the Model Toxic Controls Act.

F. Emergencies. To undertake other activities as deemed by the Grantor necessary to protect public health or safety on the Protected Property or which are actively required by and subject to compulsion of any governmental agency with authority to require such activity, provided that any such activity shall be conducted so that interference with the protection and conservation of the Protected Property as undisturbed open space purposes is avoided to the extent reasonably possible.

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VII. NOTICE AND APPROVAL

A. Notice. Grantor shall notify Grantee and receive Grantee's written approval prior to undertaking certain permitted activities provided in Section VI(B), (C), and (D). Notice shall also be provided to the Washington Department of Ecology, the Nisqually Delta Association, and the other parties listed in Section VII(D) of this Easement. The purpose of requiring Grantor to notify Grantee prior to undertaking certain permitted uses and activities is to afford Grantee an opportunity to ensure that the use or activity in question is designed and carried out in a manner consistent with the purposes of this Easement. Whenever notice is required, Grantor shall notify Grantee in writing not less than forty-five (45) days prior to the date Grantor intends to undertake the use or activity in question. The notice shall describe the nature, scope, design, location, timetable, and any other material aspect of the proposed activity in sufficient detail to permit Grantee to make an informed judgment as to its consistency with the purpose of this Easement.

B. Approval. Where Grantee's approval is required, Grantee shall grant or withhold its approval in writing within forty-five (45) days of receipt Grantor's written request for approval. Grantee's approval may be withheld only upon a reasonable determination by Grantee that the action as proposed would be inconsistent with the purposes of this Easement. Grantee's approval may include reasonable conditions which must be satisfied in undertaking the proposed use or activity. If Grantor must undertake emergency action to protect health or safety on the Property or must act by and subject to compulsion of any governmental agency, Grantor may proceed with such action without Grantee's approval only if Grantor notifies Grantee prior to taking such action and Grantee cannot provide its approval, with or without conditions, within such time as is reasonable under the circumstances.

C. Grantee's Failure to Approve Within the Required Time. Where Grantee's approval is required, and if Grantee does not grant or withhold its approval in the time period and manner set forth herein, Grantor may assume Grantee's approval of the permitted use or activity in question.

D. Addresses for Notices. Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other shall be in writing either served personally or sent by first class mail, postage prepaid, to the following addresses or such other addresses as each party may from time to time designate by written notice to the other:

To Grantor:

Glacier Northwest
Attn: General Manager
P.O. Box 1730
Seattle, WA 98111-1730

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with a copy to:

Senior Vice President/Materials Group
2025 E. Financial Way
Glendora, CA 91741

To Grantee:

City of DuPont
Attn: City Administrator
1700 Civic Drive
DuPont, WA 98327303
Attn: City Administrator

With additional copies to:

Washington Department of Ecology
Attn: Southwest Regional Director
300 Desmond Drive SE
Lacey, WA 98503

Nisqually Delta Association
P.O. Box 7444
Olympia, WA 98507

Black Hills Audubon Society
President
PO Box 2524
Olympia, WA 98507-2524

Washington Environmental Council
Executive Director
1401 Third Ave., Suite 1400
Seattle, WA 98101

Tahoma Audubon Society
Executive Director
2917 Morrison Road West
University Place, WA 98466

Seattle Audubon Society
Executive Director
8050 35th Ave NE
Seattle, WA 98115

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Anderson Island Quality of Life Committee
c/o Dave McGoldrick
820 A Street, Suite A
Tacoma, WA 98401

or to such other address as either party from time to time shall designate by written notices to the other.

VIII. DISPUTE RESOLUTION

If a dispute arises between Grantor and Grantee concerning the consistency of any proposed use or activity with the purpose of this Easement, the parties shall meet together to discuss the dispute and attempt resolution. Thereafter, either party may refer the dispute to mediation or arbitration by request made in writing upon the other. Within forty-five (45) days of the receipt of such a request the parties shall select a mediation service or a single arbitrator to hear the matter. The matter shall be settled in accordance with the Washington State mediation or arbitration statute then in effect, and the settlement agreement or an arbitration award may be entered in any court having jurisdiction thereof. The parties agree not to proceed with the disputed use or activity pending resolution of the dispute.

IX. GRANTEE'S REMEDIES

A. Notice of Failure. If Grantee determines that the Grantor is in violation of the terms of this Easement or that a violation is threatened, Grantee shall give written notice to Grantor of such violation and demand corrective action sufficient to cure the violation and, where the violation involves injury to the Protected Property resulting from any use or activity of the Grantor inconsistent with the purpose of this Easement, to restore the portion of the Protected Property so injured.

B. Grantor's Failure to Respond. If Grantor:

1. Fails to cure the violation within thirty (30) days after receipt of notice thereof from Grantee;

2. Under circumstances where the violation cannot reasonably be cured within the thirty (30) day period, fails to begin curing such violation within the thirty (30) day period; or

3. Fails to continue diligently to cure such violation until finally cured;

Grantee may bring an action as provided in subsection C.

C. Grantee's Action. Grantee may bring action at law or in equity in a court of competent jurisdiction to enforce the terms of this Easement, to enjoin the violation by temporary or permanent injunction, to recover damages to which it may be entitled for Grantor's violation of the terms of this Easement; and to require the restoration of the Protected Property to

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the condition that existed prior to any such injury by Grantor. Without limiting Grantor's liability therefore, Grantee, in its sole discretion, may apply any damages recovered to the cost of undertaking any corrective action on the Protected Property.

D. Immediate Action Required. If Grantee, in its sole discretion determines that circumstances require immediate action within the Protected Property to prevent or mitigate significant damage to the Protected Property, Grantee may pursue its remedies under this section without prior notice to Grantor or without waiting for the period provided for cure to expire.

E. Nature of Remedy. Grantee's rights under this section apply equally in the event of either Grantor's actual or threatened violations of the terms of this Easement, and Grantor agrees that Grantee's remedies at law for any violation of the terms of this Easement are inadequate and that Grantee shall be entitled to the injunctive relief with respect to the Protected Property, in addition to such other relief to which Grantee may be entitled, including specific performance of the terms of this Easement, without the necessity of providing either actual damages or the inadequacy of otherwise available legal remedies. Grantee's remedies described in this paragraph shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity.

F. Costs of Enforcement. In the event Grantee must enforce the terms of this Easement, the costs of restoration and Grantee's reasonable enforcement expenses, including attorney's fees, shall be borne by Grantor or those of its heirs, successors, or assigns, against whom a judgment is entered. In the event that Grantee secures redress for an Easement violation without initiating or completing a judicial proceeding, the costs of such restoration and Grantee's reasonable expenses shall be borne by Grantor and those of its heirs, successors or assigns who are otherwise determined to be responsible for the unauthorized activity or use. If Grantor prevails in any judicial proceeding initiated by Grantee to enforce the terms of the Easement, Grantor's reasonable cost of suit, including attorney's fees, shall be borne by Grantee.

G. Grantee's Discretion. Enforcement of the terms of this Easement shall be at the discretion of the Grantee and any forbearance by the Grantee to exercise its rights under this easement in the event of any breach of any terms of this Easement by Grantor shall not be deemed or construed to be a waiver by Grantee of such term of any Grantee's right under this Easement. No delay or omission by Grantee in the exercise of any right or remedy upon any breach by Grantor shall impair such right or remedy or be construed as a waiver.

H. Acts Beyond Grantor's Control. Nothing contained in this Easement shall be construed to entitle Grantee to bring any action against Grantor to abate, correct, or restore any condition on the Protected Property or to recover damages for any injury to or change in the Protected Property resulting from causes beyond Grantor's control, including, without limitation, fire, flood, storm, and earth movement, actions by individuals who are not employees, agents, or representatives of Grantor, or from any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Protected Property or property on adjacent property resulting from such causes.

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I Enforcement by Parties to the 2012 Settlement Agreement. Pursuant to paragraph 3.5.2 of the 2012 Settlement Agreement, the Washington Department of Ecology or the Environmental Caucus may enforce the terms of this easement in the same manner as Grantee, in the event Grantee fails to enforce this easement within 30 days of written notice that a violation is occurring.

X. ACCESS BY PUBLIC

Access by the general public to the Protected Property shall be limited to use of the pedestrian trail during daylight hours and may not unreasonably interfere with the ecological values of the Protected Property or Grantor's use of the adjacent property for mining, processing or transport as authorized under the Permit or other governmental permits and approvals.

XI. COSTS, LIABILITIES, TAXES, AND INDEMNIFICATION

A. Liabilities and Insurance. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind, related to the ownership, upkeep, and maintenance of the Protected Property, except for the pedestrian trail, including the maintenance of adequate comprehensive general liability insurance coverage. Such insurance shall include Grantee's interest and name Grantee as an additional insured and provide for at least thirty (30) days notice to Grantee before cancellation and that the act or omission of one insured will not invalidate the policy as to the other insured party. Grantor shall keep the Protected Property free of any liens arising out of any work performed for, material furnished to, or obligations incurred by Grantor.

B. Taxes. Grantor shall pay before delinquency all taxes, assessments, fees, charges of whatever description levied on or assessed against the Protected Property by competent authority (collectively "taxes"), including any taxes imposed upon, or incurred as a result of this Easement, and shall furnish Grantee with satisfactory evidence of payment upon request. Grantee is authorized but in no event obligated to make or advance any payment of taxes, upon three (3) days prior written notice to Grantor, in accordance with any bill, statement, or estimate procured from the appropriate authority, without inquiry into the validity of the taxes or the accuracy of the bill, statement, or estimate, and the obligation created by payment shall bear interest until paid by the Grantor at the maximum rate allowed by law.

C. Indemnification. Except with regard to the construction, maintenance, repair, and use of the pedestrian trail, Grantor shall hold harmless, indemnify, and defend Grantee and its members, directors, officers, employees, agents, and contractors and the heirs, personal representatives, successors, and assigns of each of them (collectively "Indemnified Parties") from and against all liabilities, penalties, costs, losses, damages, expenses, causes of action, claims, demands, or judgments including, without limitation, reasonable attorney's fees (collectively, "Claims"), arising from the Grantee's exercise of rights granted under Section IV(B) or the public's exercise of rights authorized under Section IV(C) of this Easement, to the extent such Claims result from the willful or negligent act of Grantor; provided that Grantor has no duty to indemnify, defend, and hold the Indemnified Parties harmless to the extent that Claims arise out of the willful or negligent act of any Indemnified Party;

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XII. SUBSEQUENT TRANSFER

A. Condemnation. If the Easement is taken, in the whole or in the part, by the exercise of the power of eminent domain, Grantee shall be entitled to compensation in accordance with applicable law.

B. Subsequent Transfers. Grantor agrees (1) to incorporate the terms of this Easement in any deed or other legal instrument by which it divests itself of any interest in all or a portion of the Protected Property, including without limitation, a leasehold interest, and (2) to describe this Easement in and append it to, any executory contract for the transfer of any interest in the Protected Property. Grantor further agrees to give written notice to the Grantee of the transfer of any interest of at least thirty (30) days prior to the date of such transfer. Such notice to Grantee shall include the name, address, and telephone number of the prospective transferee or his or her representative. The failure of the Grantor to perform any act required by this paragraph shall not impair the validity of this Easement or limit its enforceability in any way.

XIII. AMENDMENT

If circumstances arise under which an amendment to or modification of this Easement would be appropriate, Grantor and Grantee are free to jointly amend this Easement; provided that any amendment that constitutes an amendment of the 2012 Settlement Agreement must be agreed to by all the Parties to that Agreement; and provided further that no amendment shall be allowed that shall affect the qualification of this Easement or the status of Grantee under any applicable laws, including RCW 64.04.130, Chapter 84.34 RCW, or Section 170(h) of the Internal Revenue Code, as amended, and any amendment shall be consistent with the purpose of this Easement, and shall not affect its perpetual duration. Any such amendment shall be recorded in the official records of Pierce County, Washington, and any other jurisdiction in which such recording is required.

XIV. ASSIGNMENTS

A. Assignment. This Easement is transferable, but Grantee may assign its rights and obligations under this easement only to an organization that is a qualified organization at the time of transfer under Section 170(h) of the Internal Revenue Code of 1986, as amended (or any successor provision then applicable), and the applicable regulations promulgated thereunder, and authorized to acquire and hold conservation easements under RCW 64.04.130 or RCW 84.34.250 (or any successor provision then applicable). As a condition of such transfer, Grantee shall require that the purposes that this Easement is intended to advance continue to be carried out by the transferee. Grantee shall notify Grantor in writing, at Grantor's last known address, in advance of such assignment.

B. Succession. If at any time it becomes impossible for Grantee to ensure compliance with the covenants contained herein and Grantee has not named a successor organization, or the Grantee shall cease to exist, then its rights and duties hereunder shall become vested and fall upon the an alternative entity agreed to by Grantor and Grantee. Provided that if such vesting in the entities named above is deemed to be void under the Rule Against

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Perpetuities, the rights and obligations under this Easement shall vest in such organization as a court of competent jurisdiction shall direct, pursuant to the applicable Washington law and the Internal Revenue Code (or corresponding provision of any future statute) and with due regard to the purposes of this Easement.

XV. RECORDATION

Grantee shall record this instrument in a timely fashion in the official records of Pierce County, Washington, and in any other appropriate jurisdictions, and may re-record it at any time as may be required to preserve its rights in this Easement.

XVI. GENERAL PROVISIONS

A. Controlling Law. The laws of the State of Washington shall govern the interpretation and performance of this Easement.

B. Liberal Construction. Any general rule of construction to the contrary notwithstanding, this Easement shall be liberally construed in favor of the grant to effect the purpose of this Easement and the policy and purpose of RCW 64.04.130 and Chapter 84.34.RCW. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the purpose of this Easement that would render the provision valid shall be favored over any interpretation that would render it invalid.

C. Severability. If any provision of this Easement, or the application thereof to any person or circumstance, is found to be invalid, the remainder of the provisions of this Easement, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected thereby.

D. Entire Agreement. This instrument sets forth the entire agreement of the parties with respect to the Easement and supersedes all prior discussions, negotiations, understandings, or agreements relating to the Easement, all of which, are merged herein. No alteration or variation of this instrument shall be valid or binding unless contained in an amendment that complies with Section XIII herein.

E. No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

F. "Grantor" - "Grantee". The term "Grantor" and "Grantee," wherever used herein, and any pronouns used in the place thereof, shall be held to mean and include, respectively the above-named Grantor, and its personal representatives, heirs, successors, and assigns, and the above-named Grantee, its successors and assigns.

G. Successors. The covenants, terms, conditions, and restrictions of this Easement shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns, and shall continue as a servitude running in perpetuity with the Protected Property.

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H. Termination of Rights and Obligations. A party's rights and obligations under this Easement terminate upon transfer of the party's interest in the Easement or Protected Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

I. Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

J. Joint Obligation. The obligations imposed by this Easement upon Grantor shall be joint and several.

XVII. SCHEDULE OF EXHIBITS

EXHIBIT A. Legal Description of Property Subject to Easement.

IN WITNESS WHEREOF, the undersigned Grantor has executed this instrument this 7 day of February, 2014.

NORTHWEST AGGREGATES CO., Grantor

Signature: Doug Anderson

By Doug Anderson

Its Vice President

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The City of DuPont does hereby accept the above Grant Deed of Conservation Easement.

Date:

CITY OF DUPONT, Grantee

Signature: _____

By Michael Grayum

Its Mayor

STATE OF WASHINGTON
COUNTY OF Clark

I certify that I know of and have satisfactory evidence that Douglas Anderson
Is the person(s) acknowledge that (he/she/they) signed this Instrument on oath state that (he/she/they) was (were) authorized to execute the instrument and acknowledged it as the Grant deed of Conservation easement to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument GIVEN under my hand and official seal this 6th day of Feb, 2014
Notary public in and for the State of Washington, residing At Vancouver, WA My Appointment expires: 5/14/16

(SEAL OR STAMP) Kristina Anderson

KRISTINA ANDERSON
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
5-14-2016

STATE OF WASHINGTON
COUNTY OF PIERCE

I certify that I know of and have satisfactory evidence that Michael Grayum
Is the person(s) acknowledge that (he/she/they) signed this Instrument on oath state that (he/she/they) was (were) authorized to execute the instrument and acknowledged it as the Mayor of DuPont, WA to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument GIVEN under my hand and official seal this 19th day of March, 2014
Notary public in and for the State of Washington, residing At DuPont, WA My Appointment expires: 4-29-17

(SEAL OR STAMP) Graves

TIFFANY GRAVES
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
4-29-17

TIFFANY GRAVES
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
4-29-17

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ESM CONSULTING ENGINEERS LLC

CalPortland
Job No. 400-001-012-0003
December 10, 2013

EXHIBIT A

LEGAL DESCRIPTION

That portion of Sections 14, 15 and 22, Township 19 North, Range 1" East, W.M., Pierce County, Washington, being more particularly described as follows:

COMMENCING at the northeast corner of said Section 22, being a 6" x 6" concrete monument with "X", said corner also known as Fort Lewis Monument No. 245, as shown on that Record of Survey recorded under Recording No. 9303050249;

THENCE along the east line of said section, S 01°54'52" W, 600.06 feet to a line 600 feet southerly of and parallel with the north line of said section;

THENCE along said parallel line, N 88°53'04" W, 929.14 feet to the TRUE POINT OF BEGINNING;

THENCE N 43°22'57" E, 73.28 feet;

THENCE N 58°57'45" E, 58.55 feet;

THENCE N 38°02'47" E, 107.99 feet;

THENCE N 54°43'06" E, 90.53 feet;

THENCE N 37°57'06" E, 46.49 feet;

THENCE N 63°33'24" E, 62.50 feet;

THENCE N 62°22'16" E, 33.70 feet;

THENCE N 55°55'47" E, 53.66 feet;

THENCE N 41°00'47" E, 54.13 feet;

THENCE N 39°28'19" E, 57.05 feet;

THENCE N 38°12'22" E, 55.19 feet;

THENCE N 22°13'05" E, 30.16 feet;

THENCE N 10°14'31" E, 35.59 feet;

THENCE N 11°19'05" E, 29.22 feet;

THENCE N 09°13'23" W, 35.78 feet;

THENCE N 40°56'06" E, 36.05 feet;

THENCE N 28°28'28" E, 67.64 feet;

THENCE N 28°52'24" E, 50.79 feet;

THENCE N 26°06'05" E, 56.88 feet;

THENCE N 26°07'49" E, 77.34 feet;

THENCE N 29°45'47" E, 84.17 feet;

THENCE N 31°52'54" E, 92.16 feet;

THENCE N 33°06'15" E, 35.76 feet;

THENCE N 31°52'26" E, 55.05 feet;

THENCE N 40°56'06" E, 27.03 feet;

THENCE S 75°50'57" E, 48.58 feet;

THENCE S 86°30'48" E, 27.37 feet;

THENCE N 83°12'58" E, 22.67 feet;

THENCE N 77°40'11" E, 31.39 feet;

THENCE N 75°41'56" E, 47.35 feet;

THENCE N 71°10'28" E, 42.13 feet;

THENCE N 69°31'36" E, 47.37 feet;

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THENCE N 56°19'45" E, 54.43 feet;

THENCE N 52°42'36" E, 68.18 feet;

THENCE N 39°58'41" E, 46.31 feet;

THENCE N 41°22'57" E, 55.69 feet;

THENCE N 39°47'08" E, 62.96 feet;

THENCE N 36°37'38" E, 39.34 feet;

THENCE N 43°23'03" E, 47.27 feet;

THENCE N 28°58'07" E, 57.10 feet;

THENCE N 08°32'13" E, 43.82 feet;

THENCE N 01°03'42" W, 50.10 feet;

THENCE N 06°42'53" E, 23.30 feet;

THENCE N 35°51'27" E, 10.63 feet;

THENCE N 50°55'36" E, 14.35 feet;

THENCE N 56°59'43" E, 41.36 feet;

THENCE N 62°40'02" E, 23.93 feet;

THENCE S 84°11'56" E, 16.92 feet;

THENCE S 45°01'15" E, 38.64 feet;

THENCE S 79°10'03" E, 53.17 feet;

THENCE S 85°41'14" E, 50.11 feet;

THENCE S 84°30'42" E, 50.33 feet;

THENCE N 84°09'33" E, 56.22 feet;

THENCE S 89°23'27" E, 55.59 feet;

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THENCE N 77°28'48" E, 36.56 feet;

THENCE N 69°05'22" E, 31.98 feet;

THENCE N 28°43'25" E, 35.55 feet;

THENCE N 39°38'49" E, 7.55 feet;

THENCE S 86°59'22" E, 23.25 feet;

THENCE N 77°06'06" E, 37.21 feet;

THENCE N 52°51'20" E, 59.15 feet;

THENCE N 13°14'59" E, 37.34 feet;

THENCE N 62°29'51" E, 74.21 feet;

THENCE N 32°06'41" E, 50.81 feet;

THENCE N 13°44'45" E, 59.01 feet;

THENCE N 06°07'12" E, 67.81 feet;

THENCE N 00°00'00" E, 79.73 feet;

THENCE N 15°02'20" E, 48.09 feet;

THENCE N 34°19'38" E, 55.16 feet;

THENCE N 33°27'33" E, 42.43 feet;

THENCE N 07°48'21" E, 51.08 feet;

THENCE N 05°52'16" W, 59.97 feet;

THENCE N 08°08'10" W, 64.51 feet;

THENCE N 03°14'31" W, 23.31 feet;

THENCE N 16°10'43" E, 37.28 feet;

THENCE N 60°20'42" E, 56.97 feet;

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THENCE N 64°21'04" E, 49.18 feet;

THENCE N 71°58'41" E, 52.07 feet;

THENCE N 60°25'32" E, 43.24 feet to the westerly line of that parcel depicted on Record of Survey recorded under Recording No. 8707280196 AND a point hereinafter referred to as Point A;

THENCE along said westerly line, N 16°30'20" W, 390.98 feet;

THENCE continuing along said westerly line, S 50°54'06" W, 1171.92 feet to a spiral curve as shown on said survey;

THENCE continuing along said westerly line, along the chord of said spiral curve, S 50°04'18" W, 198.54 feet to a point of curvature;

THENCE continuing along said westerly line, southwesterly 377.16 feet along the arc of a non-tangent curve to the left, having a radius of 2258.83 feet, the radius point of which bears S 41°35'53" E, through a central angle of 09°34'00" to a spiral curve as shown on said survey;

THENCE continuing along said westerly line, along the chord of said spiral curve, S 37°09'56" W, 198.54 feet;

THENCE continuing along said westerly line, S 36°20'07" W, 1694.40 feet to a point of curvature;

THENCE continuing along said westerly line, southwesterly 163.00 feet along the arc of a tangent curve to the left, having a radius of 4276.54 feet, through a central angle of 02°11'02" to said line 600 feet southerly of and parallel with the north line of said Section 22;

THENCE along said parallel line, S 88°53'04" E, 328.24 feet to the TRUE POINT OF BEGINNING;

TOGETHER WITH that portion of Section 14, Township 19 North, Range 1" East, W.M., Pierce County, Washington, being more particularly described as follows:

COMMENCING at said Point A;

THENCE N 60°25'32" E, 10.37 feet;

THENCE N 63°27'06" E, 7.41 feet to the TRUE POINT OF BEGINNING;

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THENCE continuing N 63°27'06" E, 42.79 feet;

THENCE N 55°58'32" E, 46.74 feet;

THENCE N 56°47'15" E, 99.78 feet;

THENCE N 52°40'50" E, 70.22 feet;

THENCE N 48°17'28" E, 85.60 feet;

THENCE N 46°42'35" E, 121.96 feet;

THENCE N 49°05'28" E, 108.94 feet;

THENCE N 45°15'57" E, 105.65 feet;

THENCE N 47°28'47" E, 66.40 feet;

THENCE N 58°40'24" E, 74.14 feet;

THENCE N 61°05'29" E, 74.97 feet;

THENCE N 65°52'59" E, 78.85 feet;

THENCE N 68°06'18" E, 4.66 feet;

THENCE along a line hereinafter referred to as Line A, N 30°03'23' W, 374.74 feet to said westerly line of that parcel depicted on Record of Survey recorded under Recording No. 8707280196 AND a point hereinafter referred to as Point B;

THENCE along said westerly line, southwesterly 292.13 feet along the arc of a non-tangent curve to the left, having a radius of 2258.83 feet, the radius point of which bears S 29°11'17" E, through a central angle of 07°24'36" to a spiral curve as shown on said survey;

THENCE continuing along said westerly line, along the chord of said spiral curve, S 51°45'24" W, 198.55 feet;

THENCE continuing along said westerly line, S 50°54'06" W, 225.53 feet;

THENCE continuing along said westerly line, S 01°59'33"W, 483.37 feet to the TRUE POINT OF BEGINNING;

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ALSO TOGETHER WITH that portion of Section 14, Township 19 North, Range 1" East, W.M., Pierce County, Washington, being more particularly described as follows:

COMMENCING at said Point B, being a point on a curve on said westerly line of that parcel depicted on Record of Survey recorded under Recording No. 8707280196;

THENCE along said westerly line, northeasterly 505.11 feet along the arc of a non-tangent curve to the right, having a radius of 2258.83 feet, the radius point of which bears S 29°11'17" E, through a central angle of 12°48'44" to a line 500 feet northeasterly of and parallel with said Line A AND the TRUE POINT OF BEGINNING;

THENCE along said parallel line, S 30°03'23' E, 555.98 feet to the easterly line of that parcel depicted on Record of Survey recorded under Recording No. 8707280196;

THENCE along said easterly line, N 01°45'50" E, 547.14 feet to a point on last said curve AND said westerly line of parcel;

THENCE along said westerly line, southwesterly 302.74 feet along the arc of said curve having a radius of 2258.83 feet, the radius point of which bears S 08°41'48" E, through a central angle of 07°40'45" to the TRUE POINT OF BEGINNING.

Containing 45.26 acres, more or less.

See attached" Exhibit B.

Written by: C.A.F.
Checked by: D.L.R.

i:\esm-jobs\400\01\006\document\legal-007.doc

12-10-2013

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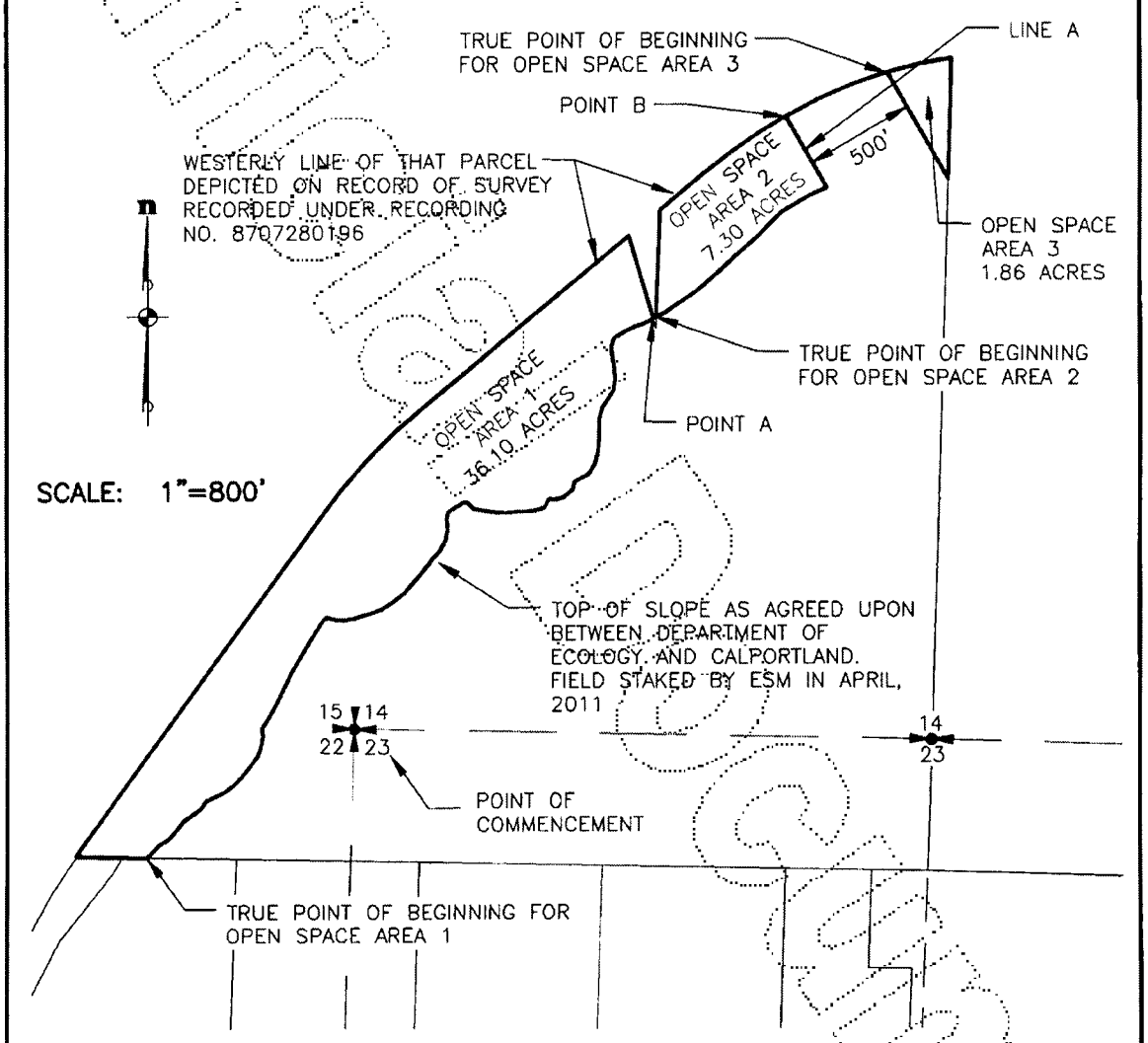
EXHIBIT B

TO ACCOMPANY LEGAL DESCRIPTION FOR OPEN SPACE AREAS

A PORTION OF SECTIONS 14, 15 AND 22, T. 19 N., R. 1 E W.M.
CITY OF DUPONT, PIERCE COUNTY, WASHINGTON



\\ESM8\ESM-JOBS\400\01\006\EXHIBITS\SR-07.DWG

ESM CONSULTING ENGINEERS LLC
33400 8th Ave. S, #205
Federal Way, WA 98003
FEDERAL WAY (253) 838-6113
EVERETT (425) 297-9900
www.esmcivil.com
Civil Engineering | Land Surveying | Land Planning
Public Works | Project Management | Landscape Architecture

JOB NO.	400-001-012-0003
DRAWING NAME :	SR-07
DATE :	2013-12-10
DRAWN :	CAF
SHEET 1 OF 1	

Attachment 1.e

201403270333 MMCKENZ 10 PGS
03/27/2014 01:11:09 PM $81.00
AUDITOR, Pierce County, WASHINGTON

After Recording Return To:
City of DuPont
Attn: Erin Larsen
303 Barksdale Avenue
DuPont , WA 98327

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Document Title(s) (or transactions contained therein)

1. **Public Access Trail Easement**

Grantor(s) (Last name first, then first name and initials)

1. Northwest Aggregates Company

☐ Additional names on page _____ of document.

Grantee(s) (Last name first, then first name and initials)

1. City of DuPont

☐ Additional names on page _____ of document.

Legal description (abbreviated: i.e. lot, block, plat or section, township, range, qtr./qtr.)

Portions of Sections 14, 15, and 22, Township 19 North, Range 01 East, W.M.

☐ Additional legal is on page(s) _____ of document.

Reference Number(s) of Documents assigned or released:

1. None.

☐ Additional numbers on page _____ of document.

Assessor's Tax Parcel/ Account Number(s)

☒ Property Tax Parcel ID is not yet assigned
☐ Additional parcel numbers on page _____ of document.

The Auditor/Recorder will rely on information provided on the form. The staff will not read the document to verify the accuracy or completeness of the indexing information.

EXCISE TAX EXEMPT DATE 03-27-14
Pierce County

By M. McKenzie Auth. Sig

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PUBLIC ACCESS TRAIL EASEMENT

This **PUBLIC ACCESS TRAIL EASEMENT AGREEMENT** (the "Agreement") is dated as of FEBRUARY 10, 2014, by **NORTHWEST AGGREGATES CO.** ("Grantor"), an Oregon corporation and wholly-owned subsidiary of Glacier Northwest, Inc., and the **CITY OF DUPONT**, a Washington municipal corporation ("Grantee").

RECITALS

A. Grantor is the fee owner of the real property described in **EXHIBIT A** attached hereto (the "Burdened Property"). Grantor has obtained the necessary permits and approvals to conduct mining and related activities on approximately 142 acres of the Burdened Property ("Mine Area"), as depicted in **EXHIBIT B**. Grantor has entered into a Conservation Easement with the City of DuPont for approximately 45 acres of the Burdened Property ("Open Space Area"), as also depicted in **EXHIBIT B**.

B. Grantor's predecessor in interest entered into a Settlement Agreement dated December 25, 1994 for Lone State Northwest DuPont Project among the Washington State Department of Ecology, Grantee, Lone Star Northwest, Inc, Weyerhaeuser Real Estate Company, the Nisqually Delta Association, the Black Hills Audubon Society, the Washington Environmental Council, the National Audubon Society, People for Puget Sound, the Tacoma Audubon Society, the Seattle Audubon Society and the Anderson Quality of Life Committee (the "Settlement Agreement"). When Grantor submitted a permit application to mine additional property near the Burdened Property, the other parties to the 1994 Settlement Agreement objected, and invoked a mediation process provided under that Agreement.

C. At the conclusion of the mediation process, the parties to the 1994 Settlement Agreement entered into a new Settlement Agreement with an effective date of February 2, 2012 (hereafter "2012 Settlement Agrement), which addressed the process for consideration of Grantor's applications to mine the Burdened Property and other nearby property. A condition of the 2012 Settlement Agreement requires Grantor to execute a public trail easement over the Open Space Area in the general vicinity of and above the 175-foot contour elevation of the Open Space Area. This trail easement would not be open to public use until the completion of mining and reclamation of the Mine Area.

D. To fulfill the requirements in the 2012 Settlement Agreement for a public access trail over a portion of the Open Space Area of the Burdened Property, Grantor desires to grant an easement to Grantee for the purposes and on the terms and conditions described herein.

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AGREEMENT

1. Grant of Easement. Grantor transfers, grants, quitclaims and conveys to Grantee a nonexclusive easement in gross for public access (the "Easement") across and over a 15-foot wide trail corridor running the length of the Open Space Area in a north-south direction in the general vicinity of and above the 175-foot contour elevation ("Easement Area"). The precise location of the 15-foot-wide Easement Area will be determined by the City prior to the commencement of any trail construction activities, at which point the City may require Grantor, at Grantor's sole cost, to prepare and record a legal description of the Easement Area as an amendment to this Agreement.

2. Purpose of Easement. Grantee, its employees, agents and contractors, shall have the right to use the Easement Area to provide a public access trail (the "Trail") above and along the Puget Sound shoreline area and to maintain the Trail (as hereinafter defined) located within the Easement Area. Grantee, its employees, agents and contractors, and members of the public, shall have the right to use the Easement Area for a public access trail subject to the terms and conditions hereof. All use of the Easement Area and the Trail shall be limited to walking, , and passive recreational uses. Motorized vehicles, including motorbikes and off-road vehicles, shall be prohibited in the Easement Area (other than vehicles used by Grantee, its employees, agents and contractors, to maintain the Trail or provide emergency assistance to Trail users). No horses or pack animals shall be permitted in the Easement Area. Camping and fires, and fireworks of any kind, shall not be permitted within the Easement Area. Members of the public may not use the Easement Area for access or any purpose until Grantor has completed all mining activities permitted by Grantee for the Burdened Property, and all tasks required under the reclamation permit issued for the Burdened Property by the Washington Department of Natural Resources ("DNR") pursuant to RCW 78.44.081 have been completed by Grantor, its successor(s) in interest or DNR, as applicable. Grantee may not begin Trail construction until the earlier of receipt of Grantor's written permission to commence Trail construction, or the completion of reclamation as outlined above. Moreover, as required under Condition 10(h) of the Site Plan Approval granted by the City of DuPont Hearing Examiner 2013 (City File No. LU 12-02) for the Mine Area, the public shall not be allowed access to the Easement Area until a "No Further Action" determination is obtained from the Washington Department of Ecology indicating that any remediation plan and protections for human health and the environment were successfully implemented under the Model Toxic Control Act

3. Construction/Maintenance/Repair of the Trail and Restrictions on Open Space Use. Except as provided in Section 4 below, Grantee shall be responsible for any necessary construction and/or surfacing of the Trail, and for any required maintenance or repairs thereto, including but not limited to re-surfacing, installation of drainage culverts beneath the Trail, removal of wash or slide materials on the trail surface, vegetation management, and/or removal of brush and fallen trees. Grantee shall also be responsible for installing signage and fencing along the Trail as reasonably necessary to inform the public that use of any portion of

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the Open Space Area outside the Easement Area is prohibited, except as specifically authorized under the terms of the Conservation Easement.

4. Grantor's Use of Easement Area. Grantor reserves the right to use the Easement Area for any purpose not inconsistent with the rights granted by this Agreement. If such use by Grantor results in the need for maintenance or repair of the Trail, Grantor shall be responsible for such and shall promptly perform or cause to be performed such maintenance or repair at Grantor's sole cost.

5. Term. The rights granted by this Agreement shall continue in perpetuity.

6. Recreational Use Immunity. Grantor and Grantee intend that, to the fullest extent possible under Washington's Recreational Use Statutes, RCW 4.24.200-.210, Grantor and Grantee shall not be liable for injuries to the other, and neither Grantor nor Grantee shall be liable for injuries to any member of the public, where such injuries are incurred as a result of use of the Trail or Easement Area by Grantor, Grantee, their respective officers, employees, agents or contractors, or member of the public consistent with RCW 4.24.200 - .210. In the event that Grantor and Grantee are named in a claim, suit or cause of action for injuries or damages arising out of use of the Trail, Grantor and Grantee shall cooperate in defense thereof by exchanging information, documents and/or evidence as necessary.

7. Settlement Agreement. Grantee accepts the Easement granted herein and agrees that it satisfies the conditions set forth in Section 3.5.3 of the 2012 Settlement Agreement as those sections concern the Burdened Property.

8. Notice. Any notice permitted or required to be given by either party to this Agreement shall be given in writing and may be effected by certified United States mail, with return receipt requested, properly addressed, postage prepaid, by reputable overnight delivery service, or by personal delivery, as follows:

If to Grantor:

Glacier Northwest
Attn: General Manager
P.O. Box 1730
Seattle, WA 98111-1730

With a copy to:

Senior Vice President/Materials Group
2025 E. Financial Way
Glendora, CA 91741

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If to Grantee: City of DuPont
Attn: City Administrator
1700 Civic Drive
DuPont, WA 98327303
Attn: City Administrator

or to such other address or to such other person's attention of which notice was given in accordance with this section. Notice shall be deemed effective upon three (3) days after being properly delivered as described above.

9. Attorneys' Fees and Costs. If either party shall bring an action to enforce the terms of this Agreement, in any such action the prevailing party shall be entitled to an award of its reasonable attorneys' fees and reasonable costs. Said costs and attorneys' fees shall include, without limitation, costs and attorneys' fees incurred in any appeal or in any proceedings under any present or future federal bankruptcy, forfeiture or state receivership or similar law.

10. Governing Law; Jurisdiction and Venue. This Agreement shall be governed by Washington law. Jurisdiction and venue for any action to interpret or enforce this Agreement shall be in the Superior Court of the State of Washington in and for Pierce County.

11. Binding Effect; Successors and Assigns. Grantee shall not have the right to assign, apportion, or otherwise transfer any or all of its rights, benefits, privileges, and interests arising herein without the written consent of Grantor, which consent shall not be unreasonably withheld or delayed. Without limiting the generality of the foregoing, the rights and obligations of the parties shall inure to the benefit of and be binding upon their respective successors and assigns and shall be deemed to run with the land. This Agreement may be amended or modified only by written instrument, executed and acknowledged by the parties hereto or their successors or assigns, recorded with the Recording Department of the Pierce County Auditor.

12. Headings. The headings used herein are for convenience only and are not to be used in interpreting this Agreement.

13. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any prior written or oral agreements with respect to the matters described herein.

14. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed the original, but which together shall constitute one and the same instrument.

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GRANTOR:

NORTHWEST AGGREGATES CO.,
an Oregon corporationcompany
By:

By: Doug Anderson
Name: Doug Anderson
Title: Vice President

GRANTEE:

City of DuPont,
a Washington municipal corporation

By:
Name: MICHAEL GRAHAM
Title: MAYOR

K:\2055698\00001\21320_SJS\PublicAccessEasement.doc

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STATE OF Washington)
) ss.
COUNTY OF King)

I certify that I know or have satisfactory evidence that Doug Anderson is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it as the Public Access Trail Easement of Northwest Aggregates Co., to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 2/10/14

Mary A McKenna
Notary Public
Print Name Mary McKenna
My commission expires 8-19-16

MARY A. MCKENNA NOTARY PUBLIC COMMISSION EXPIRES 8-19-16 STATE OF WASHINGTON

(Use this space for notarial stamp/seal)

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

I certify that I know or have satisfactory evidence that Michael Graham is the person who appeared before me, and said person acknowledged that s/he signed this instrument, on oath stated that s/he was authorized to execute the instrument and acknowledged it as the Public Access Trial Easement of the City of DuPont, a Washington municipal corporation, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 3-19-14

Notary Public
Print Name Tiffany Graves
My commission expires 4-29-17

TIFFANY GRAVES NOTARY PUBLIC COMMISSION EXPIRES 4-29-17 STATE OF WASHINGTON

(Use this space for notarial stamp/seal)

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Exhibit A

PARCEL A:

GOVERNMENT LOTS 3 AND 4, THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 14, TOWNSHIP 19 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, IN PIERCE COUNTY, WASHINGTON.

TOGETHER WITH ALL TIDELANDS OF THE SECOND CLASS ABUTTING THEREON TO THE LINE OF EXTREME LOW TIDE.

EXCEPT FROM SAID UPLANDS AND TIDELANDS THAT PORTION CONVEYED TO PORT TOWNSEND SOUTHERN RAILROAD BY DEED RECORDED UNDER RECORDING NUMBER 218041.

ALSO EXCEPT FROMS AID UPLANDS AND TIDELANDS THOSE PORTIONS CONVEYED TO THE NORTHERN PACIFIC RAILWAY COPANY BY DEEDS RECORDED UNDER RECORDING NUMBERS 309855 AND 385162.

PARCEL B:

THE NORTH 600 FEET OF GOVERNMENT LOT 1, FRACTIONAL SECTION 22, TOWNSHIP 19 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, IN PIERCE COUNTY, WASHINGTON.

TOGETHER WITH ALL TIDELANDS OF THE SESCOND CLASS ABUTTING THEREON TO THE LINE OF EXTREME LOW TIDE.

EXCEPT FROM SAID UPLANDS AND TIDELANDS THOSE PORTIONS CONVEYED TO THE NORTHERN PACIFIC RAILWAY COMPANY BY DEEDS RECORDED UNDER RECORDING NUMBERS 309855 AND 385162.

EXCEPT THAT PORTION, IF ANY, LYING WEST AND SOUTHWEST OF THE FOLLOWING DESCRIBED LINE:

BEGINNING AT THE NORTHEAST CORNER OF GOVERNMENT LOT 2; THENCE NORTH 01°56'19" EAST 784.39 FEET TO A MONUMENT; THENCE CONTINUING NORTH 01°56'19" EAST 80.61 FEET; THENCE NORTH 58°00'00" WEST.

PARCEL C:

THE NORTH 600 FEET OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF AND THE NORTH 600 FEET OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 19 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN.

SEE NEXT PAGE

Unofficial Document
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SITUATE IN THE COUNTY OF PIERCE, STATE OF WASHINGTON.

PARCEL D:

THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 14, TOWNSHIP 19 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN.

SITUATE IN THE COUNTY OF PIERCE, STATE OF WASHINGTON.

PARCEL E:

GOVERNMENT LOT 1, FRACTIONAL SECTION 15, TOWNSHIP 19 NORTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN.

TOGETHER WITH ALL TIDELANDS OF THE SECOND CLASS ABUTTING THEREON TO THE LINE OF EXTREME LOW TIDE.

EXCEPT FROM SAID UPLANDS AND TIDELANDS THOSE PORTIONS CONVEYED TO THE NORTHERN PACIFIC RAILWAY COMPANY BY DEEDS RECORDED UNDER RECORDING NUMBERS 309855 AND 385162.

SITUATE IN THE COUNTY OF PIERCE, STATE OF WASHINGTON.

Unofficial Document

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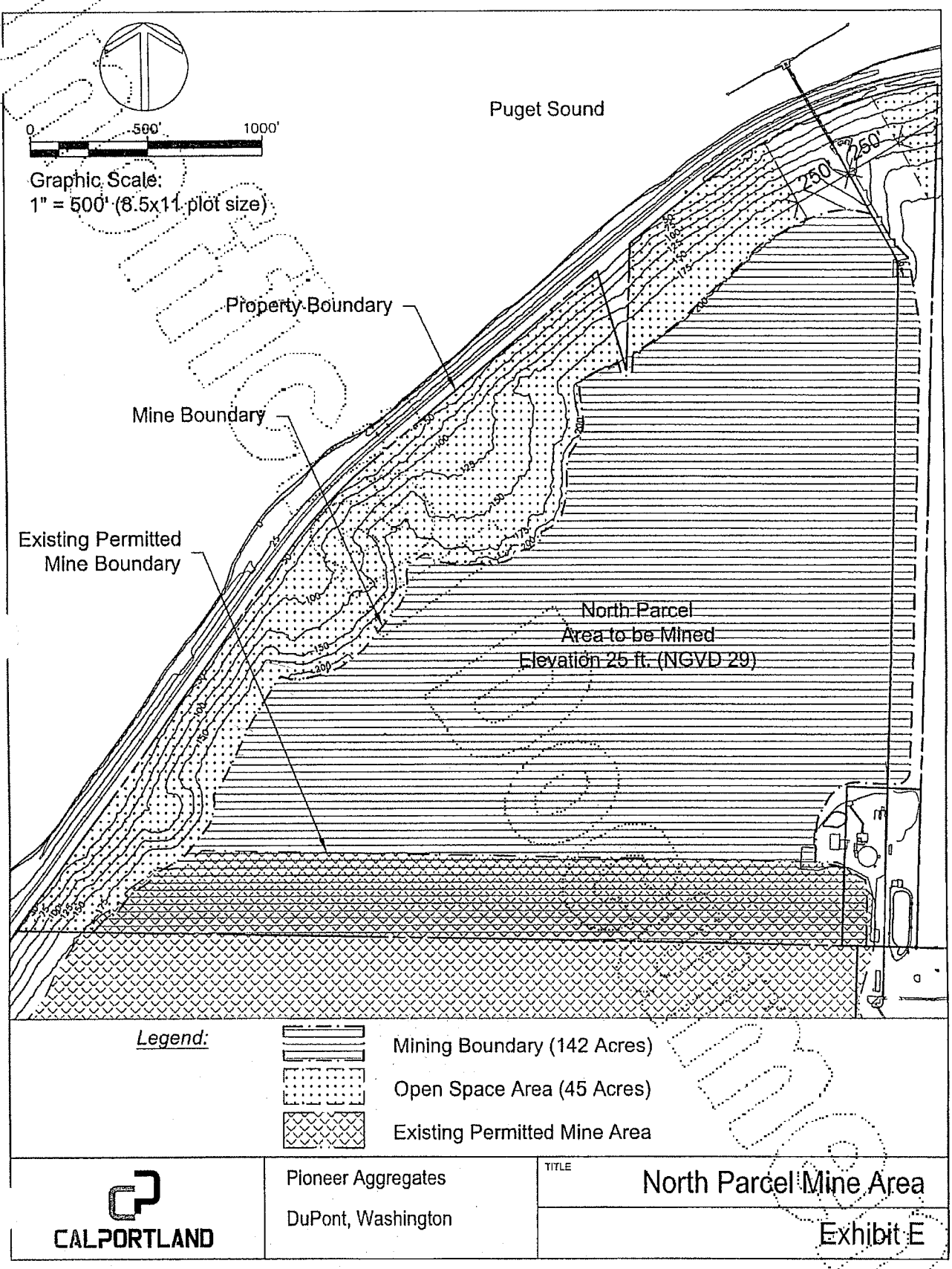
Exhibit B



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Attachment 1.f

1201 3rd Avenue, Suite 2600
Seattle, Washington 98101
206.287.9130

ANCHOR QEA

Memorandum

November 17, 2020

To: City of DuPont, Department of Community Development

From: John Small, Anchor QEA

cc: Pete Stoltz, CalPortland

Re: Pioneer Aggregates South Parcel Mine Expansion Parking Narrative

The purpose of this memorandum is to provide a narrative describing the existing and proposed parking and employee count related to the CalPortland South Parcel Mine Expansion Project. Current and proposed parking meets the requirements of Dupont Municipal Code (DMC) 25.95. The South Parcel Mine Expansion will not result in any change to the operation or employment at the facility. The project does not include erection or modification of any buildings. Parking for employees will remain the same at approximately 60 spaces for personal vehicles, plus additional space for company owned vehicles including trucks, trailers and heavy equipment. The total employment associated with CalPortland's existing mining operation in DuPont, an estimated 60-100 jobs depending on market conditions.

A paved parking lot with disabled parking and access is available at the mine office. Space in this lot is also available for high occupancy vehicles. Bicycles are not allowed inside the gates of the mine for safety reasons. Spaces in this lot meet the city standards for stalls and aisles set forth in DMC 25.95.050. Two additional gravel lots are located between the processing plant and Pioneer Ave and between the concrete batch plant and Solo Point Road. The gravel lots provide flexibility to accommodate more employee vehicles as needed in response to fluctuations in demand. Vehicle and pedestrian traffic are controlled throughout the site to protect worker safety and the site is closed to the public. There are established vehicle and pedestrian travel routes used to access parking areas, buildings and other locations on the site as well as for ingress and egress from the site.

In summary:

- The number of spaces provided is and will remain consistent with DMC 25.95.030 (1)
- The locations for parking are and will remain consistent with DMC 25.95.40
- Preferential Parking requirements are and will continue to be met consistent with DMC 25.95.070
- Parking areas have been developed in consistency with the provisions of DMC 25.9.5050 where applicable (gravel lots are not striped) and will remain so.

- Preferential parking provided meets and will continue to meet the requirements of DMC 25.95.060
- All loading and unloading facilities are and will remain in off street locations that do not impede or interfere with traffic on public roads.

Attachment 1.g

VCP Application
Standard and Expedited Processes

Washington State Department of Ecology
Toxics Cleanup Program

Application Form

Check the box of the process you are applying for:
- ☒ **Standard VCP**
- ☐ **Expedited VCP**

The Department of Ecology (Ecology) may provide informal, site-specific, technical consultations to persons conducting independent remedial actions at contaminated sites under the Voluntary Cleanup Program (VCP).[1] Ecology may provide the consultations under either the **Standard VCP** process or the **Expedited VCP** process.

Apply to the Standard VCP process

To apply for the **Standard VCP** process, you **must** submit to Ecology all the following:

- VCP application form, completed and signed ← this form
- VCP agreement form,[2] signed by applicant
- Agency determination checklist,[3] completed.

To request an opinion on a planned or completed remedial action, you **must** complete **Part 1.F** in this form. Submit with this application one searchable pdf file and one hard copy of each report you want us to review. See our report requirements on our Working with the Voluntary Cleanup Program webpage.[4]

Send your completed application to our regional contact listed, based on your site's county.

Northwest Region
Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom counties

Sonia Fernandez
Sonia.Fernandez@ecy.wa.gov
(425) 649-7233

Eastern Region
Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman counties

Ted Uecker
Ted.Uecker@ecy.wa.gov
(509) 329-3522

Southwest Region
Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum counties

Nicholas Acklam
Nicholas.Acklam@ecy.wa.gov
(360) 407-6347

Central Region
Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima counties

Frosti Smith
Frosti.Smith@ecy.wa.gov
(509) 454-7841

[1] https://www.ecy.wa.gov/VCP
[2] https://fortress.wa.gov/ecy/publications/SummaryPages/ecy070324.html
[3] http://ecyapfass/Biblio2/SummaryPages/ECY070620.html
[4] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Voluntary-Cleanup-Program/Working-with-VCP

Apply to the Expedited VCP process

You may apply for the **Expedited VCP** process only during periods specified by Ecology. To see when Ecology is accepting **Expedited VCP** applications, see the Expedited VCP webpage[5] or subscribe to our **Expedited VCP** email list.

To apply for the **Expedited VCP** process, you **must** submit to Ecology all the following:

- VCP application form, completed and signed ← this form
- Expedited VCP agreement,[6] signed by applicant
- Agency determination checklist, completed
- Remedial investigation report or equivalent, meeting the elements of our remedial investigation checklist, and other reports you want us to review (one searchable pdf file and one hard copy each)
- Electronic environmental data submitted to the Environmental Information Management (EIM) system,[7] which provides automatically generated email as confirmation
- Project schedule.

See the Voluntary Cleanup Program (VCP): Guidance for the Expedited VCP Process [8] for additional information.

To submit your **Expedited VCP** application to Ecology, upload electronic files to Box.com,[9] after creating your online account. Send hard copy materials to:

Sarah Wollwage, Expedited VCP Planner
Toxics Cleanup Program
Department of Ecology
PO Box 47600
Lacey, WA 98504-7600

Do not send your **Expedited VCP** application materials to an Ecology regional office.

You **must pay** the **nonrefundable application fee** within seven calendar days of receiving our invoice, or we may reject your **Expedited VCP** application. After receiving the complete application, we will send the invoice to the email listed for the project billing contact in **Part 1.C** of this form. We will not process your application until we have received payment. Contact Sarah Wollwage at Sarah.Wollwage@ecy.wa.gov or (360) 407-7141 for additional information.

Part 1 – Administration

1.A	**Applicant.** The applicant is the person or organization requesting services from Ecology, and is responsible for paying Ecology's incurred costs incurred. The agreement explains the applicant's authority and duty.
Name of applicant:	Glacier Northwest, Inc. (dba CalPortland)
What type of entity is the applicant?	
☐ Person	A **person** applicant **must** serve as the project billing contact. Identify this person and their contact information in both **Parts 1.B and 1.C**.
☒ Organization	An **organization** applicant **must** identify the project manager in **Part 1.B** and the project billing contact in **Part 1.C**. The organization **must** employ both persons.

[5] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Voluntary-Cleanup-Program/VCP-Expedited
[6] http://ecyapfass/Biblio2/SummaryPages/ECY070633.html
[7] https://ecology.wa.gov/Research-Data/Data-resources/Environmental-Information-Management-database/EIM-submit-data
[8] https://fortress.wa.gov/ecy/publications/summarypages/2009053.html
[9] https://account.box.com/login

Part 1 – Administration

What is the applicant's involvement at the site? Check **all that apply**.

- ☐ property owner
- ☐ past property owner
- ☐ future property owner
- ☐ property lessee
- ☐ other – specify: _____
- ☒ business owner (operator)
- ☐ mortgage holder
- ☐ consultant
- ☐ attorney
- ☐ agent of property owner
- ☐ private person / organization
- ☐ public agency / organization

Expedited VCP note: The **Expedited VCP** applicant **must** have an ownership interest in or operate the facility or have a contractual right to purchase, redevelop, or reuse the facility. Agents for the property owner, such as a consultant, **may not apply** for the **Expedited VCP process**.

If not the current property owner, is the applicant authorized to grant property access? ☒ yes ☐ no

1.B Project manager. We will send the project manager all official correspondence. The project manager **must** be either the applicant or employed by the applicant. The project manager may not be an independent contractor hired by the applicant. Enter the required information.

Name: Pete Stoltz	Title: Manager - Permitting & Government Affairs	
Mailing address: P.O. Box 1730		
City: Seattle	State: WA	Zip: 98111
Phone: 206-764-3036	Email: pstoltz@calportland.com	Fax:

1.C Project billing contact. We will send the project billing contact monthly invoices. The project billing contact **must** be either the applicant or employed by the applicant. The project billing contact may not be an independent contractor hired by the applicant. Enter the required information.

Name: Pete Stoltz	Title: Manager - Permitting & Government Affairs	
Mailing address: P.O. Box 1730		
City: Seattle	State: WA	Zip: 98111
Phone: 206-764-3036	Email: pstoltz@calportland.com	Fax:

1.D Project consultant.

Is the applicant a consultant? ☐ yes ☒ no

If "**yes**", skip to **Part 1.E**.

If **"no"**, **and** the applicant hired a consultant to conduct the independent remedial action, enter the required information.

Name:	Title:	
Organization:		
Mailing address:		
City:	State:	Zip:
Phone:	Email:	Fax:

Do you want us to contact the project consultant? ☐ yes ☐ no

Part 1 – Administration

1.E Property owner.

Is the applicant the owner of the property where independent remedial action is being conducted?

☐ yes If **"yes"**, enter the type of entity and skip to **Part 1.F**.
☒ no If **"no",** enter below all of the required information.

Name:	Title:
Organization: Weyehaeuser NR Company	
Mailing address: 220 Occidental Ave S	

City: Seattle	State: WA	Zip: 98104
Phone:	Email:	Fax:

What type of entity is the property owner? Check **one**.

☒ private ☐ tribal ☐ federal ☐ state
☐ county ☐ municipal ☐ public school ☐ mixed
☐ other – specify: _____

1.F Request for written opinion.

Are you requesting a written opinion at this time? ☒ yes ☐ no

If **"yes"**, list the report(s) or plan(s) below you are requesting a written opinion for. Note: Your reports **must** meet the requirements on our Working with the Voluntary Cleanup Program.[10]

The Customer is submitting a Cleanup Action Plan (CAP) for review with this application to address lead- and arsenic-contaminated surface soil attributable to the Tacoma Smelter Plume.

Attach to this application additional remedial action reports or plans you want us to review. We will base our opinion on the information in the site file, including information attached to this application.

1.G Reporting requirements. Comply with the following two reporting requirements when requesting written opinions on planned or completed remedial actions.

1.G.1 Professional licensing. Documents submitted containing geologic, hydrogeologic, or engineering work **must** be stamped by of an appropriately licensed professional, as required by Chapters 18.220 and 18.43 RCW.

1.G.2 Data submittal to EIM. You **must** submit all site environmental sampling and analysis data in an electronic format that meets our requirements for transfer into our EIM system. Refer to our EIM webpage for instructions on how to apply for an account and submit your data. Failure to comply with these requirements may result in unnecessary delays.

For **Expedited VCP** applications **only**, the study ID and CSV file name **must** both begin with "XVC" in the title. **Do not** use spaces or hyphens in either the study ID or CSV file name.

[10] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Voluntary-Cleanup-Program/Working-with-VCP

Part 1 – Administration

Have you submitted all the site's environmental data to EIM? ☐ yes ☒ no

☐ yes If **"yes"**, enter the study ID and CSV file name below.

☐ no If **"no",** and data need to be submitted, submit your data to EIM first, and then complete the required information below.

We will not accept your **Expedited VCP** application unless you have satisfied these requirements.

We will not issue a no further action (NFA) opinion, unless you have satisfied these requirements.

Study ID	CSV File name	Submitted to EIM? (y/n)
Ex: XVCNW9999	Ex: XVCnw9999_June20_results.csv	
Study ID:	CSV File name:	
Study ID:	CSV File name:	
Study ID:	CSV File name:	
Study ID:	CSV File name:	
Study ID:	CSV File name:	
Study ID:	CSV File name:	
Study ID:	CSV File name:	
Study ID:	CSV File name:	

Part 2 – Site description

2.A Site name. If we have already identified the site, enter the site name we provided. Otherwise, enter a suggested name for the site. You may also include an alternative name.

Name: Tacoma Smelter Plume (DuPont South Parcel Cleanup Unit)

Alternative name:

2.B Source property. The source property is the property where hazardous substances were released into the environment. For example, for an underground storage tank (UST) release, the source property is where the underground storage tank is located that caused the release.

Do you know on which property the releases occurred? ☒ yes ☐ no

If **"yes",** refer to the source property when identifying the physical address and geographic position below.

If **"no",** refer to the property addressed by your cleanup when identifying the physical address and geographic position below.

2.B.1 Physical address. Enter the property's physical address.

Street address: Former ASARCO Copper Smelter

City: Ruston	State: WA	Zip: 98407

2.B.2 Geographic position. Enter the property's geographic position.

Coordinates	Latitude:	Degrees:	Minutes:	Seconds:
	Longitude:	Degrees:	Minutes:	Seconds:

Part 2 – Site description

Location on property (e.g., point of release or center of parcel]	
Collection method (e.g., GPS or address matching)	
Collection source (i.e., map scale)	
Horizontal datum (i.e., base reference for coordinate system)	
Accuracy level (i.e., +/- feet or meters)	

Legal descriptions

TRS data	Township:	Range:	Section:	Quarter-quarter:
Tax parcels				

2.C Affected properties. An affected property is a property affected by the hazardous substances released on the source property. For example, a leaking UST release on one property (source property) may migrate through the soil or groundwater to an adjacent property (affected property).

Do any of the releases affect any properties adjacent to the source property?

☐ yes — If **"yes"**, identify below each property you know has been affected by the releases on the source property. If you need to add more information, go to 2.C in the additional information pages at the end of this form.

☐ no — If **"no"**, skip to **Part 2.D**.

☒ unknown — If **"unknown"**, skip to **Part 2.D**.

1	Address:
	Tax parcels:
2	Address:
	Tax parcels:
3	Address:
	Tax parcels:
4	Address:
	Tax parcels:

2.D Public rights-of-way affected by the releases.

Do any of the releases affect a public right-of-way (e.g., roadways)? ☐ yes ☐ no ☒ unknown

If **"yes"**, specify below. Otherwise, skip to **Part 2.E**. If you need to add more information, go to 2.D in the additional information pages at the end of this form.

Part 2 – Site description

2.E Extent of the site.

What is the approximate areal extent of the site? Check **only one**.

☐ < 5,000 square feet
☐ > 5,000 square feet, < 1 acre
☐ > 1 acre, < 10 acres
☒ > 10 acres
☐ unknown

2.F Description of site release(s).

2.F.1 Release source(s).

What are the source(s) of the release(s) at the site? Check **all that apply**.

☒ area-wide lead and arsenic soil contamination (see "Area-wide soil contamination" below)
☐ non-point source (e.g., contaminated soil used as fill)
☐ point source (e.g., leaking tank)
☐ unknown
☐ other – specify: _____

Describe below the release source(s). If you need to add more information, go to 2.F.1 in the additional information pages at the end of this form.

The property that is the subject of this VCP application is located within the Tacoma Smelter Plume.

2.F.2 Release circumstances. Describe the release circumstances. If you need to add more information, go to 2.F.2 in the additional information pages at the end of this form.

2.F.3 Release discover circumstances. Describe the release discovery circumstances. If you need to add more information, go to 2.F.3 in the additional information pages at the end of this form.

Part 2 – Site description

2.F.4 Area-wide soil contamination. Visit the Dirt Alert Program webpage[11] or see the Management Plan for the Tacoma Smelter Plume project[12] for information about the area-wide soil contamination projects.

Is the site in an area affected by smelter emissions, such as from the Tacoma Smelter Plume area?

☒ yes ☐ no ☐ unknown

See if the site is within the mapped Tacoma Smelter Plume area.

Is the site located in a former fruit orchard in operation before 1947? ☐ yes ☒ no ☐ unknown

Is the site affected by area-wide arsenic or lead soil contamination? ☒ yes ☐ no ☐ unknown

2.G Nature and extent of contamination. The following refers to conditions after the release but before cleanup.

Hazardous substances and affected media. Identify hazardous substances released and media (e.g., soil) affected by those substances to the extent known. Use the codes at the end of the table.

Hazardous substance	Check affected media				
	Soil	Ground-water	Surface water	Sediment	Air
Ex: benzene	C	S	N/A	N/A	B
lead	C	N/A	N/A	N/A	N/A
arsenic	C	N/A	N/A	N/A	N/A

C = confirmed, greater than cleanup level
B = confirmed, less than cleanup level
O = confirmed, not present
S = suspected
N/A = not suspected
U = unknown

[11] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Dirt-Alert-program
[12] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Tacoma-smelter

Part 2 – Site description

2.G.1 Drinking water.

Does site contamination pose a threat or potential threat to an existing drinking water source (groundwater or surface water)? ☐ yes ☒ no ☐ unknown

If **"yes"**, what type of drinking water system is threatened by the contamination? Check **all that apply**.

☐ single family ☐ public

If **"public drinking water supply"** is selected, is the contamination located within or upstream of a 10-year wellhead protection area? ☐ yes ☐ no ☐ unknown

If **"yes"**, or help is needed, see the Source Water Assessment Program (SWAP) Mapping Tool[13] or call the Department of Health at (800) 521-0323 for information.

2.G.2 Indoor air.

Are contaminant odors noted in any buildings, underground utilities conduits, or other confined spaces?

☐ yes ☒ no ☐ unknown

If **"yes"**, specify below. If you need to add more information, go to 2.G.2 in the additional information pages at the end of this form.

2.H Site maps.

Attach to this application maps that identify:

- site location
- affected properties and public rights-of-way
- source(s) of release(s)
- nature and extent of contamination
- impacted human or ecological receptors (e.g., through drinking water supplies)
- site physical characteristics (e.g., property lines, building and roadway outlines, surface water bodies, water supply wells, groundwater flow direction, and utility rights-of-way)
- adjacent properties and their uses (e.g., gas station, dry cleaner, residential).

Part 3 – Operational History

3.A Current use of source property. The following refers to only the source property and **not** other properties affected by the site contamination. Add information to the best of your ability.

3.A.1 Current property owners. Identify the current owner of the source property.

Name:	Title:
Organization:	
Mailing address:	

[13] https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/SourceWater/GISMappingTool

Part 3 – Operational History

City:	State:	Zip:
Phone:		

3.A.2 Current business owner (operator). Identify the current business owner operating on the source property.

Name:	Title:
Organization:	
Mailing address:	

City:	State:	Zip:
Phone:		

3.A.3 Current business operations. Identify the current business operations on the source property.

What is the current land use of the source property? Check **all that apply**.

☐ residential ☐ commercial ☐ industrial ☐ agricultural ☐ childcare facility
☐ school ☐ park ☐ other – specify:

Does a commercial or industrial business currently operate on the source property?

☐ yes ☐ no ☐ unknown

If **"yes"**, identify in the following table the current business operations using the North American Industry Classification System (NAICS) codes and specifying the operations.

NAICS Code	Operations Description
Ex: 447110	Gasoline stations with convenience stores

Is a solid waste handling facility located on the source property?

☐ yes ☐ no ☐ unknown

If **"yes"**, identify below. If you need to add more information, go to 3.A.3 in the additional information at the end of this form.

Is a dangerous waste treatment, storage, or disposal facility located on the source property?

☐ yes ☐ no ☐ unknown

If **"yes"**, identify here: .

If you need to add more information, go to 3.A.3 in the additional information pages at the end of this form.

Part 3 – Operational History

3.A.4 Regulation of current business operations.

Does the business operate under any federal, state, or local permits (e.g., NPDES) related to the release of hazardous substances into the environment? ☐ yes ☐ no ☐ unknown

If **"yes"**, specify below the regulated operation, the name of the permit, and the date it was issued.

Regulated operation	Permit	Date issued
Ex: wastewater discharge	NPDES permit	02/02/02

Has a state or federal notice of enforcement action (e.g., notice of violation) ever been issued related to the release of hazardous substances at the business? ☐ yes ☐ no ☐ unknown

If **"yes"**, specify notice and year issued: _____

Have business operations resulted in any other spills or other unpermitted releases on the source property? ☐ yes ☐ no ☐ unknown If **"yes"**, list in the following table.

Release	Date of release	Status of release

3.A.5 Storage tank information. Identify all aboveground storage tanks (ASTs) and USTs that have been used to store hazardous substances on the source property, regardless of whether the tanks are still in service or in place. Enter "U" where unknown.

Identification				Status and Closure				Releases	
Hazardous substance	AST or UST	Size (gal.)	Tank ID	Date installed	In use (y/n)	Date closed	Closure method (*)	Past (y/n)	Current (y/n)
Ex: diesel	UST	10,000	4	02/87	N	5/98	removed	Y	N

(*) Options = removed or closed in place.

3.B Past use of source property. The following refers to only the source property, not other properties affected by the site.

3.B.1 Past property owners. Identify the owner of the source property when the release occurred.

Name:	Title:
Organization:	

Part 3 – Operational History

Mailing address:		
City:	State:	Zip:
Phone:	Fax:	Email:

3.B.2 Past business owners (operators). Identify the site business owner (operator) when the release occurred.

Name:	Title:
Organization: ASARCO	
Mailing address:	
City:	State: Zip:
Phone:	Fax: Email:

3.B.3 Identification of past business operations. Identify the past operations of businesses on the source property using the NAICS codes and/or specifying the operations.

NAICS Code	Operations description
Ex: 447110	Gasoline stations with convenience stores

3.C Future use of source and affected properties. The following refers to both source and affected properties.

Will any ownership interest in the source property or affected properties be conveyed before or upon cleanup completion? ☐ yes ☐ no ☐ unknown

If **"yes"**, specify below. If you need to add more information, go to 3.C in the additional information pages at the end of this form.

Part 3 – Operational History

3.D Redevelopment plans as part of cleanup.
Will any of the source or affected properties, or portions of those properties, be redeveloped as part of the cleanup? ☐ yes ☐ no ☐ unknown If **"yes"**, specify below the proposed land use. Check **all that apply**. ☐ residential ☐ school ☐ commercial ☐ industrial ☐ childcare facility ☐ agricultural ☐ park ☐ other – specify: Also, specify below the activities proposed for that land use. If you need to add more information, go to 3.D in the additional information pages at the end of this form.

Part 4 – Administrative history

Have you previously reported the release(s) of hazardous substances? ☐ yes ☒ no ☐ unknown If **"yes"**, when? _____
Has cleanup of the site, or any portion of the site, ever been managed under the **Standard VCP** or **Expedited VCP**? ☒ yes ☐ no ☐ unknown If **"yes"**, specify **Standard VCP** or **Expedited VCP** project number: SW1323
Has the site cleanup, or any portion, ever been managed under a federal or state order or decree? ☐ yes ☐ no ☒ unknown If **"yes"**, specify type and docket number: _____

Part 5 – Independent remedial actions

5.A Scope of remedial actions.
Do you plan to characterize and investigate all site contamination, including contamination on affected adjacent properties, as part of your cleanup project? ☐ yes ☒ no ☐ unknown If **"no"**, describe below the scope of the cleanup project, including the contamination (properties, portions of a property, media and/or hazardous substances) that you **do not** plan on characterizing or investigation as part of the **Standard VCP** or **Expedited VCP** project. If you need to add more information, go to 5.A in the additional information pages at the end of this form.
The proposed cleanup action will address TSP-related metals in soil at the property that is the subject
of this VCP application.

Part 5 – Independent remedial actions

5.B Status of remedial actions.

What is the current status of remedial actions at the site? Check **all that apply** in table.

Remedial action	Planned	Ongoing	Completed	Not applicable
Initial response (UST only)				X
Interim action				X
Remedial investigation				X
Feasibility study				X
Cleanup action	X			

5.C Documentation of remedial actions.

List all known remedial action plans or reports produced for the site, including:

- title
- preparer
- date produced
- whether submitted to us
- date submitted to us

If you need to add more information, go to 5.C in the additional information pages at the end of this form.

	Title	Preparer	Date	Submitted to Ecology	
				yes/no	date
Ex:	Jane Doe site: Remedial Investigation Work Plan	Freedom Consulting	02/20/19	no	n/a
1	Asarco Tacoma Smelter Site, Final Interim Action Plan for the Tacoma Smelter Plume, Publication Number 12-09-086	WA State Dept of Ecology	6/2012	N/A	N/A
2	Tacoma Smelter Plume Model Remedies Guidance, Toxics Cleanup Program, Publication Number 19-09-101	WA State Dept of Ecology	7/2019	N/A	N/A
3	Cleanup Action Plan, DuPont South Parcel	Aspect Consulting	4/22/20	Yes	w/ VCP Application
4					
5					
6					
7					
8					
9					
10					

Part 6 – Statement and signature

6.A **Statement and signature.** The undersigned **affirms** that the information provided in this application is true and accurate to the best of the applicant's knowledge. Someone other than the **applicant** may sign this application form.		
Name: Pete Stoltz		Title: Manager - Permitting & Government Affairs
Signature:		Date: 9-3-2020
Organization: Glacier Northwest, Inc. (dba CalPortland)		
Mailing address: P.O. Box 1730		
City: Seattle	State: WA	Zip: 98111
Phone: 206-764-3036	Email: pstoltz@calportland.com	Fax:

6.B Affiliation.

What is the signatory's involvement at the site? Check **all that apply**.

☒ applicant ☐ property owner ☐ consultant ☐ attorney

☐ other - specify:

Expedited VCP note: While anyone may sign the **application form**, only certain types of applicants are eligible to join **Expedited VCP process** and sign the **Expedited VCP agreement**. To sign the agreement, the applicant **must** have an ownership interest in or operate the facility or have a contractual right to purchase, redevelop, or reuse the facility. If the applicant is a corporation, a representative authorized to bind the corporation **must** sign the **Expedited VCP** agreement.

If you need this publication in an alternative format, please call the Toxics Cleanup Program at 360-407-7170 or visit our Toxics Cleanup Program webpage.[14] Persons with hearing impairment can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

[14] https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Toxics-Cleanup

Additional Information Pages

Insert information here that does not fit into the application format above.

2.C Affected properties (continued)	
5	Address:
	Tax parcels:
6	Address:
	Tax parcels:
7	Address:
	Tax parcels:
8	Address:
	Tax parcels:
9	Address:
	Tax parcels:
10	Address:
	Tax parcels:

2.D Public rights-of-way affected by the releases (continued)

2.F.1 Release source(s) (continued)

2.F.2 Release circumstances (continued)

2.F.2 Release circumstances (continued)

2.F.3 Release discovery circumstances (continued)

2.G.2 Indoor air (continued)

3.A.3 Current business operations (continued)

3.C Future use of source and affected properties (continued)

3.D Redevelopment plans (continued)

5.A Scope of remedial actions (continued)

5.C Documentation of remedial actions (continued)

5.C Documentation of remedial actions (continued)

GIS Path: T:\projects_8\DuPont\DuPontSouthParcel_040001\Delivered\SouthParcel\CAP\Q1 Site Vicinity Map.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 4/10/2020 || User: erumbaker || Print Date: 4/10/2020

Tacoma Smelter Plume:
Estimated Arsenic Concentrations in Top Six Inches of Soil in mg/kg (ppm)

- 40.1 ppm to 100.0 ppm
- Not Evaluated
- Wetland
- Stream
- Water Body

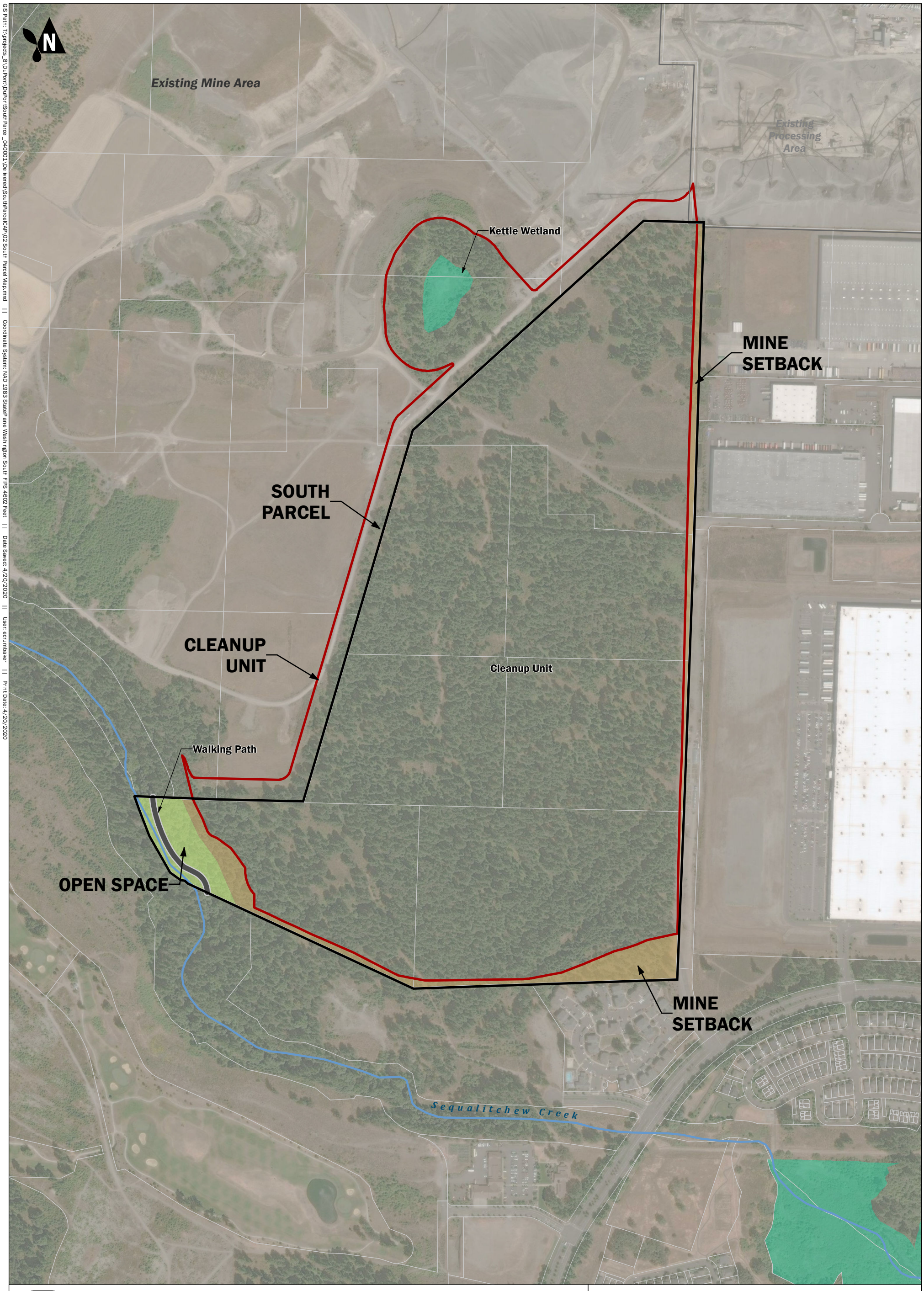
Source: Arsenic data from Ecology June 2012; revised GIS file received January 2018.

Site Vicinity Map

DuPont South Parcel DuPont, Washington

Aspect Consulting	APR-2020	BY: MLK / EAC	FIGURE NO. 1
	PROJECT NO. 040001-015	REVISED BY: RAP / EAC	

GIS Path: T:\projects_8\DuPont\DuPontSouthParcel_040001\Delivered\SouthParcelCAP\02 South Parcel Map.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 4/20/2020 || User: ecrumbaker || Print Date: 4/20/2020



South Parcel
Cleanup Unit
Open Space
Mine Setback
Wetland Soil Sample Location[1]
Wetland
Water Body
Stream

0 250 500
Feet

1) Wetland samples collected on 12/5/2019 by Anchor QEA, LLC (Anchor). The Kettle Wetland was delineated by Anchor as described in the 2007 Wetland Delineation Report.

Cleanup Unit Map

DuPont South Parcel DuPont, Washington

Aspect CONSULTING	APR-2020	BY: MBK / RAP	FIGURE NO. 2
	PROJECT NO. 040001-015	REVISED BY: EAC / OGR	

Basemap Layer Credits || Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

Agency Determination Checklist

Determination verification (for use by Ecology)
☐ correct
☐ incorrect

How to use this checklist

This checklist helps you determine which Washington State technical assistance program to apply for:

- **Department of Ecology** (Ecology)
  - Voluntary Cleanup Program (VCP)

- **Pollution Liability Insurance Agency** (PLIA)
  - Petroleum Technical Assistance Program (PTAP)
  - Heating Oil Technical Assistance Program (HOTAP).

Ecology will not accept VCP applications for independent cleanup projects eligible for a PLIA program. PLIA provides technical assistance for releases of petroleum or heating oil from tank systems. PLIA is a separate agency and not an Ecology program.

This determination does not guarantee acceptance into the VCP. Ecology may decide to supervise remedial action at the site under an order or decree, based on site-specific conditions.

What these programs provide

Ecology and PLIA may provide informal, site-specific, technical consultations for independent cleanup actions. Each can provide such consultations under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW, and its implementing regulations Chapter 173-340 WAC and Chapter 70.149.040(9) RCW.

Applying to Ecology's VCP

You can apply for one of two VCP processes: Standard VCP process and Expedited VCP process. The eligibility requirements for the Standard VCP process and Expedited VCP process are listed on the Standard VCP webpage[1] and the Expedited VCP webpage,[2] respectively.

1. **Standard VCP process:** Complete your Standard VCP application, which **must** include all required materials listed in the VCP application form, following its instructions. Submit your completed application to the appropriate Ecology regional office, based on your site's county.[3]

2. **Expedited VCP process:** Complete your Expedited VCP application, which **must** include all required materials listed in the VCP application form, following its instructions. Subscribe to the Expedited VCP email list to receive notices and updates of when Ecology opens or closes its application periods.

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[1] https://ecology.wa.gov/VCP
[2] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Voluntary-Cleanup-Program/VCP-Expedited
[3] https://ecology.wa.gov/About-us/Get-to-know-us/Contact-us/Regional-contacts

Applying to PLIA's HOTAP or PTAP

Follow PLIA's application instructions on the PLIA website[4] when applying for HOTAP or PTAP.

Part 1 - Administration

1.A. Fill in the applicant name and application submission date:

Applicant name: Glacier Northwest, Inc. (dba CalPortland)

Application submission date: _____

1.B. Final agency determination of eligibility

Complete this Part 1.B, after reviewing site eligibility in **Parts 2 through 6** in this form:

☒ Apply for Ecology's VCP

☐ Apply for PLIA's PTAP or HOTAP

Part 2 – Non-heating oil petroleum tank release sites

PLIA has responsibility for some non-heating-oil petroleum tank release sites (i.e., storage tank systems that contain petroleum or a mixture of petroleum with de minimus quantities of other substances) meeting inclusionary/exclusionary factors developed jointly by Ecology and PLIA, in accordance with Chapter 70.149.040(9) RCW.

Non-heating-oil petroleum includes, but is not limited to, petroleum and petroleum-based substances comprised of a complex blend of hydrocarbons, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used/waste oils.

Non-heating-oil petroleum does **not** include propane, asphalt, or other petroleum products that are not liquid at standard conditions of temperature and pressure.

☒ Site is a non-heating-oil petroleum storage tank release site.

If you checked this box, move to Part 4. Otherwise, **STOP**. Apply for Ecology's VCP.

Part 3 – Heating oil tank release sites

As of July 23, 2017, Ecology and PLIA policies dictate that independent remedial actions at heating oil tank release sites can best serve Washington residents, and provide greater flexibility and capacity for cleanup of contaminated sites, when conducted under PLIA's HOTAP.

Heating oil includes petroleum products used for space heating in oil-fired furnaces, heaters, and boilers, and includes stove oil, diesel fuel, or kerosene.

Heating oil does **not** include petroleum products used as fuels in motor vehicles, marine vessels, trains, buses, aircraft, or any off-highway equipment not used for space heating, or for industrial processing, or generating electrical energy.

[4] plia.wa.gov

3.A. Heating oil tank release sites

PLIA is responsible for heating oil tank release sites, with the exception of sites that meet both requirements in Part 3.B.

☐ This site is an abandoned, active, or decommissioned heating oil tank release site (including tanks above ground, below ground, or in a basement).

If you checked this box, move to Part 3.B. Otherwise, skip to Part 4.

3.B. Comingled contamination

If comingled contamination exists at your site, your site is no longer considered a heating oil tank release site, but you may apply for Ecology's VCP or PLIA's PTAP.

☐ Comingled contamination exists at your site.

If you checked this box, move to Part 4. Otherwise, skip to Part 3.C.

3.C. Heating oil tank release site exemptions

Ecology and PLIA may agree to allow Ecology to make heating oil tank release site determinations for releases that involve sites already being cleaned up under Ecology's authority.

☐ The heating oil tank release occurred at a site already being cleaned up under Ecology's authority.

☐ Ecology and PLIA have agreed that Ecology can make a heating oil tank release site determination for this site.

If you checked either box, **STOP**. Apply for Ecology's VCP.

If you did **not** check either box, **STOP**. Visit PLIA's website to apply for HOTAP.

Part 4 – Inclusionary factors

Ecology and PLIA have jointly developed inclusionary factors for non-heating-oil petroleum tank release sites. If a non-heating-oil petroleum tank release site meets any of the factors in Parts 4.A and 4.B, you may apply for PLIA's PTAP (depending on results from completing Part 5).

4.A. Ranking and inclusionary factors

The following inclusionary factors are based on the Washington Ranking Method (WARM) Scoring Manual.[5]

☐ The site has been ranked a 3, 4, or 5, based on a WARM Site Hazard Assessment.

☐ The site has been ranked a 1 or 2, based on a WARM Site Hazard Assessment but does not include complete surface water or sediment contamination pathways.

If you checked either box, move to Part 5.

If you did not check either box (site has not been ranked), move to Part 4.B.

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5 https://fortress.wa.gov/ecy/publications/SummaryPages/90014.htmlhttps://fortress.wa.gov/ecy/publications/SummaryPages/90014.html

4.B. Funding and site type factors

The following inclusionary factors represent applicable factors that may apply, regardless of a site's WARM ranking.

1. Funding factors – the site is:

- ☐ covered by PLIA insurance
- ☐ a recipient of a PLIA grant or loan.

2. Site type factor

- ☐ The site involves a release from non-heating-oil petroleum storage tank system(s) and does not include surface water or sediment contamination pathways.

If you checked any of these boxes, move to Part 5.

If you did **not** check any of these boxes, **STOP**. Apply for Ecology's VCP.

Part 5 – Exclusionary factors

Ecology and PLIA have jointly developed exclusionary factors for non-heating-oil petroleum release tank sites. If a non-heating-oil petroleum release tank site meets any of the exclusionary factors in Part 5, apply for Ecology's VCP. Your project may not be eligible for PLIA's PTAP, unless the conditions stated in Part 5.B are met.

5.A. Location, legal, funding, VCP, and site type factors

1. Location factors – the site is within the bounds of or impacting:

- ☐ a U.S. Environmental Protection Agency Superfund site
- ☐ an Ecology Nuclear Waste Program-managed site
- ☐ an Ecology Industrial Section site
- ☐ an Ecology Hazardous Waste Toxics Reduction Program Dangerous Waste site.

2. Legal factors

- ☐ A potentially liable party (PLP) dispute about liability is in progress.
- ☐ Other litigation regarding your site, such as court supervision or agreed order, is in progress.
- ☐ The site is being remediated under an active control between Ecology and the PLP.

3. Funding factors

- ☐ Site remediation is funded, with Ecology as the sole or leading funding agency.
- ☐ The applicant is a local government planning to apply for an Independent Remedial Action Grant from Ecology. For information about the grant program, including cultural resource consultation requirements, visit our Independent remedial action grants webpage[6].

[6] https://ecology.wa.gov/About-us/How-we-operate/Grants-loans/Find-a-grant-or-loan/Independent-remedial-action-grants

☐ Other litigation regarding your site, such as court supervision or agreed order, is in progress.

☐ The site is being remediated under an active control between Ecology and the PLP.

4. Site type factors

☐ The site has known impacts to surface water or sediment.

☐ The site consists of comingled non-petroleum and non-incidental contaminants not related to the operations of the site (including contaminant migration from off site).

If you checked any of these boxes, move to Part 5.B.

If you did **not** check any of these boxes, **STOP**. Visit PLIA's website to apply for PTAP.

5.B. Site characterization exemption

Ecology and PLIA may jointly override other exclusionary factors, based on the results of site characterization, in accordance with MTCA.

☐ Exclusionary factors identified in Part 5.A have been overridden by a joint decision between Ecology and PLIA, based on the results of a site characterization, in accordance with MTCA. **If applicable, include supporting documentation.**

If you checked this box, **STOP**. Visit PLIA's website to apply for PTAP.

If you did not check this box, **STOP**. Apply for Ecology's VCP. This determination does not guarantee acceptance into the VCP. Based on site-specific information, we may decide to supervise remedial action at the site under an order or decree.

Part 6 – Check that box

After completing all the required parts of this form, go back to the top of the form, and **check** the appropriate eligibility box in Part 1.B.

Accommodation Requests

If you need this publication in an alternative format, please call the Toxics Cleanup Program at (360) 407-7170 or visit our Toxics Cleanup Program webpage.[7] Persons with hearing impairment can call 711 for Washington Relay Service. Persons with a speech disability can call (877) 833-6341.

[7] https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Toxics-Cleanup

DEPARTMENT OF ECOLOGY
State of Washington

Voluntary Cleanup Program Agreement

Washington State Department of Ecology
Toxics Cleanup Program

For completion by Ecology only	Facility/Site Name:
	Facility/Site No.:
	VCP Project No.:

Instructions

Submit this Agreement (original) to Ecology as part of your Application. Before submitting, enter the Customer's name and the Site's address on the first page, and sign the Agreement on the second page. If your Application is accepted, then Ecology will do the following: 1) identify the Site and VCP project in the box below; 2) sign the Agreement; and 3) send you a copy of the completed Agreement.

This document constitutes an Agreement between the State of Washington Department of Ecology (Ecology) and Glacier Northwest, Inc. (dba CalPortland) (Customer) to provide informal site-specific technical consultations under the Voluntary Cleanup Program (VCP) for the Site identified below and associated with the following address: 4301 Pioneer Ave, DuPont, Washington, 98327.

The purpose of this Agreement is to facilitate independent remedial action at the Site. Ecology is entering into this Agreement under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC. If a term in this Agreement is defined in MTCA or Chapter 173-340 WAC, then that definition shall govern.

Services Provided by Ecology

Upon request, Ecology agrees to provide the Customer informal site-specific technical consultations on the independent remedial actions proposed for or performed at the Site consistent with WAC 173-340-515(5). Those consultations may include assistance in identifying applicable regulatory requirements and opinions on whether the remedial actions proposed for or conducted at the Site meet those requirements.

Ecology may use any appropriate resource to provide the Customer with the requested consultative services. Those resources may include, but shall not be limited to, those of Ecology and the Office of the Attorney General. However, Ecology shall not use independent contractors unless the Customer provides Ecology with prior written authorization.

In accordance with RCW 70.105D.180, any opinions provided by Ecology under this Agreement are advisory only and not binding on Ecology. Ecology, the state, and officers and employees of the state are immune from all liability. Furthermore, no cause of action of any nature may arise from any act or omission in providing, or failing to provide, informal advice and assistance under the VCP.

Payment for Services by Customer

The Customer agrees to pay all costs incurred by Ecology in providing the informal site-specific technical consultations requested by the Customer consistent with WAC 173-340-515(6) and 173-340-550(6). Those costs may include the costs incurred by attorneys or independent contractors used by Ecology to provide the requested consultative services. Ecology's hourly costs shall be determined based on the method in WAC 173-340-550(2).

Ecology shall mail the Customer a monthly itemized statement of costs (invoice) by the tenth day of each month (invoice date) that there is a balance on the account. The invoice shall include a summary of the costs incurred, payments received, identity of staff involved, and amount of time staff spent on the project.

The Customer shall pay the required amount by the due date, which shall be thirty (30) calendar days after the invoice date. If payment has not been received by the due date, then Ecology shall withhold any requested opinions and notify the Customer by certified mail that the debt is past due.

If payment has not been received within sixty (60) calendar days of the invoice date, then Ecology shall stop all work under the Agreement and may, as appropriate, assign the debt to a collection agency under Chapter 19.16 RCW. The Customer agrees to pay the collection agency fee incurred by Ecology in the course of debt collection.

Reservation of Rights / No Settlement

This Agreement does not constitute a settlement of liability to the state under MTCA. This Agreement also does not protect a liable person from contribution claims by third parties for matters addressed by the Agreement. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). Ecology's signature on this Agreement in no way constitutes a covenant not to sue or a compromise of any Ecology rights or authority.

Ecology reserves all rights under MTCA, including the right to require additional or different remedial actions at the Site should it deem such actions necessary to protect human health and the environment, and to issue orders requiring such remedial actions. Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the release or threatened release of hazardous substances at the Site.

Effective Date, Modifications, and Severability

The effective date of this Agreement shall be the date on which this Agreement is signed by the Toxics Cleanup Program's Section Manager or delegated representative. This Agreement may be amended by mutual agreement of Ecology and the Customer. Amendments shall be in writing and shall be effective when signed by the Toxics Cleanup Program's Section Manager or delegated representative. If any provision of this Agreement proves to be void, it shall in no way invalidate any other provision of this Agreement.

Termination of Agreement

Either party may terminate this Agreement without cause by sending written notice by U.S. mail to the other party. The effective date of termination shall be the date Ecology sends notice to the Customer or the date Ecology receives notice from the Customer, whichever occurs first. Unless otherwise directed, issuance of a No Further Action opinion, either for the Site as a whole or for a portion of the real property located within the Site, shall constitute notice of termination by Ecology.

Under this Agreement, the Customer is only responsible for costs incurred by Ecology before the effective date of termination. However, termination of this Agreement shall not affect any right Ecology may have to recover its costs under MTCA or any other provision of law.

Representations and Signatures

The undersigned representative of the Customer hereby certifies that he or she is fully authorized to enter into this Agreement and to execute and legally bind the Customer to comply with the Agreement.

Washington State Department of Ecology	Customer
_____	_____
Signature	Signature
_____	Pete Stoltz
Printed Name	Printed Name of Signatory
Section Manager, Toxics Cleanup Program	Manager – Permitting & Government Affairs Glacier Northwest, Inc. (dba CalPortland)
	Title of Signatory
_____	9-3-2020
Date	Date

If you need this publication in an alternative format, please call the Toxics Cleanup Program at 360-407-7170. Persons with hearing impairment can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Attachment 1.i

Electronic Copy

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • 360-407-6300
Call 711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

February 2, 2021

Pete Stoltz
Glacier Northwest, Inc. (dba CalPortland)
PO Box 1730
Seattle, WA 98111
pstoltz@calportland.com

Re: Opinion on the Proposed Cleanup of a Property associated with the Asarco Tacoma Smelter Site

- **Property Name:** DuPont South Parcel
- **Property Address:** 1700 Center Dr., DuPont, Pierce County, WA 98327
- **Facility/Site ID:** 80008
- **Cleanup Site ID:** 15278
- **VCP Project No.:** SW1728

Dear Pete Stoltz:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your proposed independent cleanup of a Property associated with the Asarco Tacoma Smelter Site (Asarco Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA),[1] chapter 70A.305 Revised Code of Washington (RCW).[2]

Issues Presented and Opinion

Ecology has determined that no further remedial action will likely be necessary at the Property to clean up contamination associated with the Asarco Site.

Ecology has determined that further remedial action will likely still be necessary elsewhere at the Asarco Site, but no further remediation will be necessary for the Property.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, chapter 70A.305 RCW, and its implementing regulations, Washington Administrative Code (WAC) chapter 173-340[3] (collectively "substantive requirements of MTCA"). The analysis is provided below.

[1] https://fortress.wa.gov/ecy/publications/SummaryPages/9406.html
[2] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305
[3] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340

Description of the Property and the Asarco Site

This opinion applies only to the Property described below within Asarco Site. This opinion does not apply to any other sites that may affect the Property. Any such sites, if known, are identified separately below.

1. Description of the Property.

The Property includes the following tax parcels in Pierce, which were affected by the Asarco Site will be addressed by your cleanup:

- 0119233011 (38 acres)
- 0119233014 (20.32 acres)
- 0119233015 (20.23 acres)
- 0119262016 (33.92 acres)
- 0119233016 (20 acres)
- 0119233017 (20.04 acres)
- 0119262015 (24.71)
- 0119232012 (Kettle wetland; 1.78 acres)

Enclosure A includes a legal description of the Property and details of the Property as currently known to Ecology.

2. Description of the Asarco Site.

The Asarco Site is defined by the nature and extent of contamination associated with the following releases:

- Arsenic into the Soil.
- Lead into the Soil.

Those releases have affected more than one parcel of real property, including the parcels identified above.

Enclosure B includes a detailed description and diagram of the Asarco Site, as currently known to Ecology.

3. Identification of Other Sites that may affect the Property.

A parcel of real property can be affected by multiple sites. A portion of his Property was also affected by the Former DuPont Works Site (FSID 1269).

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Aspect Consulting LLC (Aspect), *Cleanup Action Plan DuPont South Parcel, Tacoma Smelter Plume*, April 22, 2020.

2. Ecology Southwest Region Office Toxic Cleanup Program, *Periodic Review Report Final, Weyerhaeuser DuPont – 1 & 2 Facility Site ID#: 1269 & 19825, Cleanup Site ID#: 3555 & 2519, 2300 Golf House Drive DuPont, WA 98372*, July 2016.

3. Pioneer Technologies Corporation, *Groundwater Monitoring Results for 2014, Former DuPont Works Site*, July 2014.

4. Ecology, *Opinion on the Proposed Cleanup of a Property associated with the Tacoma Smelter Plume, Glacier Northwest, North Parcel*, November 25, 2013.

5. Pacific Environmental and Redevelopment Corporation, *Closure Report Former DuPont Works Site DuPont, Washington*, March 2007.

6. URS and Pioneer Technologies Inc., *Final Remedial Investigation for the Former DuPont Works Site*, July 2003.

7. Hart Crowser Inc., *Draft Remedial Investigation, Former DuPont Works Site, DuPont, Washington*, December 22, 1994.

8. Ecology, *Consent Decree No. 91-2-01703-1, State of Washington Department of Ecology v. Weyerhaeuser Company and DuPont Company*, July 17, 1991.

The documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Information on viewing these records can be found on Ecology's public records requests web page.[4] Some site documents may be available on Ecology's Cleanup Site Search web page[5].

This opinion is void if any of the information contained in those documents is materially false or misleading.

[4] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests.
[5] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=15278.

Analysis of the Cleanup

1. Cleanup of the Property located within the Asarco Site.

Ecology has concluded that, upon completion of your proposed cleanup, **no further remedial action** will likely be necessary at the Property to clean up contamination associated with the Asarco Site. That conclusion is based on the following analysis:

a. Characterization of the Asarco Site.

The Asarco Site is described in **Enclosure B**.

Glacier Northwest, Inc. is conducting mining operations as CalPortland (Glacier). Glacier proposed to expand their mining operations to an adjacent 178 acre area in DuPont, Pierce County, described as the South Parcel. The South Parcel is located to the south and east of the existing mine area and southeast of the North Parcel (Figure 1), which is also operated by Glacier.

Figure 1. Vicinity map

In 2013, Glacier enrolled the North Parcel in the Voluntary Cleanup Program (VCP) under an agreement No. SW1323 and requested an opinion on the proposed cleanup. Ecology issued an opinion on the proposed cleanup in November 2013. The cleanup of the North Parcel began in 2014 and will continue as part of the ongoing mining operations.

The South Parcel and the existing mine are owned by Weyerhaeuser NR Company (Weyerhaeuser), but are leased and operated by Glacier. Similar to the North Parcel, the cleanup of the South Parcel will occur in stages corresponding to the ongoing mining operations that are anticipated to take more than 20 years. The stages will consist of mining segments of land ranging from 8 to 20 acres.

The South Parcel includes areas to be mined; however, a 3.3 acre Saequalitchew Creek Open Space Area (SCOA) along the southwestern border, and a 7.8 acre Mine Setback Area, will not be mined and will remain forested. The 20-foot-wide trail transecting the western edge of the SCOA is under the public access easement agreement, established in August 2011. This agreement allows for public access along the trail.

In addition to the South Parcel, the cleanup area will include portions of an existing mine along the western border and a small isolated wetland (Kettle Wetland) northwest of the South Parcel (Figures 2 and 3). Kettle Wetland will be removed to facilitate the mine expansion into the South Parcel and deeper within the existing mine.

The cleanup area is referred to as the Cleanup Unit in the Cleanup Action Plan (CAP). The Cleanup Unit includes 167 acres within South Parcel and 26 acres within the existing mine.

This opinion letter pertains to all the areas within the South Parcel (including the Mine Setback areas and the SCOA), which will be referred to as the Property for the remainder of this opinion letter.

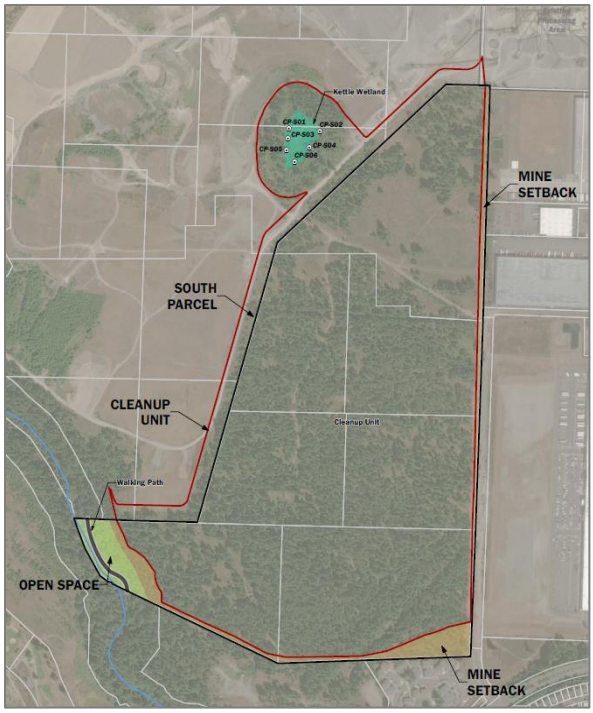


Figure 2. Aerial view of the Property displaying the South Parcel in relation to the Cleanup Unit.

Glacier may reuse the wetland sediments in the creation of a mitigation wetland on the Property after the completion of the mining. For that reason, they characterized the sediments for arsenic and lead concentrations. The soils stripped from areas in the existing mine outside of South Parcel, but within the Cleanup Unit, will be characterized for the Tacoma Smelter Plume contamination if reused on the Property.

The middle and southern portions of the Property are located within the boundary of the Former DuPont Works Site, a historical explosives and commercial munitions facility that operated from 1909 through 1976 (Figure 3). Weyerhaeuser purchased the munitions facility in 1976 and closed its operations in 1977.

Intitial Site Investitations from 1985 through 1989 addressed impacts to soil and groundwater associated with the operations and demolition of the munitions facility. The investigations divided the Former DuPont Works Site into two geographical areas: Parcel 1 and Parcel 2 (Figure 3). Most of Parcel 1 encompassed areas south of Sequalitchew Creek and a small area north of the creek—identified as the Industrial Unit. Part of Parcel 2 was identified as Black Powder Area. This area is located north of Parcel 1, occupying southeastern and central parts of the Property.

Most of the overlap between the Property and the Former DuPont Works Site falls within Parcel 2. Only 16 acres of the Industrial Remediation Unit of Parcel 1 falls within the Property (Figure 3).

In 1991, Weyerhaeuser and DuPont Company (DuPont) entered into Consent Decree 91-2-01703-1 with Ecology to complete a Remedial Investigation (RI), Health Risk Assessment (HRA), and Feasibility Study (FS) for the Former DuPont Works Site.

Results of the Remedial Investigation (RI) revealed concentrations of aldrin, dinitrotoluene, nitrobenzene, 2,4,6-trinitrotoluene, arsenic, copper, mercury, and motor oil exceeding the MTCA Method B cleanup levels for soil and groundwater.

Arsenic and lead were the prevalent contaminants in the portions that overlap with the Property, on Parcel 2, and the Industrial Unit, in Parcel 1. The RI resulted in the collection of more than 500 soil samples to evaluate arsenic and lead in the surface soil (0 to 6 inches below the ground surface [bgs]), and shallow subsurface soil (up to 2 feet bgs). The results of the historical characterization and a sampling map are included in the Appendix C of the CAP.

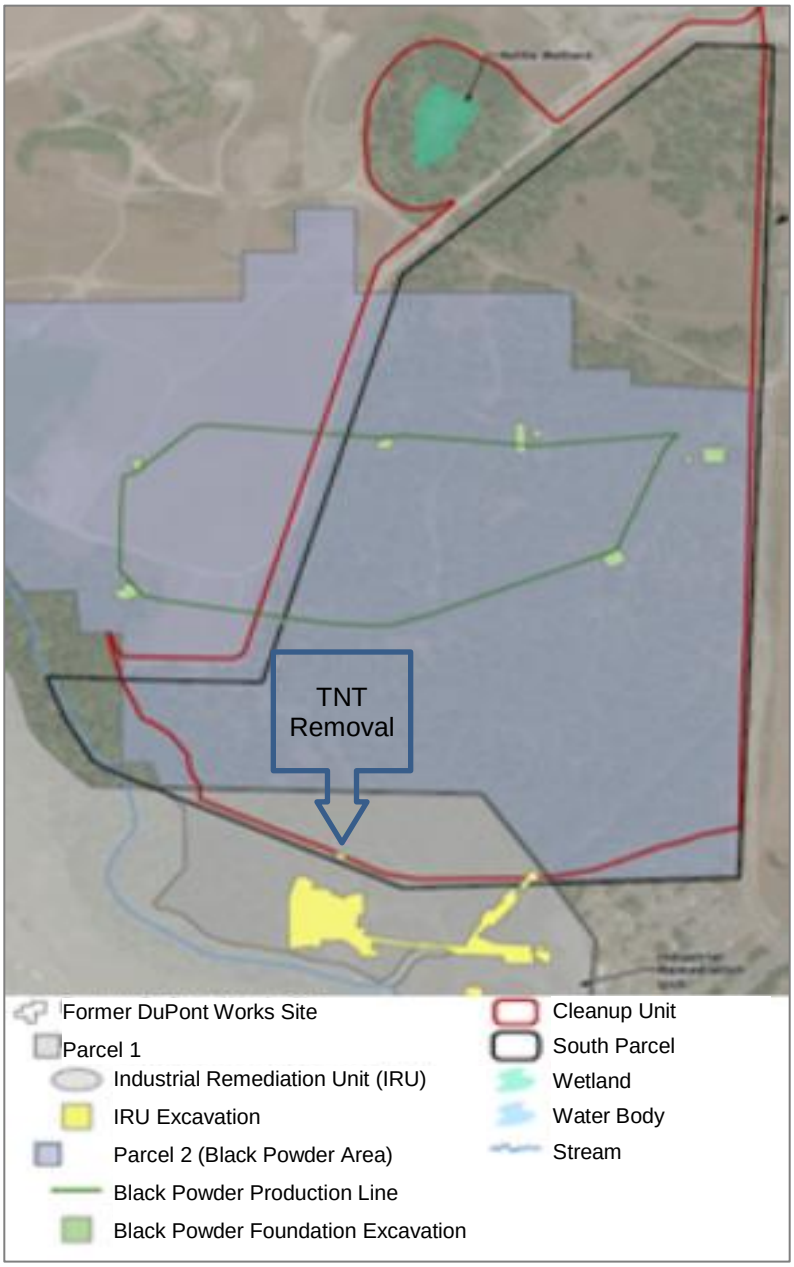


Figure 3. Former DuPont Works Site in Relation to the South Parcel

Cleanup at the Former DuPont Works Site was completed under two Consent Decrees. The second Consent Decree was entered into with Ecology in 2003 (No. 03-2-10484-7). In 1993, work completed under the 1991 Consent Decree resulted in interim source removal of soil with lead concentrations exceeding 1,000 milligrams per kilogram (mg/kg) in Parcel 1 and at the Black Powder Production Line foundations in Parcel 2 (Figure 3).

The interim source removal resulted in concentrations of lead, arsenic, and other contaminants below the site-specific soil cleanup levels for industrial land use. The site-specific cleanup level for arsenic and lead were established at 90 mg/kg and 1,000 mg/kg, respectively. In 1996, based on the results of interim source removal, Ecology approved a Cleanup Action Plan for Parcel 2 that provided for no further remediation activities except for institutional controls to maintain the industrial use of Parcel 2. In 1997, Parcel 2 was removed from the 1991 Consent Decree.

The average concentrations of lead and arsenic remaining on the Property after the interim source removal fall within the ranges of estimated arsenic and lead concentrations associated with the Tacoma Smelter Plume (TSP) contamination in the general DuPont area. They are shown in Table 1. The comprehensive results of the historical characterization sampling are included in Appendix C of the CAP.

The northern part of the Property that falls outside of Parcel 2 was not characterized for the TSP contamination. Ecology did not request additional soil sampling prior to Property cleanup. Ecology reasoned that the concentrations of arsenic and lead are similar to the concentrations found in the North Parcel and that the extensive mixing of soil during mining will be sufficient to reduce arsenic and lead concentrations to below their respective cleanup levels. Ecology did not request soil sampling in the North Parcel for the same reasons. Ongoing, periodic cleanup reports for the North Parcel since 2014 have shown that the remedial approach was successful.

Table 1. Average Arsenic and Lead Concentrations Remaining on the Property Following the Interim Remedial Action on the Property

Parcel	Location	Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
Parcel 2	Black Powder Area	0-6	19	132
	Outside of Black Powder Area	0-6	43	191
Parcel 1	Industrial Unit	0-18	38.1	120.7
	Industrial Unit	18-36	10	98.5

Additional remedial actions completed between 1999 and 2001 were conducted in the Industrial Unit of Parcel 1 that falls within the Property. They included the removal of soil with concentrations of 2,4,6-Trinitrotoluene (TNT) above the site-specific cleanup level from Area 10 of the Industrial Unit. The site-specific cleanup level for TNT was established at 1.75 mg/kg based on Ecology Agreement (Ecology letter from Mike Blum to Jim Odendahl and Ron Buchanan, January 11, 2001, included in Enclosure C). This site-specific value was designated by Ecology for the protection of groundwater.

Eight confirmational samples (10-VS-1 through 10-VS-8) from the bottom and sides of the excavated hot spots in Area 10 were collected in 1993. The comprehensive results of confirmational sampling documenting the concentrations of metals and TNT that remained in place in the Industrial Unit of Parcel 1 are included in Appendix B of the March 2007 Closure Report for Parcel 1 of the Former DuPont Works Site. The confirmational sampling for TNT within the Property boundary is shown in Table 2. The confirmational sampling for TNT following the hot spot removal is shown in Figures 4 and 5 (Area 10). Ecology issued a certification of completion of the active cleanup elements for the Former DuPont Works Site on April 26, 2007.

Table 2. Soil Verification Sample Results for Hot Spot Removal Area 10

Sample Number	Short ID	Analyte	Result (mg/kg)
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	Dinitrotoluene, 2,4-	0.046
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	Dinitrotoluene, 2,6-	0.046
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	Dinitrotoluene, 2,4,6-	1
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	DNT-Total	0.092
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	DNT-Total	0.088
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	Dinitrotoluene, 2,4-	0.044
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	Dinitrotoluene, 2,6-	0.044
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	Dinitrotoluene, 2,4,6-	0.073
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	Dinitrotoluene, 2,6-	0.044
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	Dinitrotoluene, 2,4-	0.044
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	Dinitrotoluene, 2,4,6-	0.13
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	DNT-Total	0.088
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	DNT-Total	0.094
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	Dinitrotoluene, 2,4-	0.047
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	Dinitrotoluene, 2,6-	0.047
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	Dinitrotoluene, 2,4,6-	0.2
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	Dinitrotoluene, 2,4,6-	0.048
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	DNT-Total	0.096
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	Dinitrotoluene, 2,4-	0.048
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	Dinitrotoluene, 2,6-	0.048

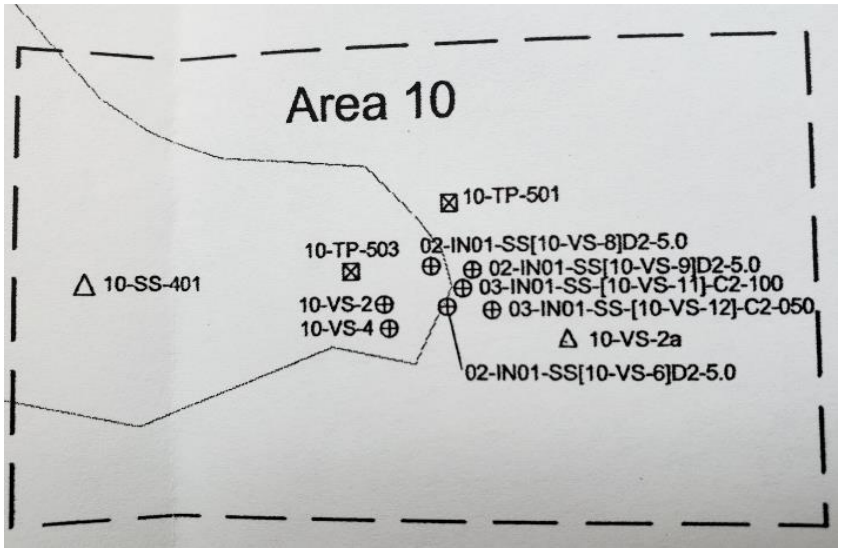


Figure 4. Approximate Locations of Confirmational Samples in the Area 10 of the Industrial Unit.

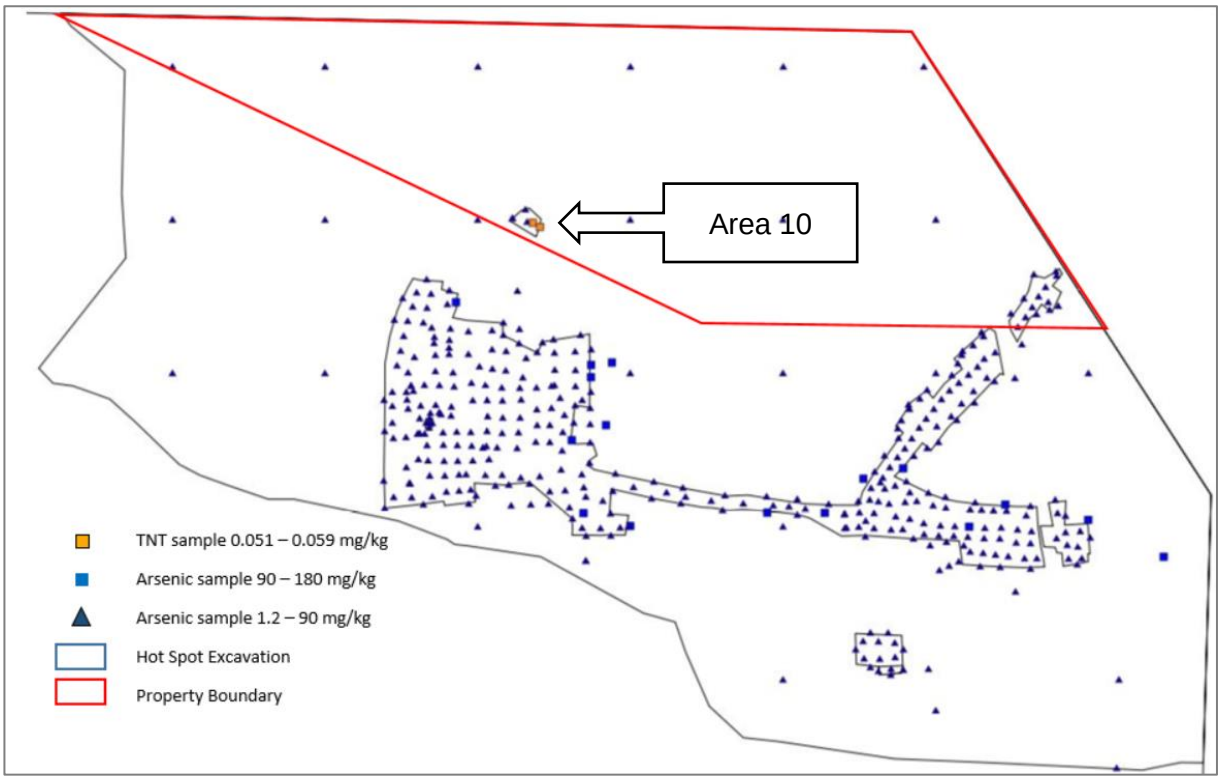


Figure 5. Approximate Locations of Confirmational Samples in the Industrial Unit Following Hot Spot Excavation.

Groundwater: The total dinitrotoluene (total DNT), which was the sum of 2,4-dinitrotoluene and 2,6-dinitrotoluene was the only contaminant that was of potential concern in groundwater within the Former DuPont Works Site. Groundwater monitoring data of 30 wells (from October 1988 through March 2001) has shown that the levels of total DNT met the groundwater decision criteria and likely pose no concern to human health or the environment. Four of the groundwater monitoring wells within the Property boundary were abandoned and backfilled with bentonite (Figure 6). Soil leaching tests have shown no arsenic or lead in the groundwater. In addition, the groundwater flow is to the northwest, away from the City of DuPont drinking water wells.

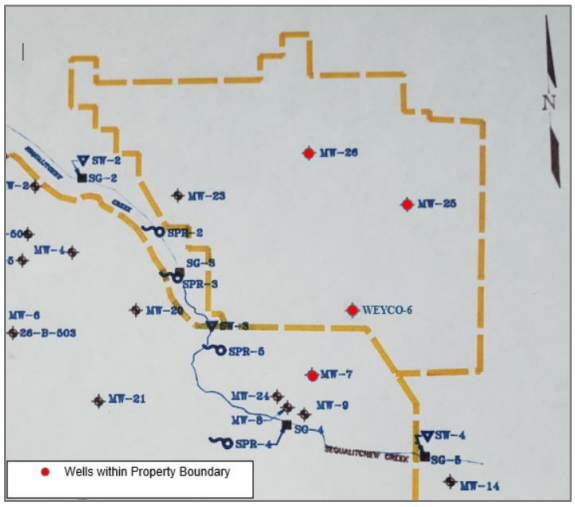


Figure 6. Locations of wells on the Property

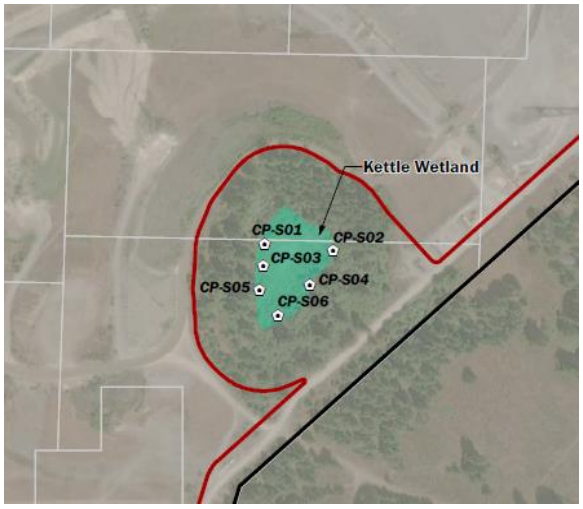


Figure 7. Sediment Sampling Locations within Kettle Wetland

The Former DuPont Works Site is under a restrictive covenant that limits development to industrial use within Parcels 1 and 2. Ecology conducts periodic reviews of both Parcel 1 and Parcel 2 every five years to ensure continued protectiveness of the completed cleanup action and compliance with the restrictive covenant. In its 2016 periodic review, Ecology determined that the remedial actions conducted within Parcel 1 and 2 continue to be protective of human health and the environment.

Kettle Wetland: On December 5, 2019, Anchor QEA (Anchor) conducted sediment sampling in Kettle wetland adhering to the TSP Model Remedies Guidance (MR Guidance). Anchor established six random sampling stations within the 1.78 acre wetland and collected 12 samples at two depth intervals:

- Six samples at 0 to 4 inches bgs.
- Six samples that ranged from 4 to 6.5 inches bgs to 4 to 8 inches bgs (Figure 7).

Anchor submitted the samples to Analytical Resources Incorporated laboratory for analysis of arsenic and lead by Environmental Protection Agency (EPA) Method 6020A.

Results of Sediment Sampling in Kettle Wetland

Samples collected at 0 to 4 inches bgs: None of the samples exceeded the Sediment Cleanup Objective (SCO) of 14 mg/kg for arsenic or 360 mg/kg for lead (Table 3). Arsenic concentrations ranged from 2.04 mg/kg to 8.5 mg/kg. The average arsenic concentration was 4.79 mg/kg. Lead concentrations ranged from 4.61 mg/kg to 91.6 mg/kg. The average lead concentration was 36.83 mg/kg.

Samples collected at 4 to 8 inches bgs: None of the samples exceeded the Sediment Cleanup Objective (SCO) of 14 mg/kg for arsenic or 360 mg/kg for lead. Arsenic concentrations ranged from 1.44 mg/kg to 12.3 mg/kg. The average arsenic concentration was 6.56 mg/kg. Lead concentrations ranged from 6.2 mg/kg to 79.6 mg/kg. The average lead concentration was 44.7 mg/kg.

All the concentrations of arsenic and lead were below the SCO levels. Ecology analyzed the sediment sampling data and determined that there were no sediment station clusters of potential concern.

Table 3. Results of Sediment Sampling in Kettle Wetland

Sample Station	Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
CP-SO1	0-4	6.39	91.6
CP-SO2	0-4	4.64	19.7
CP-SO3	0-4	4.63	6.37
CP-SO4	0-4	8.5	88.4
CP-SO5	0-4	2.04	4.61
CP-SO6	0-4	2.53	10.3
Average of the highest three:		6.51	66.57
Average all samples in 0-4 inches bgs:		4.79	36.83
CP-SO1	4-7.75	5.13	45.9
CP-SO2	4-6.5	8.48	79.6
CP-SO3	4-6.75	12.3	58.8
CP-SO4	4-6.5	2.84	6.2
CP-SO5	4-7	9.16	65.4
CP-SO6	4-8	1.44	12.3
Average of the highest three:		9.98	67.93
Average all samples in 4-8 inches bgs:		6.56	44.7

b. Establishment of Cleanup Standards for the Asarco Site.

Ecology has determined the cleanup levels and points of compliance established for the Asarco Site will likely meet the substantive requirements of MTCA.

As part of the Interim Action Plan for the Asarco Tacoma Smelter Site (June 2012) (IAP), Ecology completed a terrestrial ecological evaluation for properties with only Tacoma Smelter Plume contamination. Ecology determined the MTCA Method A cleanup levels for both arsenic and lead were protective of both human health and the environment. The MTCA Method A cleanup levels for soil are as follows:

- Arsenic is 20 mg/kg.
- Lead is 250 mg/kg.

The IAP determined that the soil and duff cleanup levels protective of human health and the environment for properties within the Asarco Tacoma Smelter Site are the following:

- Average arsenic detected in the soil is less than 20 mg/kg.
- Average lead detected in the soil is less than 250 mg/kg.
- Duff composite sample is less than 20 mg/kg for arsenic.
- Duff composite sample is less than 250 mg/kg for lead.
- No single soil sample has arsenic above 40 mg/kg.
- No single soil sample has lead above 500 mg/kg.

Ecology agreed to use the cleanup standards established for the Asarco Site for the following reasons:

- The use of heavy machinery associated with the production of black powder in the Former DuPont Works Site is thought to have resulted in Site-wide surface soil contamination with arsenic and lead. The spot discharge from batteries used in the electric locomotives, gas, diesel leaks, and wear of Babbit bearings used for railroad stock were the likely source of elevated conctentrations of lead in certain areas. Arsenic concentrations; however, showed limited apparent relationship to the source of operational areas. Elevated arsenic was largerly restricted to the upper six inches of soil except in areas where acid was discharged, drywell locations, and some production related foundations.

- This pattern of Site-wide arsenic and lead limited to the top upper 6 to 12 inches of soil is similar to the TSP contamination. The RI; however, occurred prior to the recognition of the area-wide TSP contamination and did not consider it as a potential source of the contamination.

- The concentrations of arsenic and lead remaining on the Property within the Former DuPont Works Site are within the estimated ranges of arsenic and lead in the area. The interim remedial actions removed soil in areas of former plant operations where lead concentrations exceeded 1,000 mg/kg.

- Only one area within the Property had elevated concentrations of TNT. The removal of soil in that area reduced the concentration of TNT to below the cleanup level of 1.75 mg/kg.

- Groundwater, as shown by monitoring data, was not affected on the Property.

The IAP does not set cleanup levels for freshwater sediments. The Washington State Sediment Management Standards, chapter 173-204 WAC set standards for sediment quality. Under WAC 173-204-560, the freshwater sediment cleanup objective and cleanup screening levels are based on the protection of the benthic community within the upper four inches of sediment layer. The sediment cleanup objectives establish levels at or below which no adverse effects to benthic community occur. The cleanup screening levels establish minor adverse effects to the benthic organisms in sediments.

For arsenic and lead, the freshwater sediment cleanup objective and cleanup screening levels are:

Contaminant	Cleanup Objective Level	Cleanup Screening Level
Arsenic	14 mg/kg	120 mg/kg
Lead	360 mg/kg	>1,300 mg/kg

c. Selection of Cleanup for the Property.

Ecology has determined the cleanup you proposed for the Property will likely meet the substantive requirements of MTCA and the IAP. Your proposed cleanup meets the minimum cleanup requirements and will not exacerbate conditions or preclude reasonable cleanup alternatives elsewhere at the Asarco Site.

Ecology proposed four model remedies in the IAP:

- Excavation and removal.
- Mixing.
- Capping in place.
- Consolidation and capping.

Glacier decided to use mixing on the Property.

Property Cleanup: Glacier will conduct the soil cleanup at the Property in conjunction with its mining operations. On April 22, 2020, on behalf of Glacier, Aspect developed a CAP for the Property. The CAP described the use of the selected model remedy—mixing as a way to remediate the contamination associated with the Tacoma Smelter Plume on the Property. Ecology based this opinion letter on the information provided in this CAP.

Glacier will remove all the trees from the entire Property in preparation for mining. They will clear the Property in segments, as the mining operations progress across the Cleanup Unit. Glacier will pile all the stumps and remaining vegetation into a pile. They will grind the vegetation and stumps into woodchips to be used as soil amendment in land reclamation. The sandy and gravelly soil will most likely fall to the ground before reaching the grinders. Glacier will inspect the root wads prior to grinding. If there are considerable amounts of soil left on the root wads, Glacier will shake the root wads to remove the soil, prior to grinding.

After the removal and disposal of the vegetation, Glacier will excavate the top layer of soil from the segment, which may also include limited layer of duff, into stockpiles. The estimated thickness of the soil and duff is approximately 20 inches. The mining segments typically range from 8 to 20 acres, depending on market needs. Glacier will store the stockpiled soil for soil sampling, analysis, and its reuse in reclamation pending analytical results. They will include the duff in the stockpiles.

Although the concentration of arsenic and lead in the duff layer is potentially above the cleanup level, Ecology agreed to allow mixing of the duff into the soil. Glacier is uniquely equipped to handle mixing large quantities of soil. Large-scale bulldozers, loaders, and dump trucks used in mining operations can mix and amend large quantities of soil effectively.

Ecology expects that the extensive mixing of duff with the soil will reduce the concentration of arsenic and lead to below their respective cleanup levels, which they will verify by the final confirmational sampling.

The RI also identified demolition debris (cement, lumber, sheet metal, steel pipe fragments, and wire) that may remain in some areas within Parcel 2. Glacier will document their occurrence and disposal. If there is any evidence of contaminants other than arsenic and lead associated with the debris, Glacier will take the necessary steps to document, sample, and remediate as necessary—in coordination with Ecology.

Glacier intends to sample the stockpiles within one month of excavation, minimizing the stockpile storage time. If the stockpiles need to be stored longer, Glacier will implement erosion control measures, such as surface roughening, mulching, or temporary seeding. If high winds or heavy rains occur during the first month after stockpiling, Glacier will cover the stockpiles to minimize erosion.

Glacier will sample the stockpiles adhering to the MR Guidance for stockpile sampling. They will submit the samples to an Ecology-accredited laboratory for analysis of lead and arsenic. If any of the samples exceed 20 mg/kg for arsenic or 250 mg/kg for lead, Glacier will conduct additional round of mixing of that stockpile or the portion of the stockpile.

They may amend the stockpile with filter press fines (silt and clay), which they sort and wash out of the usable aggregate. The likelihood of elevated arsenic and lead in the filter press fines is low, as they have been excavated from deeper layers, where concentrations of arsenic and lead are below their respective cleanup levels. Glacier will conduct additional round of stockpile sampling until all the composite samples are below 20 mg/kg for arsenic and 250 mg/kg for lead.

Glacier will use the clean stockpiled soil amended with woodchips and filter press fines in reclamation of land, which will include returning the mined slopes to forest and leaving a relatively flat mine floor for future development. As a component of mitigation, they will route the seep flows to form a larger mitigation wetland. They may use the sediments from the Kettle Wetland in wetland creation if feasible. The arsenic and lead concentrations were below their respective cleanup levels for sediments.

Glacier does not anticipate importing additional soil during land reclamation. They will sample any imported soils according to Imported Soil Sampling methods in the MR Guidance.

Glacier will report on the progress of the cleanup annually. The annual report will be due by November 15 of every year. The first annual report is due on November 15, 2021. Each annual report will include summary of the excavation, sampling, laboratory analysis, and reclamation performed during the reporting period. Glacier will submit the data collected for the annual report into Ecology’s Environmental Information Management System (EIM) annually.

The cleanup of the Property will reduce the concentrations of arsenic and lead to MTCA Method A cleanup levels for unrestricted land use. The need for the existing Former DuPont Works Site restrictive covenants, limiting the development to industrial uses because of residual arsenic and lead contamination, will no longer be needed within the Property after the successful cleanup.

However, prior to the removal of restrictive covenant restrictions, a No Further Action (NFA) letter must be obtained for the Property through Ecology's Voluntary Cleanup Program (VCP). After obtaining the NFA letter, the legal property owner, Weyerhaeuser, must make a request to Ecology for the removal of the land use restrictions for the cleaned up portions of Parcel 1 and Parcel 2 following a 30-day public comment period.

Prior to obtaining a NFA determination with Ecology Glacier will:

- Characterize the SCOA and the Mine Setback Area for Tacoma Smelter Plume contamination. The RI calculated the background levels of arsenic sampling outside of the Former DuPont works Site in nearby undisturbed areas at 32 mg/kg. Not considering the TSP contamination as one of the potential sources of elevated arsenic and lead levels, the RI established the soil cleanup level for open areas for arsenic at 32 mg/kg.

  The SCOA and the Mine Setback Area need to be characterized for the Tacoma Smelter Plume contamination adhering to Chapter 10 (Natural Areas) of the MR Guidance. If sampling shows elevated arsenic or lead, Glacier will develop a remediation plan in coordination with Ecology. The remediation plan may include the use of the Net Environmental Benefit Analysis and institutional controls, such as restrictive covenants, signs, and fences in place of active remediation if deemed the best option.

- Provide Ecology with a final cleanup report, summarizing all the cleanup on the Property, including the Mine Setback Area and the SCOA.

As a reminder, in accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840[6] (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see Ecology's EIM website.[7]

Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy.

[6] https://fortress.wa.gov/ecy/publications/SummaryPages/1609050.html.
[7] http://www.ecy.wa.gov/eim

Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination. Please be sure to submit all soil data collected to date, as well as any future data, in this format. Be advised that Ecology requires up to two weeks to process the data once it is received.

2. Cleanup of the Asarco Site as a Whole.

Ecology has concluded that **further remedial action** will still be necessary elsewhere within the ASARCO Site (Asarco Tacoma Smelter Site) upon completion of your proposed cleanup. In other words, while your proposed cleanup may constitute the final action for the Property, it will constitute only an **"interim action"** for the Asarco Site as a whole.

Limitations of the Opinion

1. Opinion does not Settle Liability with the State.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Property. This opinion **does not**:

- Change the boundaries of the Asarco Site.
- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

2. Opinion does not Constitute a Determination of Substantial Equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination.
See RCW 70A.305.080 and WAC 173-340-545.

3. Opinion is Limited to Proposed Cleanup.

This letter does not provide an opinion on whether further remedial action will actually be necessary at the Property upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the Voluntary Cleanup Program (VCP).

4. State is Immune from Liability.

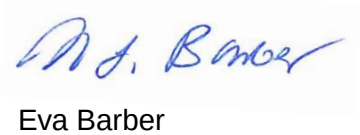
The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170 (6).

Contact Information

Thank you for choosing to clean up your Property under the VCP. As you conduct your cleanup, please do not hesitate to request additional services. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our website: Voluntary Cleanup Program.[8] If you have any questions about this opinion, please contact me at eva.barber@ecy.wa.gov or (360) 407-7094.

Sincerely,



Eva Barber
Technical Assistance Coordinator
Toxics Cleanup Program
Southwest Regional Office

EB/tm

Enclosures: A – Legal Description and General Description of the Property
B – Site Description of the Asarco Tacoma Smelter Site
C – Site Specific Cleanup Level for TNT (Mike Blum, 2001)

cc by email: Carla Brock, Aspect Consulting, cbrock@aspectconsulting.com
Nick Acklam, Ecology, nicholas.acklam@ecy.wa.gov
Connie Groven, Ecology, connie.groven@ecy.wa.gov
Carol Serdar, Ecology, carol.serdar@ecy.wa.gov
Ecology Site File

[8] http://www.ecy.wa.gov/vcp.

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Enclosure A

Legal Description and General Description of the Property

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Legal Description of the Property

Parcel 0119233011: Section 23 Township 19 Range 01 Quarter 31 L 14 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-09-07BL

Parcel 0119233014: Section 23 Township 19 Range 01 Quarter 31 L 14 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-09-07BL

Parcel 0119233015: Section 23 Township 19 Range 01 Quarter 34 L 19 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-10-07BL

Parcel 0119233016: Section 23 Township 19 Range 01 Quarter 33 L 20 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-10-07BL

Parcel 0119233017: Section 23 Township 19 Range 01 Quarter 34 L 21 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-10-07BL

Parcel 0119262015: Section 26 Township 19 Range 01 Quarter 22 L 22 ROS 2006-09-18-5006 OUT OF 2-012 & 2-013 SEG 2007-0818BL 04-10-07BL

Parcel 0119262016: Section 26 Township 19 Range 01 Quarter 21 L 23 ROS 2006-09-18-5006 OUT OF 2-012 & 2-013 SEG 2007-0818BL 04-10-07BL

General Description of the Property

The current topography is generally flat, at elevations on the order of 210 to 220 feet above mean sea level, with two exceptions. A natural steep slope on the southwest side of the South Parcel dips southwest to Sequalitchew Creek, which is located approximately 100 feet lower in elevation than the South Parcel. There is a northeast-southwest trending linear topographic features, which is likely a former railroad track (based on regional historical use), where intermittent surface water has reportedly been observed.

The geology consists primarily of Vashon-age recessional sand and gravel, known locally as the Steilacoom Gravel. Exploration drilling across the Property indicates the Steilacoom Gravel extends to depths between 40 and 70 feet bgs. Older Vashon-age glacial Advance Outwash deposits, pre-Vashon non-glacial deposits identified as the Olympia beds, and pre-Vashon glacial and non-glacial deposits underlie this recessional glacial unit.

The Olympia beds are present at approximately 100 feet beneath the Property. The Olympia beds are truncated where the recessional outwash formed a delta into a glacial lake. The truncation of the Olympia beds is located west of the Property.

The proposed mining and reclamation would occur within the Steilacoom Gravel and Vashon Outwash members. Overlying the sand and gravel unit is several inches of topsoil with low organic and fines content, and, in the forest areas, forest duff.

The Vashon Aquifer is the primary hydrogeological unit beneath the Property. The aquifer is unconfined, and average water table depths range from 14 to 18 feet bgs on the east (upgradient) side of the Property, and 20 to 30 feet bgs on the west (downgradient) side. Over a monitoring period between 2004 and 2016, water table fluctuations ranged from 6 to 12 feet in response to seasonal and longer-term precipitation changes. Groundwater flow is to the west toward the truncation of the Olympia beds.

In the southern portion of the Property, shallow groundwater may flow south-southwest and discharge as springs into the Sequalitchew Creek ravine. The aquifer is underlain by the Olympia beds aquitard, which separates the Vashon Aquifer within the Property by up to 75 feet to facilitate mining. Proposed mining will not penetrate to the Olympia beds, and no hydraulic connection with the Sea Level Aquifer is expected. The Vashon Aquifer is not used for water supply in the area of proposed mining.

Sequalitchew Creek is a small stream that flows in a steep ravine generally south and west of the Property. The southwest portion of the Property extends into this creek. The Sequalitchew Creek channel originates from Sequalitchew Lake, east of DuPont-Steilacoom Road, flows through wetlands located to the southeast of the Property, and continues to the west, draining into the Nisqually Reach of the Puget Sound. Most of the time, Sequalitchew Creek beaver activities prevent flow from the lake through the wetlands. During these periods, the creek flows at the southwestern corner of the Property for approximately 600 feet.

The Kettle Wetland is an enclosed depressional Category II wetland system that comprises 1.78 acres northwest of the Property. The Kettle wetland is hydrologically connected to the Vashon Aquifer and water levels range from winter highs of 4 to 6 feet to summer levels of 1 to 2 feet. If feasible, the wetland sediments will be kept intact and later used in the creation of a mitigation wetland if feasible.

Enclosure B

Site Description of the Asarco Tacoma Smelter Site

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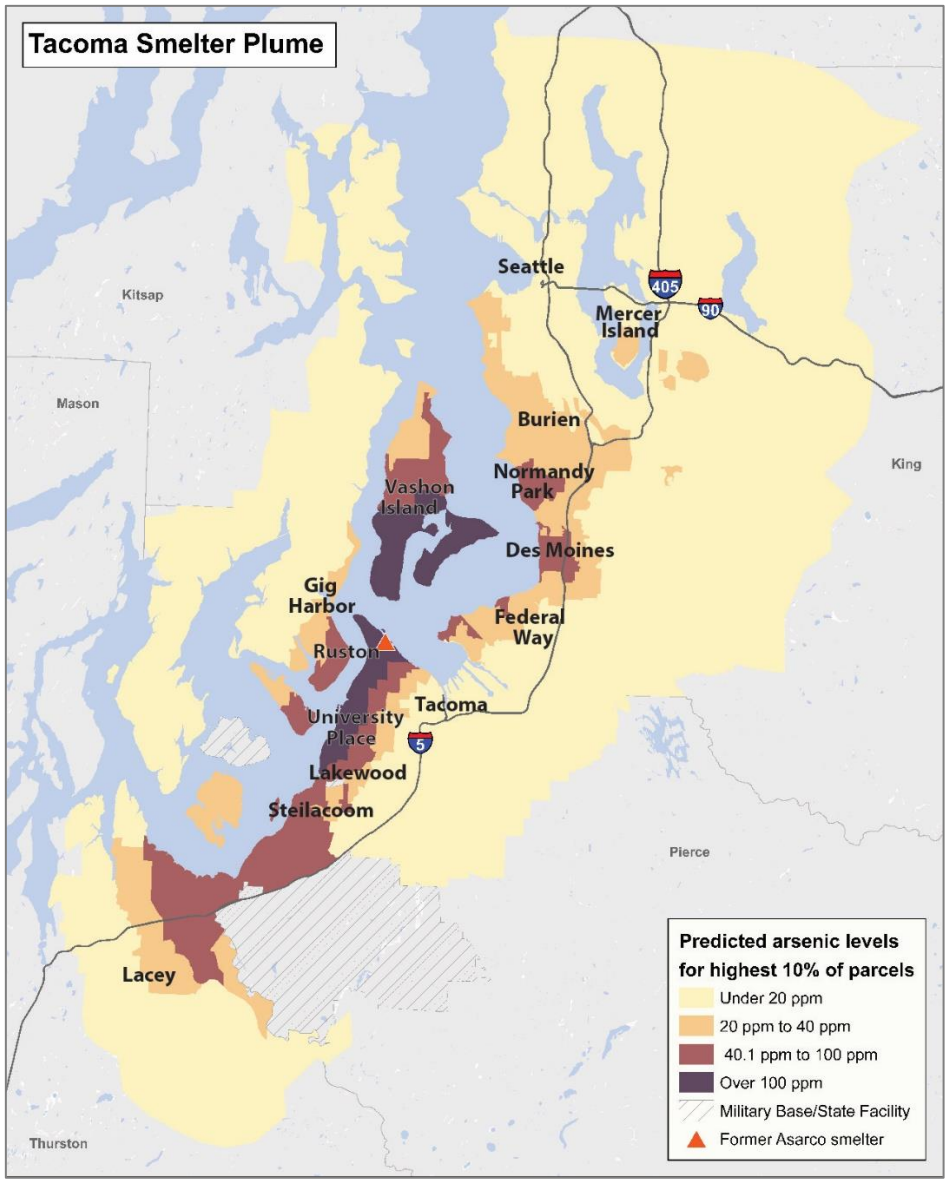
Asarco Tacoma Smelter Site



An interactive color map can be found at: https://dirtalert.info/

For almost 100 years, the Asarco Company operated a copper smelter in Tacoma. Air pollution from the smelter settled on the surface soil over a vast region—more than 1,000 square miles of the Puget Sound basin. Elevated levels of contamination are found as far south as the Nisqually Ridge and as far north as Seattle (West Seattle). Additionally, elevated levels of contamination are found as far west as the Kitsap Peninsula and as far east as Kent and Bellevue. Arsenic, lead, cadmium, and other heavy metals are still in the soil as a result of this pollution. The area has elevated levels of arsenic, lead, and cadmium in the soil due to air emissions from the Asarco smelter.

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Enclosure C

Site Specific Cleanup Level for TNT

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

January 11, 2001

Mr. Jim Odendahl
Weyerhaeuser Company
Post Office Box 100
DuPont, WA 98327-0100

Mr. Ron Buchanan
DuPont Specialty Chemicals
Barley Mill Plaza Building 27
Post Office Box 80027
Wilmington, DE 19880-0027

Re: Hot Spot Interim Action Report

Dear Jim and Ron:

The Ecology Team has reviewed the report entitled Hot Spot Interim Action Report dated October 4, 2000 and we have the following comments. I apologize for my delay in getting your our comments, as Dan Alexanian provided me with his comments a while ago.

1. Page 1, Section 1.1, Third paragraph: The Method C industrial soil cleanup level for trinitrotoluene (TNT) is identified in the report as 33 mg/kg. That level is the Method B concentration based on direct contact as a carcinogen. The Method C industrial cleanup levels are as follows:
Direct contact as a carcinogen - 4,380 mg/kg
Direct contact as a non-carcinogen - 1,750 mg/kg
Protective of groundwater as a carcinogen (100x the groundwater standard) - 2.92 mg/kg
Protective of groundwater as a non-carcinogen (100x the groundwater value)- 1.75 mg/kg
Based on protection of groundwater, the cleanup level would be 1.75 mg/kg, not 33 mg/kg. If you have some site-specific data on TNT and the leachability, that cleanup level might increase or decrease. It does look however, based on the existing sampling data, that TNT is not an issue anymore in the industrial area located north of Sequalitchew Creek. Prior sampling revealed higher TNT concentrations in Area 10 north of the creek.

2. Page 2, 2nd paragraph (and other locations in the report): "Sample 26-B-503-S-1 is located in a future Placement Area and was not removed because it will be covered with more than 15 feet of fill." The Ecology Team has some philosophical concerns about burying high levels of hazardous substances (25,000 mg/kg lead, for example), even when it is buried 15 feet or more and does not pose a threat to ground water. We should discuss this more in the near future. While it does comply with the Model Toxics Control Act regulations, it seems that if the material is easily accessible, it should be dealt with rather than just covering it over. If you continue with your proposal, you need to ensure that a minimum of 15 feet of fill is placed over those locations with "higher" contaminant concentration.

3. Page 17, Section A3: "In selected cases where the impacted soils are greater than 1.5 feet deep, the initial excavation was 10 feet by 10 feet." Why was 10 by 10 chosen rather than 50 by 50?

4. Pages 21 and 22, Section B7, the bullets: Please explain the statement "...therefore, no data were qualified." I appears from the various statements that there were problems in the lab with lead matrix spike recovery or control limits, but "no data were qualified". Only 2 of 17 bullets identified data that were qualified, though it appears that all the matrix spikes/blank spikes had problems.

5. General comment: It is hard to figure out how to compare original samples with post-excavation confirmational samples.

If you have any questions regarding the above comments, please give me a telephone call at (360) 407-6262.

Sincerely,

Mike Blum

Mike Blum
Site Manager
Toxics Cleanup Program

MB:dj

cc: Izzy Zanikos, DuPont Company
Marian Wineman, URS
Jeff King, West Shores Corporation
Brad Grimsted, Pioneer Technologies Corporation
Ecology's Weyerhaeuser/DuPont Site Team

Attachment 1.l

TECHNICAL MEMORANDUM

Project: **Pioneer Aggregates– South Parcel Project**

Subject: Traffic Impact Assessment

Date: January 26, 2021

Author: Marni C. Heffron, P.E., P.T.O.E.
Principal, Heffron Transportation, Inc.

Glacier Northwest (dba CalPortland) is seeking a permit to expand existing Pioneer Aggregates Gravel Mine in Dupont, Washington. This expansion (hereafter referred to as the "South Parcel Project") would increase the existing sand and gravel resources available to mine by 30 to 40 million tons, and extend the life of the mine by an additional 14 years. Current mine operations on the North Parcel and the respective transportation-related impacts were assessed in the June 2013 *Final Environmental Impact Statement (FEIS)*.[1] This memorandum evaluates the potential transportation impacts associated with the South Parcel Project and compares those to impacts previously evaluated in the FEIS.

1. Current and Planned Mine Operations

The Dupont Pioneer Aggregates Gravel Mine is located at the north end of the City of Dupont. The existing processing plant is accessed from Pioneer Avenue. The mining areas and processing plant location are shown on Figure 1.

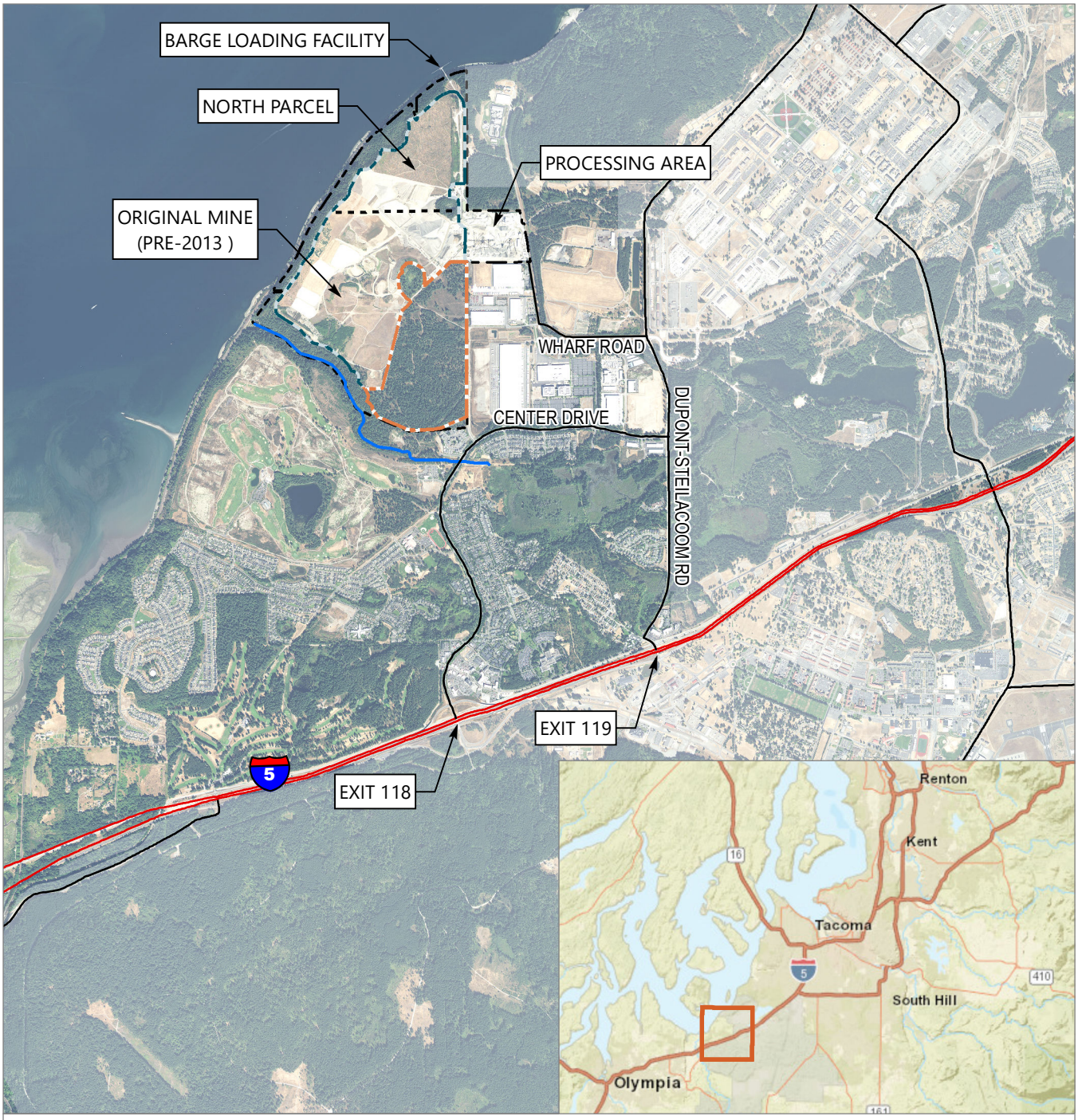
Current Operations

The mine, processing plant, and barge loading dock at Tatsolo Point have been in operation since 1997. The expansion of the mine to the 142-acre North Parcel (described in the 2013 *FEIS*) assumed extraction of approximately 2.8 million cubic yards of sand and gravel annually. It also assumed that 80% of that aggregate would be transported by barge, the same rate that had been historically barged before expansion. The remaining 20% was assumed to be exported from the site by truck, either as mined aggregate or as part of processed concrete. Section 2 of this memorandum presents information about the *FEIS*-estimated truck and employee traffic volumes, along with data about actual truck loads in 2020.

Future Operations with South Parcel Project

The South Parcel Project would expand the footprint of the existing mine to include the 188-acre expansion area shown in Figure 1. It would increase the existing sand and gravel resources available to mine by 30 to 40 million tons, and extend the life of the mine by an additional 14 years. This relates to an annual extraction rate of between 2.1- and 2.8-million-tons-per-year, which is similar to the maximum rate of extraction defined in the *FEIS*. CalPortland expects that 80% of the aggregate would continue to be transported by barge with the remaining aggregate exported by truck. The processing plant would remain in its current (and historic) location.

[1] City of Dupont, *Final Environmental Impact Statement for CalPortland Dupont North Parcel Mining*, June 2013.



LEGEND:

- Expansion Area (188 ac)*
- Mining Limits (existing and proposed, 620 ac))
- Pioneer Aggregates Property (791 ac)
- Sequalitchew Creek
- Joint Base Lewis-McChord

NOTES:
Imagery: 2017 USDA NAIP

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CALPORTLAND

Figure 1
Vicinity Map
Traffic Impact Assessment
Pioneer Aggregates South Parcel Project

2. Existing Mine-Generated Traffic Volumes

Predicted by FEIS

The 2013 *FEIS* included detailed trip generation estimates for the mine (see Chapter 3.11), which were based on historic operations and annual extraction rates. The trip generation estimates assumed that 20% of the mined aggregate would be transported from the site by truck (the remaining 80% would be by barge and not affect roadways). *FEIS* Table 3.11-4 summarized the trip generation estimates, and is presented below.

FEIS Table 3.11-4. Summary of Project-Generated Off-Site Trips

Trip Type	Vehicle Type	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Typical Day								
Employee Commute	Automobile	126	3	0	3	0	3	3
Service & Deliveries	Light Truck	18	2	2	4	2	2	4
Product Transport	Heavy Truck	246	9	9	18	1	1	2
Logging [1]	Heavy Truck	0	0	0	0	0	0	0
Total		390	14	11	25	3	6	9
Peak Day								
Employee Commute	Automobile	200	7	3	10	0	4	4
Service & Deliveries	Light Truck	30	5	2	7	3	3	6
Product Transport	Heavy Truck	710	25	25	50	5	5	10
Logging [1]	Heavy Truck	24	0	0	0	0	0	0
Total		964	37	30	67	8	12	20

Source: Final Environmental Impact Statement for CalPortland Dupont North Parcel Mining, *June 2013.*

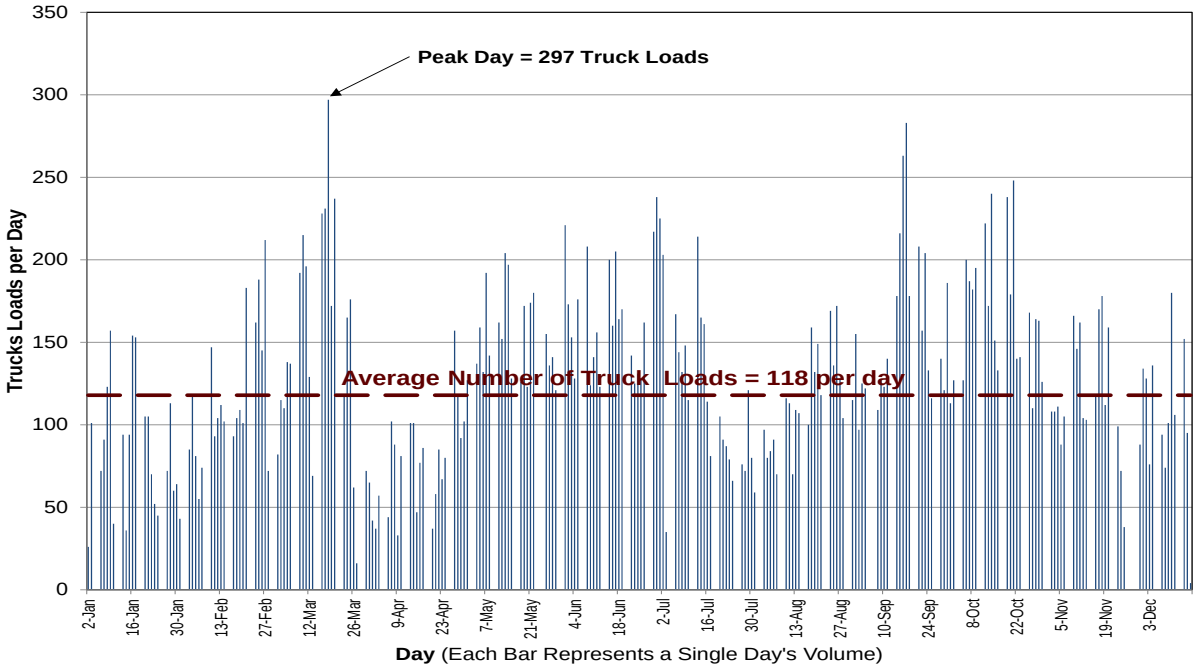
1. *Logging the North Parcel would occur only during the first year of operation.*

The FEIS had estimated that the mine would generate an average of 390 trips per day (195 trips entering the site and 195 trips exiting the site). Of these, 264 trips per day (132 inbound and 132 outbound) would be truck trips. On the peak day, daily trips were expected to increase to 964 trips per day (482 inbound and 482 outbound) of which 764 would be truck trips (382 inbound and 382 outbound). Trips during each of the commuter peak hours—AM and PM—were also determined. More traffic was expected to occur during the AM peak hour when product is typically transported out to construction sites. During the peak day, the mine was expected to generate 67 AM peak hour trips (37 inbound and 30 outbound). The PM peak hour would have much lower volumes, expected to be 20 trips on the peak day (8 inbound and 12 outbound).

Actual Truck Trips – Year 2020

CalPortland tracks all truck loads that exit the site. One full year of data from 2020 were obtained from CalPortland and compiled to determine average and peak-day truck activity. While the COVID-19 pandemic affected activity during some weeks of the year, the total aggregate mined was 2,776,615 tons, just below the 2.8 million tons anticipated by the FEIS. Figure 2 below shows each day's concrete and aggregate loads (trucks exiting the site).

Figure 2. Daily Truck Loads (Outbound Truck Trips) – Actual for Year 2020

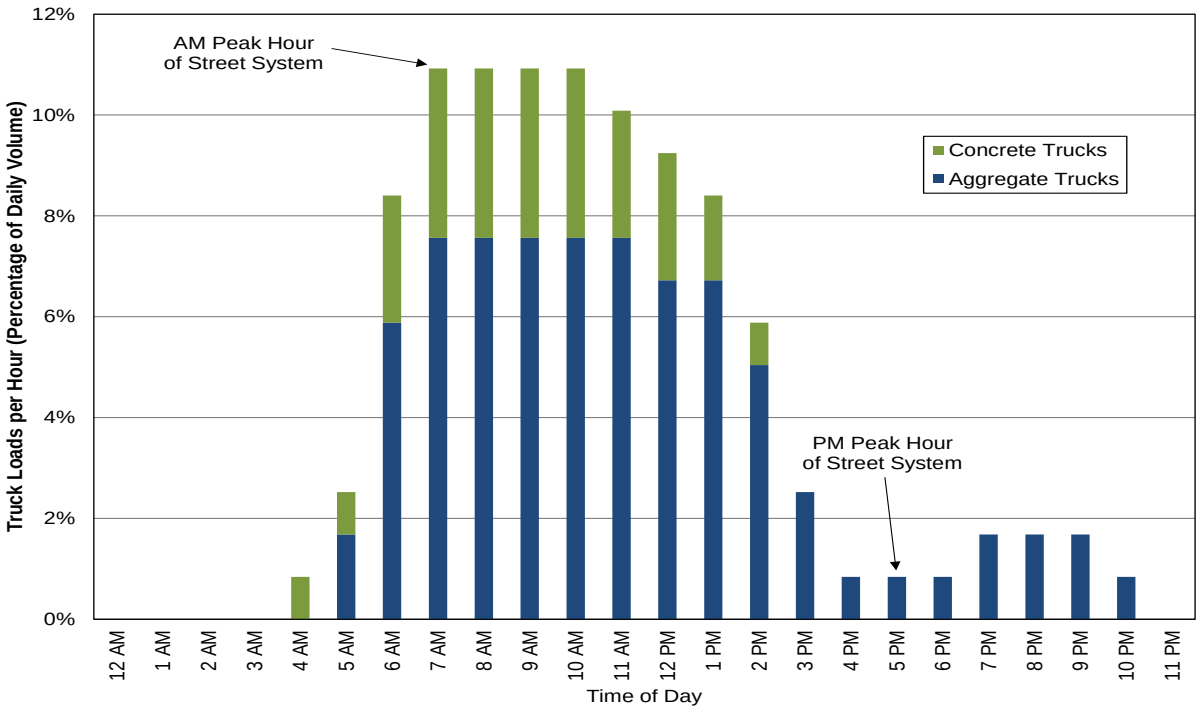


Source: CalPortland Data compiled by Heffron Transportation, Inc., January 2021.

There were several long-duration events in 2020 that affected the daily truck volume. The first was the COVID-19-induced Governor's order on March 12 that closed schools and prohibited activities in King, Pierce, and Snohomish Counties. This was followed by a statewide shut-down of many businesses on March 15 and then the "Stay Home/Stay Safe" order on March 23, 2020. The peak day for the year occurred just prior to the full statewide shutdown of all construction projects. Finally, wildfires in early to mid-September 2020 created severe air quality issues in the Puget Sound region that could have affected outdoor construction activities. Since the overall tonnage processed was nearly the same for the year, these disruptions likely just shifted deliveries to other weeks in the year which increased activity before and after these events.

In 2020, the average and peak-day volumes were approximately 90% of those forecast in the 2013 *FEIS*. A total of 118 truckloads were processed on the average day, which results in 236 truck trips. The peak day of the year had 297 truckloads, equaling 594 truck trips. The full year's data were also compiled to show truck loads by time of day. Figure 3 shows the percentage of each day's trucks for each hour.

Figure 3. Percent Trucks by Hour – Weekday



Source: CalPortland Data compiled by Heffron Transportation, Inc., January 2021. Data reflect the average of full year of truck loads.

As shown in Table 1, actual truck trips generated by the site in 2020 were very similar to the estimates in the 2013 *FEIS*. The total daily trips were below the level estimated in the *FEIS*. Actual AM peak hour trips were slightly higher for an average day (26 trips compared to the estimated 22 trips), but lower on the peak day (52 trips compared to the *FEIS* level estimated 57 trips). PM peak hour trips were lower for the average day and the same as expected for the peak day.

Table 1. Comparison of *FEIS* Truck Estimates to Actual Truck Volumes

		AM Peak Hour			PM Peak Hour		
Trip Type	Daily	In	Out	Total	In	Out	Total
FEIS Estimated Truck Trips [a]							
Average Day	266	11	11	22	3	3	6
Peak Day	740	30	27	57	8	8	16
Actual Truck Trips – Year 2020							
Average Day [b]	236	13	13	26	1	1	2
Peak Day [c]	594	26	26	52	8	8	16

a. *Source:* Final Environmental Impact Statement for CalPortland Dupont North Parcel Mining, *June 2013.*
b. *Based on average loads per hour for all of year 2020.*
c. *Based on actual loads for the Peak Day (March 18, 2020).*

3. Future Traffic with South Parcel Expansion

The South Parcel Project would allow for continued mine operations that are similar to those already permitted. The processing plant would remain in the same location, and the market area and travel patterns are expected to remain the same. Trip generation is expected to continue at current levels and would remain below the peak day estimates that had been evaluated in the 2013 *FEIS*. Expansion to the South Parcel would have a short period when logging trips are added to the traffic stream. The *FEIS* had estimated up to 24 logging truck trips per day (12 loads). This is likely to be conservatively high since the timber to be logged on the South Parcel is of poorer quality than for the previously-logged North Parcel.

The 2013 *FEIS* had evaluated traffic operations at area intersections for the future horizon year of 2035. Impacts of the project were evaluated for the peak day condition, which as shown above, reflect a higher trip condition than occurred during the peak day in 2020. The *FEIS* traffic operations analysis found that, "*…project-generated trips are expected to constitute 3 percent or less of total trips through the LOS E and F intersections in the AM peak hour, and less than 1 percent in the PM peak hour. This reflects projected conditions on a day of peak mining operations; on days of more typical mining operations, these proportions would be even lower."* It goes on to conclude, *"Because the project-generated trips would represent a small proportion of traffic volumes at the study area intersections and would have negligible effect on the levels of service at the I-5 ramps and city intersections, no adverse level of service impacts are project to result from the South Parcel proposal."* The conclusion is still reasonable given that the trips are expected to remain similar to or less than those evaluated in the *FEIS*, and that the horizon year evaluated (2035) is reasonable to capture the extended life of the mine with expansion to the South Parcel.

4. Summary

The South Parcel Project is not expected to exacerbate transportation conditions in the study area. Trip generation is expected to continue at current levels and would remain below the peak day estimates that had been evaluated in the 2013 *FEIS*. Traffic operations had been evaluated in the *FEIS* for the anticipated South Parcel traffic and extended mine life, and concluded that the South Parcel would not adversely affect traffic operations in the site vicinity. This conclusion is still reasonable.

MCH/tsm

CalPortland Pioneer Mine - South Parcel Expansion - Traffic Impact Assessment - FINAL.docx

Attachment 1.m

November 2020
DuPont Aggregates South Parcel Project

Floodplain Habitat Assessment and Mitigation Report

Prepared for
CalPortland
P.O. Box 1730
Seattle, Washington 98111

Prepared by
Anchor QEA, LLC
1201 3rd Avenue, Suite 2600
Seattle, Washington 98101

1 Introduction

Glacier Northwest, Inc., dba CalPortland, is seeking regulatory approvals for the Pioneer Aggregates South Parcel Project (Project), which proposes to extend sand and gravel mine operations to the southeast of existing activities at the Pioneer Aggregates Mine in DuPont, Washington. This Floodplain Habitat and Mitigation Report (Report) has been prepared per Federal Emergency Management Agency (FEMA) guidelines as defined in the FEMA guidance document *Regional Guidance for Floodplain Habitat and Assessment and Mitigation in the Puget Sound Basin* (FEMA 2013).

There is one waterbody in the Project Area, the 1.78-acre Kettle Wetland. Fish and wildlife habitat conservation areas located within the Project Area include the Kettle Wetland, the associated wetland bu

ffer, and upland vegetation communities. The following Project documents have been prepared describing the Kettle Wetland and vegetation communities and wildlife habitat conditions within the Project Area:

- *North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor Environmental 2007)
- *Addendum to 2007 North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor QEA 2018)
- *South Parcel Expansion Project Critical Areas Report* (Anchor QEA 2020a)

These other reports provide supporting information such as the Project description, Kettle Wetland delineation and rating, vegetation and wildlife habitat description, topography, soils, geologic conditions, Project impacts, proposed mitigation measures, and associated figures, all of which are included by reference in this Report. Per FEMA guidance, the term Project Area is used in this Report (FEMA 2013). In the *South Parcel Expansion Project Critical Areas Report and Habitat Management Plan* (Anchor QEA 2020a), the term Expansion Area is used to describe the Project Area.

2 Project Area

The proposed Project is located on privately owned property at 4301 Pioneer Avenue in the City of DuPont, Pierce County, Washington (Figure 1). The proposed Project covers portions of Sections 22, 23, 26, and 27 of Township 19 North, Range 1 East at 47.118213 N latitude / -122.661295 W longitude.

The Project will be located on the following privately owned tax parcels: 0119233011, 0119233014, 0119233015, 0119233016, 0119233017, 0119262015, 0119262016, 0119232011, 0119232012, and 0119224005. The Project is located in the Chambers-Clover Watershed, Water Resource Inventory Area (WRIA) 12 (Ecology 2020).

The Project Area is zoned as Mineral Resources overlay (City of DuPont 2015). Project Area features including parcel boundaries, the analysis area, the Kettle Wetland, topography, soils, geology, and aerial photographs displaying vegetation communities are shown in the figures in the *South Parcel Expansion Project Critical Areas Report and Habitat Management Plan* (Anchor QEA 2020a) and *North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor Environmental 2007).

2.1 Fish and Wildlife Habitat

There is one waterbody in the Project Area, the Kettle Wetland. The Kettle Wetland is a 1.78-acre wetland located southwest of the existing processing plant. This wetland is classified as a Class II wetland by City of DuPont regulations and a Category III wetland using the Washington State Department of Ecology (Ecology) wetland rating system. Water levels within the wetland are determined by the seasonal fluctuation in the elevation of the Vashon aquifer, which is the dominant source of hydrology for the wetland. The Kettle Wetland is more than 1/2 mile from a water of the United States and sits in a closed depression, with no surface water connection to the larger watershed, substantially limiting the wetland's opportunity to provide hydrologic or water quality functions. The Kettle wetland is within a FEMA mapped Special Flood Hazard Area without base flood elevation (Zone A). A second FEMA mapped Special Flood Hazard Area (also Zone A) is approximately 0.3 miles southwest of the Kettle Wetland (Figure 2). This second feature is on dry, excessively drained soils (Soil Survey Staff 2020). The second feature has been previously disturbed and cleared of woody vegetation. It provides poor habitat conditions for the species described in this document. Neither of the two Flood Hazard Areas have any surface water connections, the only hydrologic connections are precipitation and in the case of the Kettle wetland, groundwater.

The original Kettle Wetland delineation was conducted in 2007 by Anchor Environmental staff. The Kettle Wetland was redelineated in December 2017 due to the length of time that transpired since the original delineation occurred. During this later delineation, the Kettle Wetland was rated under Ecology's *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014)

and the 2018 DuPont Municipal Code Sensitive Areas Regulations (City of DuPont 2018). On April 17, 2019, the U.S. Army Corps of Engineers issued a determination that the Kettle Wetland is not a water of the United States (USACE 2018).

A complete description of the Kettle Wetland and associated wetland buffer vegetation, soil, and hydrologic characteristics, wetland functions, wetland delineation data forms, and the Ecology and City of DuPont wetland rating forms are included in the *North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor Environmental 2007) and *Addendum to 2007 North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor QEA 2018).

The Kettle Wetland is identified on Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) Maps (WDFW 2020a) and U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map Information (USFWS 2020a). The southwest portion of the Project Area is also mapped by WDFW PHS as a biodiversity area. The WDFW PHS identifies the Project Area as containing big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), and Yuma myotis bat *Myotis yumanensis*), which may breed in the area. No state or federally listed species are documented by WDFW within the Project Area (WDFW 2020a). Federally listed species are discussed in Section 2.1.1.

2.1.1 Endangered Species Act-Listed Species and Critical Habitats

Endangered Species Act (ESA)-listed species and critical habitats under National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) jurisdiction in western Washington are referenced on the agencies' websites. The NMFS identifies ESA-listed species that occur or may occur within a broad geographic area, such as an evolutionarily significant unit (ESU) or a distinct population segment (DPS), rather than a project-specific location (NMFS 2020). The USFWS identifies ESA-listed species that occur or may occur within a specific location where a project is proposed (USFWS 2020b).

The October 2020 status and potential presence of federally listed species and critical habitats protected under the ESA that may occur within the Project Area are presented in Table 1. As shown in Table 1, 11 ESA-listed species are identified by NMFS and USFWS as having the potential to occur within the Project Area. Of these species, three are aquatic (fish); five are terrestrial (one amphibian, three birds, and one mammal), and three are plants. Designated critical habitat for several of these species is present within Pierce County; however, no designated critical habitat is present within the Project Area.

Table 1
Occurrence of Listed Species and Critical Habitat in or Near the Project Area

Common Name	Scientific Name	ESA Status	Jurisdiction	Species Present in Project Area	Critical Habitat Present in Project Area
Fish					
Puget Sound ESU Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened	NMFS	No	No
Puget Sound DPS Steelhead	*Oncorhynchus mykiss*	Threatened	NMFS	No	No
Coastal-Puget Sound DPS Bull Trout	*Salvelinus confluentus*	Threatened	USFWS	No	No
Amphibians					
Oregon Spotted Frog	*Rana pretiosa*	Threatened	USFWS	No	No
Birds					
Marbled Murrelet	*Brachyramphus marmoratus*	Threatened	USFWS	No	No
Streaked Horned Lark	*Eremophila alpestris strigata*	Threatened	USFWS	No	No
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened	USFWS	No	No
Mammals					
Gray Wolf	*Canis lupus*	Proposed Endangered	USFWS	No	No
Plants					
Golden Paintbrush	*Castilleja levisecta*	Threatened	USFWS	No	No
Marsh Sandwort	*Arenaria paludicola*	Endangered	USFWS	No	No
Water Howellia	*Howellia aquatallis*	Threatened	USFWS	No	No

There are no federally listed species, designated critical habitats, or essential fish habitats in the Project Area. The ESA-listed or proposed terrestrial and plant species identified by the USFWS as potentially occurring in the Project Area do not occur in the vicinity of the Project Area based on the species' life history and habitat requirements. The Kettle Wetland does not provide wetland habitat features associated with Oregon spotted frog. Potential habitat for the four ESA-listed bird and mammal species identified in Table 1 (gray wolf, marbled murrelet, streaked horned lark, and yellow-billed cuckoo) is not located within many miles of the Project Area due to urban development. Additionally, these species are not typically associated with areas of human activity except in rare,

usually temporary, circumstances. Habitat features associated with the three plant species (golden paintbrush, marsh sandwort, and water howellia) are not present within the Project Area or vicinity.

3 Project Description, Environmental Effects, and Mitigation Measures

3.1 Project Description

The Project description is presented in the *South Parcel Expansion Project Critical Areas Report and Habitat Management Plan* (Anchor QEA 2020a).

3.2 Environmental Effects and Mitigation Measures

The following subsections provide a summary of environmental effects under the proposed Project. A complete description of potential Project impacts and Project mitigation measures is presented in the *South Parcel Expansion Project Critical Areas Report* (Anchor QEA 2020a).

3.2.1 Wetlands

Under the proposed Project, permanent impacts to the Kettle Wetland and its buffer would occur as a result of earthwork mining activities: the entire wetland would be excavated. The area of wetland disturbance is 1.78 acres, and the total buffer area of disturbance is 3.4 acres. All functions and values of the wetland will be mitigated for by constructing a larger wetland as described in the *South Parcel Expansion Project Wetland Mitigation Plan* (Anchor QEA 2020b).

3.2.2 ESA-Listed Species and Critical Habitats

Overall, the Project will not result in measurable potential impacts on ESA-listed species or critical habitats. There is no designated critical habitat located within the Project Area. Potentially suitable habitat for ESA-listed species identified by NMFS and USFWS as having the potential to occur within or near the Project Area is not present within the Project Area. Based on the proposed Project elements, if an ESA biological evaluation was performed for this Project, the effect determination for ESA-listed species and associated critical habitats would likely be no effect.

4 Figures

5 References

Anchor Environmental, 2007. *North Sequalitchew Creek Project Impact Area Wetland Delineation Report*. Prepared for CalPortland Northwest. October 30, 2007.

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Anchor QEA, 2020b. *South Parcel Expansion Project Wetland Mitigation Plan*. Prepared for CalPortland. November 2020.

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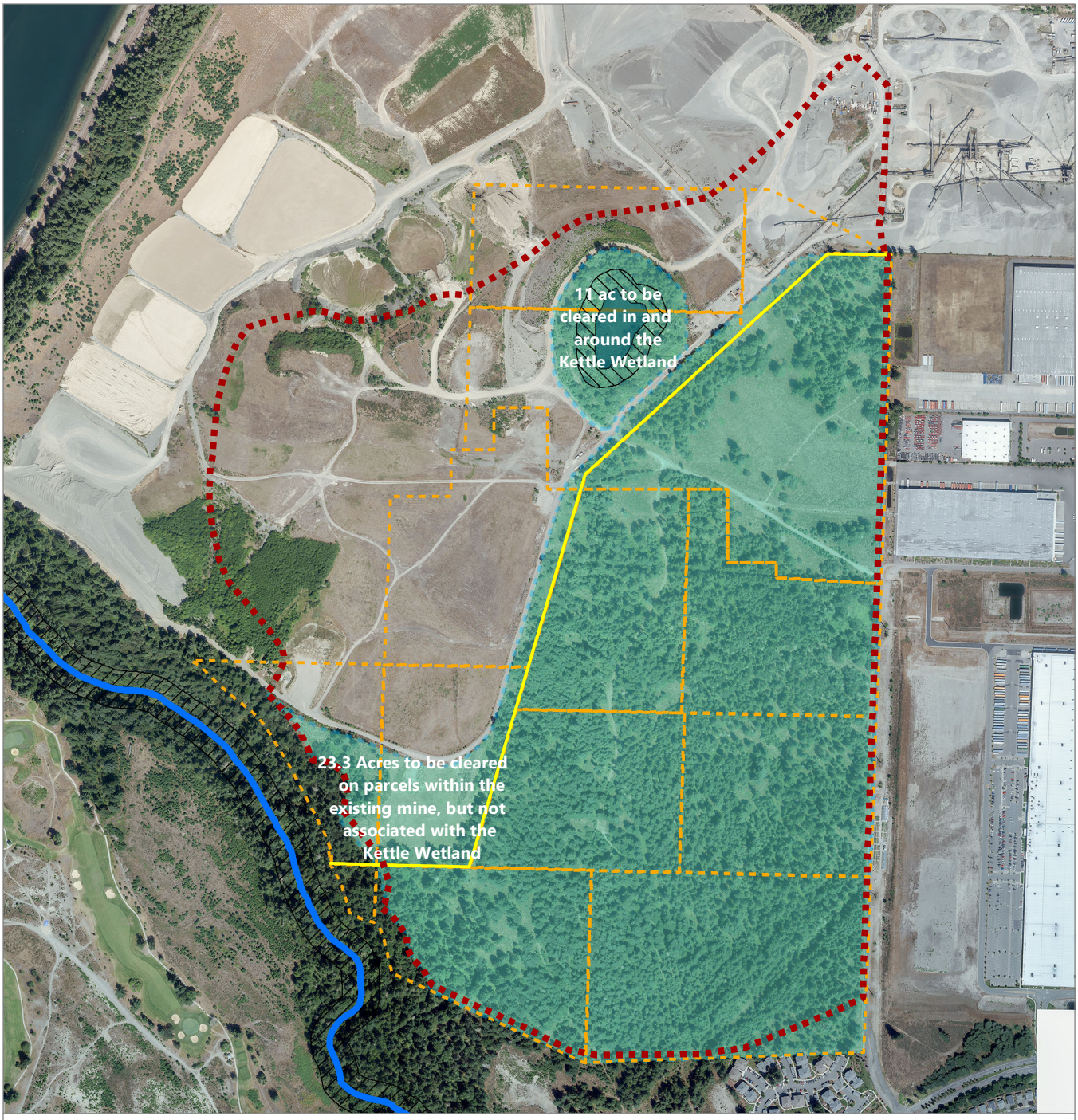
WDFW, 2020b. "SalmonScape." Accessed October 20, 2020. Available at: http://apps.wdfw.wa.gov/salmonscape/.



LEGEND:

- South Parcel Project
- Clearing Limits for Mine Expansion (201.6 ac)
- Boundary of Existing Mine
- Area Inside Existing Mine (100.7 ac)
- Kettle Wetland
- 100-ft Wetland Buffer
- Sequalitchew Creek
- 100-ft Stream Buffer

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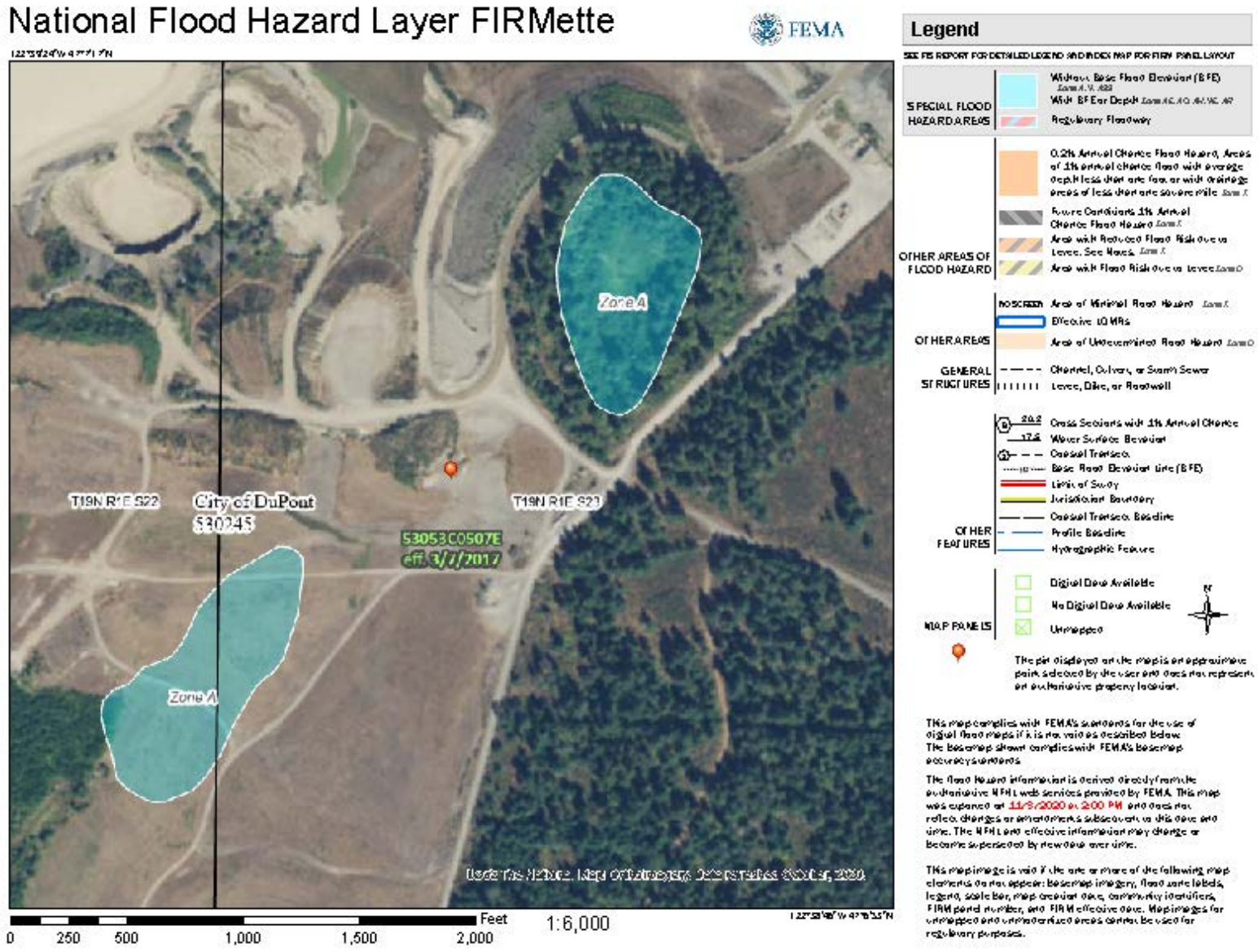
ANCHOR QEA

Figure #1
Project Area
FEMA Habitat Assessment
Pioneer Aggregates South Parcel Project



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ANCHOR QEA

Figure 2

Mapped Flood Hazards Within the Expansion Area

FEMA Habitat Assessment

Pioneer Aggregates South Parcel Project

Attachment 1.n

CalPortland Company 2025 E. Financial Way Glendora, CA 91741 (626) 852-6200			VENDOR NUMBER 104712	DATE 04/29/2021		CHECK NUMBER 2015151
DOC.NO.	P.O.NUMBER	DATE	INVOICE NO.	AMOUNT	DEDUCTIONS	NET AMOUNT
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U.S. Pat.# 6,065,407

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MAY 07 2021

Initial: BLC

REMITTANCE ADVICE	TOTAL	3,000.00	0.00	3,000.00

CALPORTLAND

CalPortland Company
2025 E. Financial Way
Glendora, CA 91741
(626) 852-6200

BANK OF AMERICA NA
PO BOX 27025
RICHMOND

DATE 04/30/2021

No. 2015151

90-4182
1211

AMOUNT
$ *********3,000.00*

PAY ***THREE THOUSAND USD********

TO THE ORDER OF CITY OF DUPONT
303 BARKSDALE AVE
DUPONT WA 98327-9002 USA

DOCUMENT CONTAINS BLUE PANTOGRAPH & MICROPRINTING. BACK HAS THERMOCHROMATIC INK & A WATERMARK. HOLD AT AN ANGLE TO VIEW. VOID IF NOT PRESENT.

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CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

May 3, 2019

Pete Stoltz
Glacier Northwest, DBA CalPortland
P.O. Box 1730
Seattle, WA 98111

RE: Pioneer Aggregates Mine Expansion, PLNG2018-067
Planning Department Pre-application Meeting Comments

Dear Mr. Stoltz:

The following letter summarizes the City's response to your request for a pre-application meeting related to the 177.23-acre expansion of the existing Pioneer Aggregates Mine for an additional 14-year period, increasing the available sand and gravel resources by 30 to 40 million tons. Mining of the South Parcel would involve six primary activities: logging, clearing and topsoil removal, groundwater management, mining, processing & transport, and reclamation. These activities would overlap, with multiple occurring at any one time. The expansion area property is located south of the existing Pioneer Aggregates Mine and covers seven parcels: 0119233011, 0119233014 – 17, 0119262015, and 0119262016.

The materials submitted include the following:

- Pre-application Meeting application form
- Description of proposal
- Mine Expansion Drawings

Subsequent to the meeting you have also provided copies of the August 15, 2013, Site Plan Review and Slope Buffer Reduction Final Decision (LU 12-02), the 2013 FEIS and the 1993 EIS.

Background and History

The original application for the mine was submitted in 1991. It included clearing, mining and reclamation, construction of a processing facility; rehabilitating and using a then-existing dock in Puget Sound (subsequently removed); and constructing an above-ground conveyor system to move material to the processing plant and dock.

In 1993 City Council approved Ordinance 95-521 for shoreline permits, master program amendment, site plan approval, and sensitive area ordinance exception for the Pioneer Aggregates Tatsolo Point barge trans-shipment proposal with conditions. Ecology denied the shoreline CUP. Subsequently, multiple parties appealed and cross appealed the City and Ecology's determinations. . A Settlement Agreement was executed in 1994. Parties to the 1994 Settlement included Ecology, the City, Lone Star NW (now CalPortland), WRECO, Nisqually Delta Association, Black Hills Audubon Society, Washington Environmental Council, National Audubon Society, and the Anderson Island Quality of Life Committee.

CalPortland abandoned plans for the wharf and agreed to locate a transshipment facility at Tatsolo Point. These actions were addressed in a Pioneer Aggregates Barge Loading Facility and DuPont Shoreline Master Program Amendment SEIS in 1995. A map and text amendment to the City's SMP addressed the "Tatsolo Point Special Management Unit" and the shoreline environment was re-designated from Urban to Conservancy. The revised master plan was approved by the City, Ecology and mining operations began in 1997.

In 2007 CalPortland (aka Glacier Northwest) submitted an application to permit mining on the 177-acre South Parcel. The proposal would fill the Kettle wetland and create either a new tributary to Sequalitchew Creek or a pipeline for the purposes of dewatering the mine. A final Supplemental EIS was published in May 2007. The City issued its staff report in January 2009. Several parties to the 1994 Settlement Agreement challenged the application and argued the decision violated the 1994 Settlement Agreement. These challenges ultimately resulted in the City taking no final action on the permit application.

In 2009 Nisqually Delta Association invoked the formal dispute resolution process in the 1994 Settlement Agreement in response to the 2007 permit application. To avoid protracted litigation the parties executed, through mediation, a Memorandum of Agreement to establish a process for further study of the watershed. In June 2011 the parties reached a new Settlement Agreement, which established a framework for review and permitting of CalPortland's mining proposals along with a concurrent process for developing a mitigation program to restore and enhance Sequalitchew Creek watershed and protect open space and the Puget Sound Shoreline. The new agreement was executed in January of 2012.

The 2012 Settlement Agreement articulates a phased series of planning, review and permitting actions that would occur over a several-year period for mining the North and South parcels. CalPortland would also preserve a 45-acre open space area along Puget South, west of the mine area, including bluffs and an area for a pedestrian trail, and grant an easement for future public access for a pedestrian trail within the open-space area following closure of the mine. The Agreement established procedures for finalization and recording of the conservation easement following review and agreement by the parties.

The City amended their Comprehensive Plan in 2012 to designate the North and South Parcels as mineral resource lands of long-term significance.

In accordance with the 2012 Settlement Agreement CalPortland applied for permits to mine the North Parcel (142 acres). The mining would occur over a 4 year period. Site Plan approval and approval for reduction of a steep slope buffer was requested.

In June 2013 a Final EIS was published for the North Parcel mining operation. Information was included about the adjacent South Parcel, which the City deemed to be a "similar action" as that term is defined in SEPA rules (WAC 17-11-060(3)(c)). It appears the South Parcel was included to facilitate consideration of cumulative impacts. Per the Hearing Examiner's Decision on the North Parcel, *"Whether or not the EIS is adequate for purposes of reaching a decision on any future application for approvals needed to commence mining operations on the South Parcel is an issue that must be addressed under the laws in effect at such time, and shall be based on the specifics of any proposal that might come forward."*

On August 15, 2013 the City's Hearing Examiner issued approval of Site Plan Review and Slope Buffer Reduction for the North Parcel mining proposal subject to 35 conditions.

A. Planning Department Comments: Contact Jeff Wilson at (253) 912-5393The following comments are provided from the City's planning department regarding the proposed project:

1. General

a. The project is located within the Residential Reserve (RR), Residential 4 (R4), Manufacturing and Research (MRP) zoning districts. All seven parcels are located in the Mineral Resource Overlay.

b. Sheet G-3 incorrectly shows the zoning for the properties. Mineral extraction is not a permitted use in the Open Space (OS) district. Further, the Mineral Resource Overlay boundary does not extend onto the OS-zoned property, therefore mining will not be allowed on OS property. The zoning boundaries shown on Sheet G-3 should be revised to reflect the correct zoning boundaries and limit mining and grading to those areas outside of the Open Space district. Please revise Sheet G-3 to match the City of DuPont official zoning map, which can be found on the City's website at the following location:

http://dupontwa.gov/DocumentCenter/View/2624

c. Sheet C-1 through C-10 show that portions of the north mine area will be needed to accommodate an infiltration pond, dewater pipeline, and a mitigation wetland. Include these properties as being within the work area on the permit applications.

d. The expanded mining operation is proposed on land that is within the Mineral Resource Overlay zoning district. Permitted Uses in the Mineral Resource Overlay are provided in DMC 25.60.020, which include: "Mineral extraction together with associated structures and equipment." Therefore the use is permitted outright.

e. DMC 25.60.050, Performance Standards, states that potential impacts related to traffic, dust control, light emission, visual screening, loss of tree cover, noise emission and protection of environmentally sensitive areas shall be examined. The city recognizes that impacts to other elements of the environment including air and water quality are regulated by the state, regional and federal authorities. Staff anticipates that most of these potential impacts will also be examined and mitigated where appropriate during the SEPA environmental review process.

f. DMC 25.60.060 provides that Site Plan Approval is required and shall be processed as a Type III approval, which requires a final decision from the City's hearing examiner. It is staff's interpretation that to comply with the performance standards of DMC 265.60.050 the mining proposal will need to meet the intent of these regulations, however, including at a minimum:

   1) The proposal shall meet the buffering and landscaping standards provided at DMC Chapter 25.90. Buffering and landscaping will also be reviewed during the environmental analysis based on the adjacent uses and noise buffering to ensure impacts are mitigated.

   2) It is anticipated that landscape screening of Powerline Road will be required and shall meet the standards provided at DMC 25.70.030(3) and will further need to meet the requirements defined in DMC 25.10.020.060.

   3) Your application indicates that no additional parking is needed as there is no change to employee counts. If that should change and the project requires 10 or more parking stalls, landscaping shall be provided within interior surface parking lots under the standards provided at DMC 25.70.030(2). The Applicant shall provide a narrative with the application that details the current parking quantity and number of employees. Should additional parking lots be proposed the City code provisions and standards for parking (Chapter 25.95) and screening DMC 25.70.070(3) will apply.

g. The site plan provided for the pre-application meeting does not indicate a fence proposed for this project. Fences larger than 6 feet that are located within the building setbacks will require a variance. The approval criteria for variance is found in DMC

h. DMC 25.120 provides tree retention requirements. There is not a per-acre tree retention requirement for the Mineral Resource Overlay District. The property is also located in Oak Management Mapping Unit MO-14. There are no specific recommendations pertaining to this unit in DMC 25.120.040 or the Oak Management Recommendations report prepared by Jones & Stokes Associates dated December 23, 1996. A tree survey will be required and requirements for retention will be reviewed as part of SEPA environmental review

i. Per DMC 25.120.030(9), additional tree retention requirements are found in Section I.B.2 of the 1994 Settlement Agreement and along the north side of Sequalitchew Creek may be found in Exhibit A to Ordinance 95-521, page 36, Section 9. This states that a 100 foot buffer from Sequalitchew Creek is required. The undisturbed buffer is measured from the top of the slope to the limits of clearing for the conveyor and shall general follow the alignment shown in the Final EIS, Appendix K. This buffer shall be denoted on the face of the civil and landscape plans.

j. On December 11, 2018, the City Council adopted Ordinance 18-1054. This ordinance repealed and replaced the sensitive area regulations with new critical area regulations. The proposed project will be required to meet the new critical area ordinance. Any development within a critical area or its buffer shall require a critical area permit. Currently, the critical area ordinance has not been codified online; we have included a hard copy of the ordinance with these comments.

Initial staff analysis indicates the proposal is located within or adjacent to the following critical areas; two individual wetlands), fish and wildlife habitat conservation areas, and geologically hazardous areas. A Critical Area Report that is compliant with DMC 25.105 will be required at the time of application. The following is a summary, but not an exclusive listing of, the critical areas and the associated reports that will be needed as part of the Critical Area Report:

1) A wetland report is required and shall be incompliance with DMC 25.105.050.A.

   a) Per DMC 25.105.050.A.2.c, wetland buffer width averaging may be allowed. If wetland buffer width averaging is pursued, the Critical Area Report will need to include written responses to the DMC 25.105.050.A.2.c criteria.

   b) Per DMC 25.105.050.A.2.d, wetland buffer reduction may be allowed with enhancements. If wetland buffer reduction is pursued, the Critical Area Report will need to include a Buffer Enhancement Plan and written responses to the DMC 25.105.050.A.2.d criteria.

   c) The proposed project description includes filling and replacing the kettle wetland located on the existing mine site. Any proposal to fill an isolated or kettle wetland on the property will have to conform to the requirements of DMC 25.105. A Wetland Compensatory Mitigation Plan that is in compliance with DMC 25.105.050.A.4 and addresses all associated criteria will be required for any wetland impacts. The City will not issue grading permits until a copy of the US Army Corps of Engineers (or a Jurisdictional Determination) and Department of Ecology approvals have been received. Also, the City will likely require peer review of the wetland Compensatory Mitigation Plan at the applicant's expense. The wetland fill and mitigation will also be evaluated under the SEPA environmental review process.

2) The subject properties are adjacent to a stream (Sequalitchew Creek) and in the breeding area for three WDFW Priority Habitat Species (bats). A Habitat Management Plan is required to be prepared for Terrestrial Habitat and Species in compliance with DMC 25.105.050.B. During the SEPA Environmental Review process consultation with WDFW shall be initiated for the requirements for protection of Priority Habitat Species.

3) Per DMC 25.105.050.B.7.a, the stream will require a 100-foot buffer. (Note, see item #9 above, which requires a buffer be established from the top of the slope).

4) The proposal includes work in the regulated floodplain associated with the 1.8-acre kettle wetland on the existing mine site. Per DMC 25.105.080.B.9.d, a floodplain assessment will be required. The assessment shall address all items listed in Per DMC 25.105.080.B.9.d.

   a) Per DMC 25.105.080.B.1.a.ii, the applicant shall notify affected communities and native tribes of proposed alteration(s) prior to any alteration in a flood hazard area. The applicant shall submit evidence of such notification to the Federal Emergency Management Agency.

5) The proposal is located in a potential landslide hazard area. A Geotechnical Report is required and shall be prepared in compliance with DMC 25.105.050.C.

a) If development is within 300 feet of a landslide hazard area, the geological assessment must address the standards in DMC25.105.050.B.2.ii.

b) A setback from the edge of any landslide hazard area will be required and the width of the setback shall be based on the findings in the geotechnical report. As such, the geotechnical report must address the setback criteria provided in DMC25.105.050.B.3.

3. Settlement Agreements

a. Please provide a copy of the 2012 Settlement Agreement and a narrative response as to how the proposal has complied with the phased series of planning, review and permitting actions that would occur over a several-year period for mining the North and South parcels. Also provide a copy of the recorded conservation easement for the 45-acre open space area along Puget South, west of the mine area.

b. Certain provisions of Ordinance 95-521 will apply to the mining of the South Parcel that we have not fully evaluated at this time. We recommend you review the Ordinance prior to submitting applications.

4. SEPA Environmental Review

SEPA Environmental Review will be required for the proposal. It is highly anticipated that a Determination of Significance will be issued and at a minimum a Supplemental EIS will be required. The City is currently in discussions with Dept. of Ecology and Dept. of Natural Resources as agencies with expertise regarding the environmental review process and lead agency.

The lead agency will likely advertise for a SEPA consultant to lead the preparation of the environmental documents. The lead agency will meet with you separately to discuss scoping and schedule, establishing the process for scoping the impacts as well as selecting a consultant for preparation of the SEPA documents, in consultation with the applicant.

5. Application Requirements

a. Submittal Requirements for Site Plan Review are listed on the City's Land Use Application form located here:

http://wa-dupont.civicplus.com/index.aspx?nid=140

Also submit the following:

1) Detailed narrative description of the proposal.

2) A copy of the 2012 Settlement Agreement (SA). Include a narrative description as to how the proposal has complied with the phased series of planning, review and permitting actions that would occur over a several-year period for mining the North and South parcels.

3) A copy of the recorded conservation easement (requirement of the 2012 Settlement Agreement).

4) A written letter with the name and address of the financially responsible party.

5) Tree Retention Plan, including tree survey.

6) Narrative describing the existing and proposed parking and employee count per DMC 25.95.

7) Documentation of soil contamination (or not), "No Further Action" letter from Ecology will be required prior to issuance of grading permits.

8) Mailing list and self-addressed and stamped envelopes for all owners of property within 300 feet of the subject property.

9) An electronic copy of all submittal requirements.

b. Submittal Requirements for Critical Area Permit is provided in DMC 25.105.080. Currently, there is no application form for a Critical Area Permit. Please use the general Land Use Application Form, which can be obtained from the City website. The following required reports are the minimum requirements as known at this time. We understand that some of these reports will be prepared in conjunction with the SEPA environmental review process.

1) Provide a narrative at the time of application that addresses the permit review criteria provided in DMC 25.105.080.D.1. This can be included within the Critical Areas Report.

2) Wetland Report and Compensatory Mitigation Plan.

3) Habitat Management Plan for Terrestrial Habitat and Species per DMC 25.105.050.B.

4) Geotechnical Report.

5) Geo-hydrologic Report.

6) Traffic Study.

7) A floodplain assessment and evidence that FEMA has been notified of work within the regulated floodplain (DMC 25.105.080.B.1.a.ii).

c. If the City is lead agency or co-lead agency, an application for SEPA Environmental Review is required. The City will provide a separate scoping letter detailing the requirements and fees. The consultant costs associated with EIS preparation and review will be passed on to the applicant. (see section A.4 below)

4. Permit Fees (based on initial permit requirements)

a. Type III Site Plan Review application fee is $3,000.

b. The Critical Areas Review application, is $3,000 plus $1,500 for review of each professional study.

c. The City fee for the Supplemental EIS (if lead or co-lead agency) is $5,000.

d. In addition you will be charged for consultant costs, fire department review fees, hearing examiner cost, and 10 percent overhead charges.

5. Approval Process Overview

The Type III approval process is summarized below.

a) Staff will review the application for completeness and issue a Notice of Complete Application within 28 days. It is important that you provide each of the items identified above at the time of application.

b) Staff will issue Notice of Application with a 14-day Comment period. You will be responsible for posting the site with the Notice.

c) The application will be reviewed for consistency with the DMC. A Staff Report will be prepared with recommended Conditions of Approval.

d) After issuance of the Final Supplemental or full EIS, staff will issue a Notice of Hearing.

e) Within 14 days of the hearing a Decision will be issued. Type III Decisions are appealable to Pierce County Superior Court.

B. Building Department Comments: Contact Bill Anderson at (253) 912-5216 or banderson@dupontwa.gov.

C. Fire Department Comments: Contact Mike Turner at (253) 666-2760 or mturner@dupontwa.gov.

D. Engineering and Water Department Comments: Contact Dominic Miller of Gray & Osborne at (360) 292-7481, Ext 1504 or dmiller@g-o.com.

In conclusion, this is an incredibly complex proposal that has a long history of permits, environmental review and agreements. While we believe we have evaluated the proposal to the extent possible without all available documents, it is possible that additional requirements may be discovered as we review the application. If you have any questions, please call me at 253.912.5393, or email me at jwilson@dupontwa.gov.

Sincerely,

Jeffrey S. Wilson, AICP
Director of Community Development
City of DuPont

Cc: File No. PLNG2018-067
City of DuPont TRC members

Per DMC 25.175.020(1)(e), neither the discussions at the pre-application meeting nor the information provided herein shall bind the director in any manner or prevent the director's future application or enforcement of all applicable codes, ordinances, and regulations.

Attachment 2.a

CALPORTLAND®

RECEIVED
JUN 04 2021
CITY OF DUPONT

Barbara Kincaid
City of DuPont
Community Development Director
1700 Civic Drive
DuPont, WA 98327

June 4, 2021

RE: CalPortland – Pioneer Aggregates South Parcel Project

Dear Ms. Kincaid:

Enclosed please information provided in response to your e-mail dated May 17, 2021 identifying additional application materials and fees required to proceed with our application for the Pioneer Aggregates South Parcel Project.

Sincerely,

Pete Stoltz
Senior Manager – Permitting & Government Affairs

Enclosures

1) Revised Land Use Application
2) Financial Assurance Form
3) Check In the Amount of $11,350.00
4) Description of how project meets Landscape Plan requirements
5) Request for Modification of Tree Retention Requirements (if applicable)
6) Landmark Tree Inventory Report revised to cross reference request for modification

Attachment 2.b

RECEIVED
JUN 0 [illegible]
CITY OF DUPONT

City of DuPont
Planning Division
Land Use Application

1700 Civic Drive
DuPont, WA 98327
www.dupontwa.gov

Phone: (253) 912-5393
Fax: (253) 964-1455

City File Number: ~~PLNG2018-067~~ BK
PLNG2021-006

All information listed in this application, or by applicable ordinance, must be submitted in order for a land use application to be determined complete. Only a complete land use application will be processed for conformance with adopted policies and requirements.

General Information:

Project name: Pioneer Aggregates South Parcel Project

Applicant name: Glacier Northwest, Inc. dba CalPortland

Address: P.O. Box 1730, Seattle, WA 98111

Phone number: 206.764.3000 Fax number: 206.764.3012

Applicant's representative: Pete Stoltz

Address: P.O. Box 1730, Seattle, WA 98111

Phone number: 206.764.3036 Fax number: 206.764.3012

Description of proposal. Be specific.
Mineral extraction together with associated structures and equipment. Please see attached for additional detail.

Applicant is requesting: Site Plan Review, Critical Areas Permit, Modification of Tree Retention Requirements and Transportation Concurrency test and finding from the City. Consistent with the 2012 Settlement Agreement CalPortland has agreed that an Environmental Impact Statement will be prepared for this project, and therefore an Environmental Checklist is not included with our application materials.

Site Information:

Assessor's Parcel Number(s): See attached.

Area of site in square feet: 22,458,812 sf (515.6 acres) based on total area of the listed parcels.

Area of streets and alleys: N/A

Area of storm drainage improvements and conveyance lines: 14.3 acres

Area of open space and neighborhood green tracts: N/A

Area of critical areas and buffers: 26.5 acres

Area of building floors: N/A

Area of impervious surfaces: None

Area of landscaping: 477 acres (all areas disturbed by mining will be reclaimed)

Building height: N/A

Number of dwelling units: N/A

Number of employees:

Number of disabled, compact and standard parking stalls: N/A

Description and area of all proposed tracts: N/A

Required Plans, Information and Fee:

(Quantity and minimum scale of each item or drawing is indicated in parenthesis. Plans shall be no larger than 24 by 36 inch sheet size)

1. ☑ Vicinity Map (include as part of site plan).
2. ☑ Site Plan drawn at 1 inch = 20 feet extending 100 feet beyond the property lines (eight copies).
3. ☑ Landscape Plans identifying: location, size and species of all landmark, historic and specimen trees; trees to be retained, specific tree protection measures drawn at 1 inch = 20 feet (seven copies).
4. ☑ Grading Plan with estimated dimensions and quantities of work involved drawn at 1 inch = 20 feet horizontal with 2' contour intervals (seven copies).
5. ☑ Storm Drainage and Utility Plan drawn at 1 inch = 20 feet (seven copies).
6. ☑ Preliminary Stormwater Management Report and calculations (three copies).

N/A 7. ☐ Roadway cross sections, (seven copies of single line drawing with dimensions).

8. ☑ One each 8 by 11 inch reduction of all drawings.
9. ☑ Average daily trips generated by the proposal based on the International Transportation Engineers Trip Generation Manual (two copies).

N/A 10. ☐ Building Elevations drawn at ¼ inch = 1 foot or larger. Identify building materials and colors (eight copies).

11. ☑ Title report of subject lot that is less than 30 days old to identify all encumbrances (two copies).

N/A 12. ☐ Draft of proposed covenants, conditions and restrictions related to the maintenance of open space or commonly owned improvements, if applicable (two copies).

N/A 13. ☐ Letter of Sewer Availability from Pierce County (two copies).

N/A 14. ☐ Letter of Water Availability from City of DuPont (two copies).

N/A 15. ☐ One site drawing showing the refuse enclosure(s) that is approved via signature and date by LeMay, Inc. Contact person is Charlie Maxwell, Public Relations Director, 253-537-8687.

N/A 16. ☐ Completed Environmental Checklist (two copies).

17. ☑ Completed Land Use Application (one copy).
18. ☑ Completed Agent Affidavit (one copy).
19. ☑ Filing fee(s).

Note:

Fill out and return this application with all material listed in the Required Plans, Information and Fee section. Submittal of all required plans, information and fees constitutes a complete application. You will be contacted by the City within 28 days of formal application submittal regarding whether the application is complete. Site work may not start until all necessary permits have been obtained. Paper or electronic drawings of the proposal may be requested for presentation purposes.

(Applicant Signature) (Date) Pete Stoltz, Glacier Northwest (Print name)

Attachment 2.c

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JUN 04 2021
CITY OF DUPONT

CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

FINANCIAL RESPONSIBILITY FORM

City File Number: PLNG2018-067

Project Name: Pioneer Aggregates South Parcel Project

Applicant Name: Glacier Northwest, Inc. dba CalPortland

Address: P.O. Box 1730, Seattle, WA 98111

Phone Number: (206) 764-3000 Email Address: pstoltz@calportland.com

Financial Responsible Party: Glacier Northwest, Inc. dba CalPortland

Address: P.O. Box 1730, Seattle, WA 98111

Phone Cell Number: (206) 930-4683 Email Address: snicholson@calportland.com

Scott H 6/4/21

Signature Date

Scott Nicholson - VP General Manager, WA Division

Print Name

Attachment 2.d

RECEIVED
JUN 04 2021
CITY OF DUPONT

Landscape Plan Approval

The purpose of landscaping stated in DMC 25.90.010 is to:

(a) Protect natural habitats, air quality, and ground water recharge;
(b) Improve the appearance of the community;
(c) Provide shade and wind protection;
(d) Reduce stormwater discharge; and
(e) Conserve water supplies.

The substantive requirements stated in 25.90.020 are focused on achieving a balance between landscape areas and pavements and structures as a whole and requires a proportion of the area in several zoning districts to be landscaped, but does not specify a requirement for the mineral resource overlay (MRO) district. Similarly, DMC 25.90.030 describes substantive requirements such as requirements for street tree location and spacing, and landscaping and buffering of parking lots that are not applicable to this project in the MRO where no pavements or structures are proposed.

Mining is a unique and interim land use and the sole purpose of the MRO district. Mine reclamation is an important and necessary step in the extraction process intended to leave the land in a condition suitable for its intended subsequent land uses. The Surface Mining Act gives the Washington Department of Natural Resources (DNR) exclusive authority to regulate reclamation and administer the Act. RCW 78.44.050. The proposed project will require a revision of the existing reclamation permit to include the South Parcel Project. The DNR inspects the mine regularly and requires sufficient performance security (typically a bond) be available to reclaim the surface mining (See RCW 78.44.087)

The minimum standards for reclamation required under RCW 78.44.141 include:

(1) Prior to surface mining, permit holders shall carefully stockpile all topsoil on the site for use in reclamation, or immediately move topsoil to reclaim adjacent segments, except when the approved subsequent use does not require replacing the topsoil. . . .

(4) All surface-mined slopes shall be reclaimed to the following minimum standards:
(a) In surface mines in soil, sand, gravel, and other unconsolidated materials, all reclaimed slopes shall:
(i) Have varied steepness;
(ii) Have a sinuous appearance in both profile and plan view;
(iii) Have no large rectilinear topographic elements;
(iv) Generally have slopes of between 2.0 and 3.0 feet horizontal to 1.0 foot vertical or flatter except in limited areas where steeper slopes are necessary in order to create sinuous topography and to control drainage;
(v) Not exceed 1.5 feet horizontal to 1.0 foot vertical except as necessary to blend with adjacent natural slopes;

(vi) Be compacted if significant backfilling is required to produce the final reclaimed slopes and if the department determines that compaction is necessary. . . .

(d) Final topography shall generally comprise sinuous contours, chutes and buttresses, spurs, and rolling mounds and hills, all of which shall blend with adjacent topography to a reasonable extent. Straight planar slopes and right angles should be avoided.. . .

(7) Revegetation shall be required as appropriate to stabilize slopes, generate new topsoil, reduce erosion and turbidity, mask rectilinear contours, and restore the scenic value of the land to the extent feasible as appropriate to the approved subsequent use. Although the scope of and necessity for revegetation will vary according to the geography, precipitation, and approved subsequent use of the site, the objective of segmental revegetation is to reestablish self-sustaining vegetation and conditions of slope stability, surface water quality, and appearance before release of the reclamation permit. Revegetation shall normally meet the following standards:

(a) Revegetation shall commence during the first proper growing season following restoration of slopes on each segment unless the department has granted the permit holder a written time extension.. . .

.

(c) Revegetation generally shall include but not be limited to diverse evergreen and deciduous trees, shrubs, grasses, and deep-rooted ground cover.

(i) For western Washington, nitrogen-fixing species including but not limited to alder, white clover, and lupine should be included in dry areas. In wet areas, tubers, sedges, wetland grasses, willow, cottonwood, cedar, and alder are appropriate. . .

(f) The department may refuse to release a reclamation permit or performance security until it deems that effective revegetation has commenced.

The proposed mineral extraction project is different from other development projects in the City that typically involve the construction of pavements and structures. Because mining is an interim action and is being conducted consistent with the MRO for which the DMC has no applicable substantive landscape requirements, landscape plan review and the substantive requirements stated in DMC 25.90.020 are not clearly applicable to the proposed mine project.

The City can look to the substantive requirements of the Surface Mining Act to fulfill the purpose of the landscape requirements in DMC 25.90.010. Retention of trees in buffers and planting of trees as proposed in the Landmark Tree Inventory report and as required under the Surface Mining Act will establish trees and other vegetation in the open space areas consistent with the objectives of the landscape provisions in the City Code. Other portions of the property will be reclaimed suitable for future development.

Landscape plans consistent with DMC 25.90 will be prepared and submitted to the City for review in the future as part of any proposed development to be constructed after mining and reclamation are complete.

Attachment 3.a

City of DuPont
Received 8/11/2021

CALPORTLAND®

August 11, 2021

Barb Kincaid, AICP
Director of Community Development
City of DuPont
1700 Civic Drive
DuPont, WA 98327

Re: Pioneer Aggregates South Parcel Project – Applications for PLNG2021-006 (Site Plan Review, PLNG2021-006 (Tree Modification, PLNG2021-010 (Critical Areas Permit), SEPA2021-002 (SEPA)

Dear Ms. Kincaid:

I am writing in response to the Notice of Incomplete Application you dated June 24, 2001, and am transmitting the following materials in response:

(1) Completed Agent Affidavit prepared by Weyerhaeuser dated August 29, 2018.

(2) Owner's Authorization letter from Weyerhaeuser dated July 28, 2021.

(3) Property Ownership Labels – I confirmed the addresses for the labels that were sent previously and added addresses for additional parties that are adjacent to the operation, not just the South Parcel Project.

(4) A copy of the current Surface Mine Reclamation Permit issued by The Washington Department of Natural Resources is enclosed

(5) We revised the tree inventory report to describe how landmark trees are distributed within the proposed project area more clearly. The labels on the table in the modification request was revised to be consistent with the revised tree inventory report. Both documents are enclosed.

We understand submitting these additional materials should complete our application. If you have questions or require additional information, please call me at 206-764-3036 or e-mail pstoltz@calportland.com.

Sincerely,

CalPortland

Pete Stoltz
Senior Manager of Permitting & Government Affairs

Enclosures (6)

Attachment 3.b

City of DuPont
1700 Civic Drive • DuPont, WA 98327
Phone: (253) 964-8121 / Fax: (253) 964-1455

AUTHORIZATION TO ACT AS AGENT AFFIDAVIT

I, WEYERHAEUSER NR, as property owner of the following described property

(Undetermined) SE of Pioneer Mine - 4301 Pioneer Way, DuPont, WA 98327
(Property Address)

0119233011, 0119233014, 0119233015, 0119233016, 0119233017, 0119262015, 0119262016
(Parcel Number)

hereby authorize

Glacier Northwest, Inc. representative (Attn: Pete Stoltz)
(Name)

PO Box 80531 Seattle, WA 98111
(Address)

(206)764-3036 / pstoltz@calportland.com
(Phone/Email)

to act as agent on my behalf before the City of DuPont regarding the application to

Expand the Pioneer Aggregates Mine operation into the property commonly known as the South Parcel.

Property Owner Signature

8/29/18
Date

KENDALL B. FOUNTAIN
Print Name

STATE OF WASHINGTON }
COUNTY OF PIERCE }

On this 29th day of August, 2018, personally appeared before me Kendall B. Fountain known to be the individual(s) described in and who executed the within and foregoing instrument and acknowledged that he/she signed the same as given, as his/her free and voluntary act and deed, for the uses and purposes therein mentioned, and under oath stated that he/she was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereto set my hand and affixed my official seal the day and year first above written.

LISA M EUROM
COMMISSION EXPIRES
NOTARY
PUBLIC
MAR 28, 2021
STATE OF WASHINGTON

Lisa M. Eurom
Notary Public

Lisa M. Eurom
Print Name

NOTARY PUBLIC in and for the State of Washington
Residing at Graham, Washington
My Commission expires: 3/28/2021

City of DuPont
Received 8/11/2021

Attachment 3.c

Weyerhaeuser

Energy and Natural Resources • 220 Occidental Ave S • Seattle, WA 98104

July 28, 2021

City of DuPont
Department of Community Development
1700 Civic Drive DuPont, WA 98327

Subject: Landowner Authorization of CalPortland's permitting of the Pioneer Aggregate Mine operation.

Ms. Kincaid:

This letter confirms that Weyerhaeuser acknowledges CalPortland is proceeding with permitting of the Pioneer Aggregate Mine. Weyerhaeuser authorizes CalPortland to submit and manage the permitting process for the parcels listed below:

South Parcel Lease Area parcels:
0119233011, 0119233014, 0119233015, 0119233016, 0119233017, 0119262015, 0119262016

Existing Mine Area:
0119221007, 0119221008, 0119221009, 0119221010, 0119221011, 0119221012, 0119221013, 0119221014, 0119221015, 0119223013, 0119224004, 0119221005, 0119224006, 0119224007, 0119224008, 0119224009, 0119232008, 0119232009, 0119232010, 0119232011, 0119232012 0119233010, 0119233012

This letter does not modify any rights of Weyerhaeuser pursuant to the terms of the Second Amended and Restated Sand and Gravel Mining Lease dated January 1, 2006 (as the same may have been amended from time-to-time) and other existing contractual obligations between Glacier and Weyerhaeuser.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Mary Castle

Energy and Natural Resources
Manager, Minerals West
(O): 503-479-2309
(C): 541-954-9738
OUR VISION: **Working together to be the world's premier timber, land, and forest products company**
OUR VALUES: **Safety | Integrity | Citizenship | Sustainability**
Weyerhaeuser

City of DuPont
Received 8/11/2021

Attachment 3.d

August 11, 2021

List of Property Owners within 300 feet of the CalPortland DuPont South Parcel Expansion Project.

1. PIERCE COUNTY INVESTORS LLC
   Mailing Address PO BOX 1368
   CARLSBAD, CA
   92018
   Parcel Number 0119234016 Site Address 4175 PIONEER AV
   Parcel Number 0119234017 Site Address 4175 PIONEER AV

2. CHASE HOLDINGS L P
   Mailing Address 129 W WILSON ST STE 100
   COSTA MESA, CA
   92627-1586
   Parcel Number 0119234018 Site Address 3895 PIONEER AVE

3. DUKE REALTY LIMITED PARTNERSHIP
   Mailing Address PO BOX 40509
   INDIANAPOLIS, IN
   46240-0509
   Parcel Number 0119234026 Site Address 1350 WHARF RD
   Parcel Number 0119234030 Site Address 2700 CENTER DR
   Parcel Number 0119261026 Site Address TRACTS

4. CITY OF DUPONT
   Mailing Address 1700 CIVIC DR
   DUPONT, WA
   98327-9603
   Parcel Number 0119261027 Site Address XXX CENTER DR (AKA Powerline Road)
   Parcel Number 0119224010 Site Address 1700 CENTER DR

5. M AND M ARLINGTON LLC
   Mailing Address 2401 4TH AVE STE 840
   SEATTLE, WA
   98121
   Parcel Number 0119262021 Site Address 1600 TO 1695 SEQUALITCHEW DR

6. DUPONT INDUSTRIAL PARTNERS LLC
   Mailing Address 1940 E D ST STE 108
   TACOMA, WA
   98421
   Parcel Number 0119262019 Site Address 1700 CENTER DR

7. WEYERHAEUSER NR COMPANY
   Mailing Address C/O TAX DEPT
   220 OCCIDENTAL AVE S
   SEATTLE, WA
   98104
   Parcel Number 0119221008 Site Address XXX UNDETERMINED SITUS

8. Fort Lewis
   Mailing Address: UNITED STATES OF AMERICA
   803 FRONT ST
   NORFOLK, VA
   23510
   Parcel Number 0119242001 Site Address XXX UNDETERMINED SITUS

9. Joint Base Lewis-McChord
   Mailing Address Directorate of Public Works
   BLDG 2012
   2012 LIGGETT AVENUE
   JOINT BASE LEWIS-MCCHORD, WA
   98433
   Parcel Number 0119242001 Site Address XXX UNDETERMINED SITUS

10. NORTHWEST WA PROPERTIES LLC
    Mailing Address INTERLINE REAL ESTATE HOLDING
    REAL ESTATE DEPARTMENT
    390 E PARKCENTER BLVD, STE 250
    BOISE, ID
    83706
    Parcel Number 0119234015 Site Address 1350 WHARF RD

11. NISQUALLY INDIAN TRIBE
    Mailing Address C/O FINANCIAL SERVICES
    4820 SHE NAH NUM DR SE
    OLYMPIA, WA
    98513-9105

    Parcel Number 0119271009 Site Address XXX CENTER DRIVE

12. NORTHWEST AGGREGATES CO
    Mailing Address 2025 E FINANCIAL WAY
    GLENDORA, CA
    91741-4692
    Parcel Number 0119154001 Site Address XXX UNDETERMINED SITUS

13. QUADRANT CORP
    Mailing Address 15900 SE EASTGATE WAY STE 300
    BELLEVUE, WA
    58008
    Parcel Number 0119221016 Site Address XXX UNDETERMINED SITUS

14. BNSF RAILWAY
    Mailing Address 44 S HANFORD ST.
    SEATTLE, WA
    98134
    Parcel Number 0119143000 - ROW Site Address XXX UNDETERMINED SITUS
    Parcel Number 0119221004 - ROW Site Address XXX UNDETERMINED SITUS
    Parcel Number 0119221016 - ROW Site Address XXX UNDETERMINED SITUS

PIERCE COUNTY INVESTORS LLC
PO BOX 1368
CARLSBAD, CA 92018

CHASE HOLDINGS L P
129 W WILSON ST STE 100
COSTA MESA, CA
92627-1586

DUKE REALTY LIMITED PARTNERSHIP
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15900 SE EASTGATE WAY STE 300
BELLEVUE, WA
58008

BNSF RAILWAY
44 S HANFORD ST.
SEATTLE, WA 98134

Request for Modification of Tree Retention Requirements under DMC 25.120.050 for Expansion Area of South Parcel Project

A landmark Tree Inventory Report is included with the application. DMC 25.120 is clearly written to address tree retention under a typical development scenario and includes no provision specific to land designated with a mineral resource overlay (MRO). The tree retention requirements in DMC 25.120.030 are not consistent with mineral extraction permitted within the MRO.

To the extent DMC 25.120.030 is applicable to land and trees within the City's designated Mineral Resource Overlay District, CalPortland requests a modification of those requirements as allowed under SMC 25.120.050 given the special circumstances pertaining to the land or the trees on it, including the unique nature and purpose of the Mineral Resource Overlay District and the enhanced and permanent tree replacement proposed in the Tree Report (Section 6), which goes far beyond what would be proposed if the site were developed in accordance with its underlying zoning designations.

Non-Landmark Trees. Before turning to landmark trees, we note that the Code contains tree retention for non-landmark trees in certain use districts. However, the Mineral Resource Overlay District is not identified as a district where such tree retention is required, as confirmed in the city's Pre-Application Memorandum for this project. See DMC 25.120.030(3); PRE-APPLICATION MEMORANDUM MAY 3, 2019, PAGE 3.

Landmark Trees. With regard to landmark trees, DMC 25.120.030 contains standards for both white oak landmark trees and other (non-oak) landmark trees. The Code calls for retention of all Oregon white oak trees "unless overall neighborhood densities cannot be met" with retention. It also calls for retention of at least half of other (non-oak) landmark trees. It is unclear whether the City intended these retention *requirements* to apply to areas within the Mineral Resource Overlay District. In general, the MRO District is subject to special "performance standards" that take into account the unique nature of mining uses. See DMC 25.60.050. These standards provide that the Site Plan approval process will be used to address "loss of tree cover" when property is mined in according with the MRO designation. DMC 25.60.050. It appears that the City's intent was for this general performance standard to govern the matter of tree retention, tree impacts, and mitigation, rather than the specific retention requirements in DMC 25.120.030 that are geared to typical residential and commercial development rather than mineral resource extraction.

If the City nevertheless determines that the Tree Retention Standards in DMC 25.120.030 are applicable, a modification is requested under DMC 25.120.050 for removal of the additional landmark trees beyond the Code-specified number, as identified in Table 1 below. This modification involves the removal and replacement of 13 additional white oaks and 29 non-white oaks within the approximately 188-acre Expansion Area. This is the equivalent of one white oak every 14.5 acres, and one non-white oak for every 5.5 acres.

Table 1
Summary of Landmark Tree Inventory, Retention Requirements, and Tree Retention and Mitigation Plan for the Expansion Area Parcels

	Oregon white oak (*Quercus garryana*)	**Big Leaf Maple** (*Acer macrophyllum)*	**Douglas fir** (*Pseudotsuga menziesii*)	**Pacific madrone** (*Arbutus menziesii*)	**Pacific yew** (*Taxus brevifolia*)	**Western red cedar** (*Thuja plicata*)	**Total Trees**
Total Landmark Trees	**13**	**2**	**81**	**1**	**1**	**10**	**108**
Trees to be Removed from Expansion Area	13	0	73	1	1	1	89
Total Tree Retention Requirement per DMC 25.120.030(2)	13	1	40.5	0.5	0.5	5	61
Trees to be Retained in Open-Space Adjacent to Expansion Area	0	2	8	0	0	9	19
Landmark Tree impacts to be mitigated for with new tree planting	**13**	**29**					**42**

The City Code allows a modification of the City's tree retention regulations as follows:

> Anyone with an ownership interest in land may request a modification from the provisions of [Chapter 25.120] based on special circumstances pertaining to the land or the trees on it."

As stated above, all of the landmark trees proposed for removal are within the designated Mineral Resource District in the City's Zoning Map and Comprehensive Plan. The South Parcel Project proposed by CalPortland at the DuPont Aggregates mine is consistent with these planned land use designations. The extraction of mineral resources will allow for future development generally consistent with the planned zoning. The trees proposed for removal are in the middle of the mining footprint as shown in attached Figure. It is not possible to access the sand and gravel resources protected by the mineral resource overlay designation without removing these additional trees. This is a special circumstance pertaining to the land and the trees on it.

The process of aggregate mining on this scale takes several years, in contrast to the types of development addressed in the Tree Retention Code (DMC 25.120). This allows the opportunity to propagate large numbers of mature trees during operation of the mine. This is consistent with the segmental reclamation approach that has included planting of trees on the mine slopes over the past 10 years. This approach to reclamation will fully meet the intent of the Tree Retention Code as stated in the purpose.

Requests for modifications are evaluated under DMC 25.120.010. See DMC 25.120.050.
DMC 25.120.010 provides as follows:

(1) The purpose of this chapter is to:

- **(a)** Protect natural habitats, air quality, and ground water recharge,
- **(b)** Improve the appearance of the community,
- **(c)** Provide shade and wind protection,
- **(d)** Reduce stormwater discharge, and
- **(e)** Conserve water supplies.

(2) This chapter is intended to help achieve these purposes by:

- **(a)** Retaining trees, without reducing developmental densities from those indicated in the comprehensive plan.

Mine operations and reclamation will meet this purpose as follows:

- **(a) Protect natural habitats, air quality, and ground water recharge.** By creating an almost continuous forested corridor on the mine slopes, natural habitats will be protected in perpetuity by the City of DuPont's Critical Areas Ordinance (DMC 25.105). The reforestation of this corridor has already begun and will continue for many years. CalPortland is required to maintain a reclamation bond with the Washington Department of Natural Resources under the Washington State Surface Mining Reclamation Act (78.44 RCW) until this work is completed. These newly established forests are younger and healthier allowing greater carbon sequestration and ability to remove atmospheric pollution to protect air quality. The entire project will result in 100% infiltration of treated stormwater. This will be enhanced by the filtering of runoff from the forested mine slopes.
- **(b) Improve the appearance of the community.** The forested areas will be visible from the developable portion of the mine, creating a nearly continuous forested hill slope around the future, planned Sequalitchew Village development.
- **(c) Provide shade and wind protection.** The forested areas are densely planted (10 feet on center), creating a high degree of shade, wind attenuation, and a microclimate effect that will mitigate the heat island of future development.

(d) Reduce stormwater discharge. The entire site will be engineered to provide 100% infiltration of stormwater. This water will be treated before infiltration and to the extent practical, clean ground water will be kept segregated from stormwater.

(e) Conserve water supplies. The forested mine slopes will not be irrigated and will be planted with native species acclimated to the local climate.

(f) Allowing tree retention to the extent possible without reducing the development footprint indicated in the Comprehensive Plan and the 2012 Settlement Agreement. The City' Tree Retention Standards in DMC 25.120.030 are for the purpose of "[r]etaining trees, *without reducing developmental densities from those indicated in the comprehensive plan*." DMC 25.120.010(2)(a) (emphasis added)." Part of the City's planned development density is sand and gravel mining within the City's designed Mineral Resource Overlay District. The City's tree retention requirements are not intended to preclude the residential densities or mineral resource development planned for in the Comprehensive Plan. Retaining trees, without reducing developmental densities from those indicated in the comprehensive plan is not practicable within the mineral resources overlay. Gravel extraction will require land clearing. These impacts will be fully mitigated by site reclamation in accordance with Washington Department of Natural Resources reclamation permits for the project. The development density for this land as indicated in the City's Mineral Resource Overlay designation and the 2012 Settlement Agreement is mineral extraction of sand and gravel, followed by reclamation for future use. Allowing removal of an additional 13 landmark white oaks and 29 landmark non-oak trees over a 188-acre area--the equivalent of one tree per 4.5 acres--will allow the mineral resource development allowed under the Comprehensive Plan and 2012 Settlement Agreement.

GEODESIGN INC

June 18, 2013

Washington State Department of Natural Resources
Geology and Earth Resources Division
1111 Washington Street SE
Olympia, WA 98504-7007

Attention: Mr. Rian Skov

Reclamation Plan Narrative
CalPortland DuPont North Parcel Expansion
City of DuPont, Pierce County, Washington
GeoDesign Project: CalPortCo-1-02

Dear Rian Skov,

On behalf of our client, CalPortland, GeoDesign Inc. (GDI) is providing the attached documents for the DuPont North Parcel Expansion Surface Mine and Reclamation Permit. To minimize duplication, this submittal does not include the Final Environment Impact Statement (Final EIS) and associated studies. The Final EIS document can be found on City of DuPont or CalPortland websites. The Draft EIS (March 2013) is currently on these web sites and is expected to be finalized in the very near future. The following documents are included:

- Reclamation Plan Narrative
- Attachment A - SM-6
- Attachment B - SM-8A
- Figures 1-8 & Appendix A-D

Should you have any questions regarding the submittal information please call me at 360-431-5120 or Pete Stoltz at 206-768-7636.

Sincerely,

Roy Garrison
Principal – Mining Consulting

Encl:
cc: Pete Stoltz - CalPortland

GEODESIGN INC

June 18, 2013

Washington State Department of Natural Resources
Geology and Earth Resources Division
1111 Washington Street SE
Olympia, WA 98504-7007

Attention: Mr. Rian Skov

Reclamation Plan Narrative
CalPortland DuPont North Parcel Expansion
City of DuPont, Pierce County, Washington
GeoDesign Project: CalPortCo-1-02

INTRODUCTION

On behalf of Glacier Northwest, Inc., dba CalPortland, GeoDesign, Inc. has prepared this surface mine reclamation plan for the Washington State Department of Natural Resources (DNR). This reclamation plan, including the narrative, DNR forms, maps, and figures, is intended to satisfy the requirements of the State Surface Mining Act (*Chapter 78.44 Revised Code of Washington*). DNR Forms SM-6 and SM-8A are presented in Attachments A and B, respectively.

SITE DESCRIPTION

SITE LOCATION

The North Parcel area is located approximately 1.5 miles north of DuPont City Hall, Pierce County, Washington. The site is situated in Portions of the NE & SE quarters of Section 22, NW, NE & SW of Section 23, SW quarter of Section 14, and SE quarter of Section 15, Township 19 North, Range 1 East; Willamette Meridian (Figure 1). The North Parcel is within the city limits of DuPont and adjoins the existing Pioneer Aggregates pit (DNR permit #70-012668) to the south.

BACKGROUND

The North Parcel property (201 acres) is owned by Northwest Aggregates, and over laps into the northern portion of their existing Pioneer Aggregates mine (467 acres) to the south. Within the North Parcel property, the mine permit boundary is being expanded 105 acres. There are 7 acres of undisturbed area proposed for removal from the existing permit boundary. These 7 acres are located in the northwestern corner of the existing permit boundary that overlaps the southwestern corner of the North Parcel property (Figure 2). Coupled with the 105 acres being

expanded in the North Parcel and removal of 7 acres within the 467 acre existing permit boundary, the total permit boundary will encompass 565 acres.

The existing mine was originally leased from the Weyerhaeuser Company and is now leased by the current property owner, WPP LLC. Refer to Figures 3 and 3A. The existing mine has been in operation since 1997. The existing operation will sequentially transition into the North Parcel expansion area while continuing to process the high quality Steilacoom Gravels at the onsite facility located in the northeast portion of the existing pit. The majority of the processed aggregate will continue to be shipped from the processing plant via conveyor to CalPortland' s barge transport dock at Tatsolo Point on Puget Sound (Figure 4).

The northern expansion area is bordered to the west by Puget Sound and adjoining bluffs. The Burlington Northern-Santa Fe Railroad is located between the Puget Sound shoreline and the toe of the slope. These forested slopes will not be disturbed by the mine expansion, and a prescribed buffer between the mineral extraction and the crest of the slope will be maintained.

The proposed mine expansion in the North Parcel has been extensively reviewed in an Final Environmental Impact Statement (FEIS) under the State Environmental Policy Act (SEPA). To avoid replication and redundancy, studies from the FEIS will be referenced throughout this document.

SUBSEQUENT USE

As stated on Form SM-6, the subsequent use of the site after reclamation is Residential Reserve (RR), Residential 4 (R-4), Open Space/Sensitive Areas (OS), Community Park (CP), Manufacturing and Research (MRP), Industrial (IND), (Attachment A). Refer to Section 3.6 - Land Use of the FEIS for a full description of subsequent uses and there locations identified (FEIS Figures 3.6-2 and 3.6-3).

GEOLOGY AND GROUNDWATER

The geology and groundwater section has been prepared by Aspect Consulting. The geology and groundwater of the North Parcel and existing mine have been studied extensively and are presented in the Final Environmental Impact Statement (FEIS) for the existing mine (City of DuPont and Ecology, 1993) and the Final Environmental Impact Statement (FEIS) for the North Parcel (City of DuPont and Ecology, 2013).

The pre-mining topography consists of a gently rolling forested upland that generally slopes gradually down to the northwest, and then descends steeply to Puget Sound. Elevations range from approximately 215 feet (NGVD 29) in the southeast corner to approximately 200 feet to 125 feet (NGVD 29) along the western boundary. Within 300 to 400 feet of its northwestern boundary, the topography dips steeply down toward the barge loading conveyor and transport dock. The railroad was cut into the original slope and slope material was used to construct the railroad embankment. The embankment lies at about elevation 32 feet and is about 50 feet wide with an armored, steep embankment on the northwest side that continues downward into the intertidal zone.

The geology of the area was formed when the Puget Sound lowland was repeatedly glaciated, or covered with thick sheets of ice that also covered much of Alaska, Canada and the Northern United States, during the last two million years. Soil and rocks carved from the landscape and deposited by these ice sheets and glacial rivers and lakes are termed glacial deposits. Sediments deposited in lowland river, floodplain, lake, and forest bog environments during intervening periods between times when glacial ice sheets occupied the landscape, are recognized as non-glacial deposits. The most recent glacial period in the area is the Vashon stade of the Fraser glaciation.

Geologic units of glacial and non-glacial origin were deposited in the area before, during, and after the Vashon glaciation. In the area of the mine, the surface geology consists primarily of Vashon-age recessional sand and gravel locally known as Steilacoom Gravel. This recessional glacial unit is underlain by older Vashon age glacial deposits, pre-Vashon non-glacial deposits, and pre-Vashon glacial deposits, all comprised primarily of sand and gravel.

The uppermost pre-Vashon non-glacial sequence in the area is identified as the Olympia beds. These non-glacial deposits are generally marked by an increase in silt, organics, and wood fragments. The Olympia beds underlie the Steilacoom gravel in the eastern portion of the existing mine. The Olympia beds are not present in the western portion of the existing mine and the North Parcel.

The first (shallowest) aquifer in the existing mine occurs within the Vashon outwash deposits. The Vashon outwash deposits comprise a productive, highly permeable groundwater zone that occurs at relatively shallow depths of approximately 15 to 25 feet [190 to 200 feet in elevation (NGVD 29)].

Beneath the North Parcel, however, the aquifer occurs well below the ground surface and lies within the Steilacoom Gravel at a depth of roughly 200 feet or greater (near sea level elevation). This change in depth to groundwater is because the North Parcel lies west of the truncation of the Olympia beds.

All mining is, and will be, above the seasonal high groundwater level. The mine floor would be established at an elevation intended to maintain a minimum separation of 10 feet between ground surface and regionally high groundwater.

MINING AND RECLAMATION

The reclamation plan for the expansion area will include returning the mined slopes to forest and leaving a relatively flat mine floor for residential use. All mining will be dry and maintain a minimum 10-foot separation between the mine floor and the seasonal high groundwater table. At the conclusion of mining, insitu slopes (2 feet horizontal to 1 foot vertical, or flatter) will surround the mine floor and sinuously join the existing mined area to the south. The pit floor will be developed to slope gently toward perimeter drainage leading to the wetponds and infiltration ponds. Slope stability was evaluated in the FEIS documents for the existing mine and the expansion area.

The North Parcel expansion boundary is 105 acres of which approximately 99 acres will be disturbed by mineral extraction. Prior to the in inception of mining, reclamation preparation starts by logging and clearing stumps, followed by removing and stockpiling native topsoil which will be applied to the slopes once postmining topography is achieved. Topsoil will be directly placed when applicable or stockpiled for future placement. As with the existing mine, segmental mining and reclamation is planned for the entire expansion area (Figure 5). Topsoil will be redistributed on the slopes at the completion of mining each segment, providing foot rooting medium for young tree seedlings. Reclamation will occur as each mining segment is completed, creating a contemporaneous approach to reclaiming the site. Topsoil will not be handled in overly wet or dry conditions. Historically, topsoil has been handled throughout the entire year, due to the gravely/sandy texture and high infiltration capacity of the native soil. Topsoil will not be placed on the completed mine floor due to the subsequent use being residential.

The maximum vertical depth of mining at any given point is 185 feet below ground surface, occurring between elevations 210 feet and 25 feet above MSL. A cut method of mining will be utilized creating a postmining topography with overall 2 foot horizontal to 1 foot vertical insitu slopes and a gently sloping pit floor. Backfilling will not be required to reclaim the site using a cut slope method of mining. Figure 6 illustrates the final configuration of the reclaimed mine area upon completion of mining activities. Figure 7 illustrates cross sections through the site. The perimeter of the mining disturbance area will be sinuously joined to the existing contours surrounding the site.

Eight soil test pits on the relatively flat expansion area indicate the presence of approximately 20 inches of salvageable topsoil/rooting medium (average), which is consistent with the Natural Resources Conservation Service description for the Spanaway Gravelly Sandy Loam soil series (41A). Approximately 259,000 cubic yards of topsoil will be salvaged within the 99 acre expansion, which will be utilized for reclamation.

After mining is complete in a segment, topsoil previously stripped and stored in advance of mining will be replaced to an approximate depth of 3 feet on the slopes for reforestation. This will provide adequate and substantial rooting medium and aid in revegetating the slopes. Historically, wood chips from onsite vegetation, pond sediments and filter press fines have been used to augment topsoil. This topsoil augmentation practice has produced an excellent rooting medium for a successfully proven reforestation program. All though pond sediments are in much smaller quantity than the filter press fines, both provide additional moisture holding capacity to the native soil.

The following section is an excerpt from the Earth and Water Resource Report, Sections 2.1.4.4 and 2.2.4 (Aspect Consulting) referencing topsoil and the Tacoma Smelter Plume: *The North Parcel is located within the Tacoma Smelter Plume (TSP). The TSP is an approximately 1,000-square-mile area where pollutants emitted from a former Asarco smelter before 1986, most notably arsenic and lead, settled onto surface soils. The Washington State Department of Ecology (Ecology) predicts more than 730,000 properties are within the TSP, including the entire City of DuPont and the portions of the existing mine and the North Parcel where mining is proposed.*

Ecology developed a model to predict the concentration of arsenic in surface soil throughout the TSP using wind speed, wind direction, and empirical results obtained from soil samples collected across the TSP (Ecology, 2012). The model indicates the concentration of TSP-related metals decreases as the distance from the former smelter increases (Ecology, 2012). Ecology has also determined elevated concentrations of metals in undisturbed areas within the TSP are generally confined to the top 6 inches of soil (Ecology, 2012).

The North Parcel is within an area where Ecology predicts surface soil concentrations of arsenic are between 40 and 100 parts per million (ppm). Ecology considers areas with these concentrations to be "moderate" zones where immediate action is not necessary (Ecology, 2012). Ecology has pre-approved certain approaches to achieve the established cleanup levels at properties within the TSP. Mixing of impacted surface soils with deeper clean soils is one of the approved approaches under the Final Interim Action Plan (Ecology, 2012).

The proposed mining and reclamation activities will serve as a permanent and final remedy for any TSP-impacted soils at the existing mine and North Parcel. Under the Proposed Action, topsoil within the North Parcel would be removed to facilitate extraction, and conserved and maintained on site to be incorporated into the reclaimed mine landscape and support re-vegetation and reclamation of mined areas consistent with the anticipated subsequent residential land use identified in the City of DuPont Comprehensive Land Use Plan (2001). Stripping, stockpiling, and replacement of topsoil would be completed using methods and procedures that are generally the same as those used in the existing mine area, including employment of BMPs to control erosion and fugitive dust. Samples would be collected from stockpiled topsoil and analyzed in accordance with the Final Interim Action Plan for the TSP (Ecology, 2012). If the sample results indicate the topsoil does not contain arsenic in concentrations exceeding 20 ppm (the conservative cleanup level established by Ecology for the TSP), then the topsoil would be used in reclamation. If the sample results indicate the topsoil contains arsenic in concentrations equal to or greater than 20 ppm, then clean soil would be mixed with the topsoil to reduce the arsenic concentration. Stockpiled topsoil would not be used for reclamation until sample results confirm the concentration of arsenic is below 20 ppm.

Mitigation measures recommended by Ecology for potential contamination from the TSP on the CalPortland-owned North Parcel include the following:

1. The applicant shall operate the facility to meet health and safety requirements and to limit worker exposure to potentially contaminated soils. The applicant shall notify operators, employees and construction workers that the property is located within the Tacoma Smelter Plume (TSP) and may contain contaminated soils and duff.

2. Before undertaking any grading activities, the applicant shall enter into a Voluntary Cleanup Program (VCP) with the Department of Ecology pursuant to the Model Toxics Control Act (MTCA) RCW 70.105D and WAC 173-340.

3. The applicant shall develop a cleanup action plan for the disturbed area of the property consistent with Ecology requirements, and will include compliance sampling and a remediation plan for area of the property, approximately 20 acres, that are not proposed for mining or open space. The cleanup action plan will acknowledge that the

45-acre open space area will be addressed in the Settlement Agreement process. The cleanup action plan will also include compliance sampling and a remediation plan for area on the property not proposed for mining and open space (approx. 20 acres).

4. Prior to initiating grading, the applicant shall obtain an opinion letter from Ecology for property areas outside of the open space area. The opinion letter will state that the proposed duff and soil remediation, and the human health and environmental protections, will likely result in no further action under MTCA. The opinion letter will also acknowledge that the open space area will be addressed later as part of the Settlement Agreement process.

5. City-permitted site development plans shall be consistent with the plans that Ecology reviewed and deemed consistent with MTCA.

6. Because the soil and duff may be contaminated, appropriate best management practices (BMPs) shall be installed to avoid escaping dust, soil erosion and water pollution during clearing and grading activities.

7. If contamination is left on the property, the applicant shall record a notice on title about the contamination to notify future buyers. The notice on title shall be recorded prior to any public access to the property, including the open space area.

8. Prior to the public gaining any access to the property, including the open space area and any un-mined areas, the property owner shall obtain a "No Further Action" determination from Ecology indicating that the remediation plan and protections for human health and the environment were successfully implemented under MTCA.

9. Any imported soil shall follow the Tacoma Smelter Plume Model Remedies Guidance, Chapter 9: Imported Soil Sampling.

After application of topsoil, slopes would be re-forested. When reclamation is complete, heavy equipment would generally not operate on the reclaimed slopes except for construction or maintenance of pedestrian paths, access roads, utilities, or other permitted facilities.

SETBACKS

The steep slope buffer associated with the west side of the pit, as negotiated in the 2011 Settlement Agreement (Ecology, City of DuPont, CalPortland, and Environmental Coalition, 2011) varies from a minimum of 25 feet in some locations to approximately 120 feet in others. The City of DuPont Municipal Code requires a 50 foot buffer between proposed development activity and hillslopes of 40 percent. The proposed development maintains a 50 foot buffer from the top of slopes greater than 40 percent with the exception of two areas. These areas are the two scallop-shaped former borrow pits along the bluff slope west of the expansion. The slope in these areas is greater than 40 percent at the top, but then becomes much more gradual downslope. The average slope from the top of the bluff to the railroad embankment in these areas is less than 40 percent. According to the City of DuPont Municipal Code (DMC 25.105.070(2)), the development buffer can be reduced to a minimum of 25 feet if the Geotechnical Engineer demonstrates that four criteria are met. As discussed in the FEIS, the

proposed development meets all four criteria for a buffer reduction to 25 feet where the project borders the two former borrow pits. A 50 foot setback from mine excavation is established along the eastern boundary of the expansion.

STORMWATER

Existing stormwater and processing water collected in the processing area are pumped to a water treatment facility located within the processing area. All water is treated and most is reused for washing sand and gravel. During periods of heavy rainfall, the supply of treated water exceeds plant needs. Excess treated water is discharged from the treatment pond to NPDES discharge monitoring point P3, where it infiltrates to recharge groundwater. During dry periods, the supply of treated water in not sufficient to meet plant needs and is supplemented by adding water from CalPortland's onsite water supply well. Stormwater from the conveyor and road collects at two pump stations (NPDES discharge points P5 and P6) and is pumped to an infiltration area in the adjacent forest.

As the area is mined, it will form a closed depression so all stormwater generated within the mine will either infiltrate or evaporate. Stormwater runoff will be collected and conveyed to separate pond systems in each drainage basin for treatment and infiltration. Each pond system will consist of a two-celled lined wetpond designed to remove sediments and provide spill control and an infiltration pond to dispose of stormwater and recharge groundwater. The predicted stormwater flows presented above were used in preliminary design of the water quality and infiltration ponds. Pond locations and the conceptual drainage patterns are shown on Figure 6.

The wetponds were designed to treat 91 percent of the total runoff under developed conditions in accordance with Ecology guidance (Ecology, 2005). Key pond dimensions are shown in Table 4-5 of the FEIS. The ponds were designed to be 7 feet deep, which includes one foot of sediment storage at the bottom of the first cell, and one foot of freeboard in both cells.

The conveyance system would consist of a network of open ditches that collect and route stormwater to the water quality facilities described above. In places where the slope is less than 2.5 percent, the ditches would be vegetated. Steeper ditches would require lining with cobbles for slopes up to 5 percent, or rip rap for steeper.

The final drainage calculations are presented in the FEIS.

REVEGETATION

Once topsoil has been placed on the slopes, tree seedlings will be planted during the dormant season. Douglas fir and Red Alder will be planted at 10ft.x10ft. spacing, establishing a stocking level of approximately 430 trees per acre on the reclaimed slopes. Based on the success of the reforested slopes in the existing mine, Douglas fir (1+1 seedling stock) and Red Alder (plug 1 or yearling pull-ups) are recommended. Based on existing reclamation at the site, volunteer seedlings are expected to propagate on the topsoiled slopes in addition to the planting described above. The mature forests that buffer the western mine boundary provide an excellent seed source of other native deciduous and conifer species.

Due to the high porosity and low erosion potential of the native topsoil, grasses are not recommended as part of the reforestation prescription. Grass cover can be detrimental to reforestation due to the competition for moisture and nutrients. In addition, grass cover provides a habitat for rodents that chew the bark around the base of the seedlings (girdling) which leads to seedling mortality and potential disease.

As the reclaimed areas mature, a native understory of herbaceous and woody species will also propagate from seed and rhizomes naturally occurring in the redistributed topsoil. Reclaimed slopes along the western boundary of the site are designed in a sinuous fashion to mimic and blend with the native topography that parallels the Puget Sound.

Deleterious vegetation such as blackberry and Scotch Broom will be removed either mechanically or with the use of herbicides to allow tree establishment and release from shading and competition for nutrients and moisture.

The following table prescribes a recommended specification for temporary revegetation on stockpiled topsoil to minimize the potential for erosion to occur. A comparable seed mix can substitute this specification.

Temporary Revegetation Specifications

Species Common Name	Scientific Name	Planting Method	Planting Density (percent)	Planting Season
Big bluegrass	*Poa secunda*	broadcast	5	spring/fall
Creeping wild rye	*Elymus repens*	broadcast	10	spring/fall
Blue creeping rye	*Elmyus glaucus*	broadcast	20	spring/fall
Timothy	*Phleum pratense*	broadcast	10	spring/fall
Idaho fescue	*Festuca idahoensis*	broadcast	20	spring/fall
White clover	*Trifolium repens*	broadcast	25	spring/fall
Ladak alfalfa	*Medicago sativa*	broadcast	5	Spring/fall
Burnet	*Sanguisorba sp.*	broadcast	5	spring/fall

LIMITATIONS

The services described in this narrative were performed consistent with generally accepted professional consulting principles and practices. There are no other warranties, express or implied. The services performed were consistent with our agreement with our client. This narrative is prepared solely for the use of our client and may not be used or relied upon by a third party for any purpose. Any such use or reliance will be at such party's risk.

The opinions and recommendations contained in this narrative apply to conditions existing when services were performed. GeoDesign is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this narrative. GeoDesign does not warrant the accuracy of supplemental information that was supplied by others as incorporated in this narrative.

♦ ♦ ♦

Please call if you have questions concerning the information provided.

Sincerely,

GeoDesign, Inc.

Roy Garrison
Principal – Mining Consulting

cc: Pete Stolz, CalPortland, (two copies)

RLG:kt
Attachments
One copy submitted
Document ID: CalPortCo-1-02-061813-minl-reclamation-plan
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REFERENCES

Final Environmental Impact Statement (FEIS) for the existing mine (City of DuPont and Ecology, 1993).

Aspect Consulting. Earth and Water Resources Report, DuPont Mine North Expansion, January 22, 2013 Draft.

Final Environmental Impact Statement (FEIS), CalPortland DuPont North Parcel Mining (City of DuPont and Ecology, 2013), http--www.calportlandresources.com.

ATTACHMENT A

WASHINGTON STATE DEPARTMENT OF
Natural Resources

COUNTY OR MUNICIPALITY APPROVAL FOR SURFACE MINING (Form SM-6)

NAME OF COMPANY OR INDIVIDUAL APPLICANT(S)
Same as name of the exploration permit holder. *(Type or print in ink.)*

Glacier Northwest, Inc., dba CalPortland

MAILING ADDRESS

5975 E. Marginal Way South
Seattle, WA 98134-2414

Telephone 206-768-7636

TOTAL ACREAGE AND DEPTH OF PERMIT AREA
(Include all acreage to be disturbed by mining, setbacks, and buffers, and associated activities during the life of the mine.) *(See SM-8A.)*

Total area disturbed will be 565 acres

Maximum vertical depth below pre-mining topographic grade is 185 feet

Maximum depth of excavated mine floor is 25 feet relative to mean sea level

COUNTY Pierce

No attachments will be accepted. Legal description of permit area:

1/4	1/4	Section	Township	Range
Portions	NE/SE	22	19N	R1E
Portions	NW/SW	23	19N	R1E
Portions	NE	23	19N	R1E
Portions	SW	14	19N	R1E
Portions	SE	15	19N	R1E

Proposed subsequent use of site upon completion of reclamation

Residential Reserve (RR), Residential 4 (R-4), Open Space/Sensitive Areas (OS), Community Park (CP), Manufacturing and Research (MRP), Industrial (IND).

Signature of company representative or individual applicant(s)	Name and title of company representative *(please print)*	Date signed
Scott Nicholson	Scott Nicholson Director	6/11/13

TO BE COMPLETED BY THE APPROPRIATE COUNTY OR MUNICIPALITY:

Please answer the following questions 'yes' or 'no'.

	Yes	No
1. Has the proposed surface mine been approved under local zoning and land-use regulations?		X
2. Is the proposed subsequent use of the land after reclamation consistent with the local land-use plan/designation?	X	

When complete, return this form to the appropriate Department of Natural Resources regional office.

Name of planning director or administrative official *(please print)*

Bill Kingman

Signature

Bill Kingman

Title *(please print)*

DuPont Planning Manager

Address

City of DuPont
1700 Civic Drive
DuPont, WA 98327

Telephone 253-912-5393

Date 6/11/13

FOR DEPARTMENT USE ONLY

DNR Reclamation Permit No.

ATTACHMENT B

WASHINGTON STATE DEPARTMENT OF
Natural Resources

APPLICATION FOR RECLAMATION PERMIT (Form SM-8A)

Check appropriate box(es): ☐ new permit ☐ revision of existing permit ☐ transfer of permit ☒ expansion

NOTE: Do not attempt to complete this form until you have carefully read "Instructions for Form SM-8A".

1. NAME OF APPLICANT/PERMIT HOLDER(S)
Glacier Northwest, Inc., dba CalPortland

2. MAILING ADDRESS
5975 E. Marginal Way South
Seattle, WA 98134-2414

3. Telephone **206-768-7636** UBI No. **601301145 Location 7**

4. NAME OF MINE
DuPont Pioneer Aggregates

5. Street address and milepost of surface mine
4301 Pioneer Avenue
DuPont, WA 98327-7736

6. Distance (miles)	7. Direction from	8. Nearest community
1.5	North	DuPont City Hall

9. COUNTY **Pierce**
No attachments will be accepted. Legal Description of permit area:

1/4	1/4	Section	Township	Range
Portions	NE&SE	22	19N	R1E
Portions	NW&SW	23	19N	R1E
Portions	NE	23	19N	R1E
Portions	SW	14	19N	R1E
Portions	SE	15	19N	R1E

10. TOTAL ACREAGE OF PERMIT AREA APPLIED FOR:
(Include all acreage to be permitted. See Form SM-6.) **565** acres

11. Do you or any person, partnership, or corporation associated with you now hold, or have you held, a surface mining operating or reclamation permit? ☒ yes ☐ no
If you answered yes to the above, please list:

Permit Number	Active Operation?		Reclamation current/complete?	
	Yes	No	Yes	No
See Attached List	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐

12. Are all of these mines now in compliance with RCW 78.44, WAC 332-18, and conditions of the permits? ☒ yes ☐ no

13. Have you ever had a surface mine operating or reclamation permit revoked? ☐ yes ☒ no
Have you ever had a reclamation security forfeited? ☐ yes ☒ no
If you answered yes to either of the above, give permit number(s):

14. Type of proposed or existing mine: ☒ pit ☐ quarry
Material(s) to be mined: ☒ sand and gravel ☐ rock or stone
☐ clay ☐ metal ☐ limestone ☐ silica
☐ other

Deposit type: ☒ glacial ☐ river floodplain (alluvial)
☐ river channel deposits ☐ talus ☐ bedrock ☐ lode ☐ unknown
☐ other

15. Total disturbed acreage and maximum depth of permit area:
(Include all acreage to be disturbed by mining and reclamation during the life of the mine.)
Total area to be disturbed: 431 acres
Area to be disturbed in next 36 months: 116 acres.
Maximum vertical depth (thickness) mined below pre-mining topographic grade will be 185 feet.
Lowest elevation of excavated mine will be 25 feet (NGVD 29).
Highest elevation of excavated mine will be 210 feet (NGVD 29).

16. Expected start date of mining:	17. Estimated number of years:
2013	8-15

18. Total quantity to be mined over life of mine (estimated):	19. Estimated annual production:
26,600,000 ☐ tons or ☒ cu yds	2.8 million ☐ tons or ☒ cu yds

20. Subsequent land use: ☒ industrial ☐ commercial ☒ residential
☐ agricultural ☐ forestry ☐ wetlands and lakes
☒ other **Open Space/Sensitive Areas, Manufacturing and Research, Community Park.**
Reclaimed elevation of floor of mine: 25 feet relative to mean sea level
Reclaimed elevation is shown on cross sections? ☒ yes ☐ no
Subsequent land use is compatible with County or Municipal comprehensive plan? ☒ yes ☐ no
County or Municipality Approval for Surface Mining (Form SM-6) attached? ☒ yes ☐ no
SEPA Checklist required? ☒ yes ☐ no
If any answers are no, explain:

21. Application fee for a new reclamation permit is herewith attached? ☒ yes ☐ no

APPLICATION FOR RECLAMATION PERMIT

22. SEGMENTAL RECLAMATION

Permit area has been divided into segments for mining and a mining schedule has been developed? ☒ yes ☐ no

If no, explain:

Permit area has been divided into segments for reclamation and a reclamation schedule has been developed? ☒ yes ☐ no

If no, explain:

23. SITE PREPARATION

23A. Permit and Disturbed Area Boundaries

Boundary of the permit area has been marked on the ground with permanent boundary markers? ☒ yes ☐ no

Explain boundary markers: **Metal tee posts with florescent painted tops.**

23B. Saving Topsoil, Subsoil, and Overburden for Reclamation

Thickness of topsoil is **1.67 (20 inches)** feet Thickness of subsoil is **0** feet Depth to bedrock is **1.67 (20 inches)** feet

Total volume of topsoil is **259,000** cubic yards Total volume of subsoil is **0** cubic yards

Volume of stored topsoil/subsoil is **86,000** cubic yards and will require **2-3** acres for storage.

Storage areas are shown on maps and have been marked on the ground with permanent boundary markers? ☒ yes ☐ no

Storage areas are shown on maps. Topsoil will be stored in berms at the top of the slopes in advance of mining which will not be staked since this material will be replaced on reclaimed slopes in a relatively short duration.

Topsoil will be salvaged? ☒ yes ☐ no

If no, explain:

Topsoil and overburden will be moved to reclaim an adjacent depleted segment? ☒ yes ☐ no

If no, explain:

Before materials are moved, vegetation will be cleared and drainage planned for soil storage areas? ☒ yes ☐ no

If no, explain:

Soil storage areas will be stabilized with vegetation to prevent erosion if materials will be stored for more than one season? ☒ yes ☐ no

If no, explain:

23C. Setbacks and Screens

The setback for this site will be **Varied** feet wide. **Refer to Setbacks Section of the Narrative.**

Is a permanent, undisturbed buffer planned for this site? ☒ yes ☐ no

If no, explain:

Setbacks are shown on maps and have been marked on the ground with permanent boundary markers? ☒ yes ☐ no

If no, explain:

Does this site have a backfilling plan that addresses the protection of adjacent property and how the final, stable slopes are to be achieved? ☐ yes ☒ no

If no, explain: **No backfill is planned.**

23D. Buffers to Protect Streams and Flood Plains

A stream buffer of at least 200 feet has been marked on the ground with permanent boundary markers? ☐ yes ☒ no

If yes, see "Additional Requirements for Mines in Flood Plains" in "Instructions for SM-8A".

A buffer of at least 200 feet from the 100-year flood plain has been marked on the ground with permanent boundary markers? ☐ yes ☒ no

If no, explain: **N/A**

Copy of Shoreline Permit from local government or the Department of Ecology is attached? **N/A** ☐ yes ☒ no

Hydraulic Project Approval from the Department of Fish and Wildlife is attached? **N/A** ☐ yes ☒ no

23E. Conservation Buffers

Conservation buffers will be established for the following purpose(s): *(Check all that apply)*

☐ unstable slopes ☐ wildlife habitat ☐ water quality ☐ other

Describe the nature and configuration of the conservation buffer(s): **N/A**

Conservation setbacks are shown on maps and have been marked on the ground with permanent boundary markers? **N/A** ☐ yes ☒ no

23F. Ground Water

EXISTING MINE:

High water table depth is **200** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Low water table depth is **5.73** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Annual fluctuation of water table is estimated at **5-10 feet.**

Direction of ground water flow: **Northwest**

Refer to narrative.

NORTH PARCEL

High water table depth is **9.59** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Low water table depth is **5.73** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Annual fluctuation of water table is from **5.73** feet on **9/29/09** to **9.30** feet on **1/19/10**.

Direction of ground water flow: **Northwest**

Refer to narrative.

Are well logs attached? **Well OB-1** ☒ yes ☐ no

Is the aquifer perched? ☐ yes ☒ no

The shallowest aquifer is ☐ confined ☒ unconfined?

The site will be mined: ☐ wet ☒ dry ☐ both

Describe mining method: **Open pit mining will continue as in the existing mine south of the expansion. Concurrent clearing, mining, and reclamation will occur in increments.**

The site is in a: **N/A**

☐ critical aquifer recharge area ☐ sole source aquifer ☐ public water supply watershed

☐ wellhead protection area ☐ special protection area ☐ designated aquifer protection area

Ground water study attached? **Groundwater study in attached EIS.** ☒ yes ☐ no

If yes, see "Additional Requirements for Mines in Hydrologically Sensitive Areas" in "Instructions for SM-8A". If no, explain:

23G. Archeology

Are archeological/cultural resource sites present? ☐ yes ☒ no

If yes, describe how you will protect these resources:

24. MINING PRACTICES TO FACILITATE RECLAMATION

24A. Soil Replacement

Topsoil will be saved? ☒ yes ☐ no

If no, explain:

Up to 4 feet of topsoil and (or) subsoil will be restored? ☒ yes ☐ no

If "yes" give details. If "no", explain: **All salvaged topsoil will be replaced to approximately 3 feet on the pit slopes as rooting medium.**

Topsoil will be restored and seedbeds prepared as necessary to promote effective revegetation and to stabilize slopes and mine floor? If "yes" give details. If "no", explain: **Topsoil will be replaced on the slopes only and mine floor is for residential use.**	☒ yes ☐ no
Subsoil will be replaced to an approximate depth of 0 feet on the pit floor and a depth of 0 feet on slopes. Topsoil will be replaced to an approximate depth of 0 feet on the pit floor and a depth of 3 feet on slopes.	
Topsoil will be distributed evenly over the site? If no, explain: **Topsoil will be replaced on the slopes only and mine floor is for residential use.**	☐ yes ☒ no
If topsoil is in short supply, it will be strategically placed in depressions and low areas in adequate thickness to conserve moisture and promote revegetation? If no, explain: **There will be a sufficient supply of topsoil to distribute evenly over the slopes.**	☐ yes ☒ no
Topsoil will be moved when conditions are not overly wet or dry? If no, explain:	☒ yes ☐ no
Topsoil will be imported? If yes, describe source. If no, explain: **There will be a sufficient supply of topsoil to distribute evenly over the slopes.**	☐ yes ☒ no
Synthetic topsoil made from compost, biosolids, or other amendments will be used and (or) made on site to supplement existing topsoil? **Wood chips from onsite vegetation and filter press fines will be used to augment topsoil as appropriate.**	☒ yes ☐ no
Materials such as till, loess, and (or) silt are available on site that could be used to supplement topsoil for reclamation. If yes, explain: **As explained in the following two questions, filter press fines, silt and clay materials will be utilized as topsoil supplement.**	☒ yes ☐ no
Silt from settling ponds or a filter press will be used for reclamation? **As appropriate, filter press material will continue to be blended with the native topsoil for reclamation.**	☒ yes ☐ no
Settling pond clay slurries will be pumped or hauled to other segments for reclamation? If yes, explain: **Only small quantities are generated from pond clean out and will supplement topsoil as appropriate.**	☒ yes ☐ no
Topsoil will be replaced with equipment that will minimize compaction, or it will be plowed, disked, or ripped following placement? If no, explain:	☒ yes ☐ no
Topsoil will be immediately stabilized with grasses and legumes to prevent loss by erosion, slumping, or crusting? If no, explain:	☒ yes ☐ no
Topsoil stockpile areas are shown on maps and will be marked on the ground with permanent boundary markers to protect from loss? If no, explain: **Storage areas are shown on maps. Topsoil will be stored in berms at the top of the slopes in advance of mining which will not be staked since this material will be replaced on reclaimed slopes in a relatively short duration.**	☒ yes ☐ no
Segmental topsoil removal and replacement is shown on maps? If no, explain:	☒ yes ☐ no
Topsoil salvage and replacement plan included? **Refer to narrative.** If no, explain:	☒ yes ☐ no
24B. Removal of Vegetation	
Vegetation will be removed sequentially from areas to be mined to prevent unnecessary erosion? If no, explain:	☒ yes ☐ no

Small trees and other transplantable vegetation will be salvaged for use in revegetating other segments? ☐ yes ☒ no

If yes, give details. If no, explain: **No transplanting is planned, but topsoil will contain seed and rhizomes that will augment revegetation.**

Wood and other organic debris will be:

☒ recycled ☐ removed from site ☒ chipped ☐ burned ☐ buried ☒ used to synthesize topsoil or mulch

☐ other (*explain*)

Solid waste disposal, burning, and land use permits are attached? **N/A** ☐ yes ☒ no

Some coarse wood (logs, stumps) and other large debris will be salvaged for fish and wildlife habitats? ☒ yes ☐ no

If yes, give details. If no, explain: **Salvaged as needed for proposed stormwater ponds.**

24C. Erosion control for Reclamation

Pit floor will slope at gentle angles toward highwall, sediment retention pond, or proper drainage? ☒ yes ☐ no

If yes, give details. If no, explain: **Stormwater will be directed to infiltration ponds located at the toe of the reclaimed slopes. Refer to Figure 6. Refer to narrative for description of existing stormwater management.**

Revegetation, sheeting, and (or) matting will be used to protect areas susceptible to erosion? ☒ yes ☐ no

If yes, give details. If no, explain: **Reclaimed slopes will be reforested contemporaneously to minimize the potential for erosion. The mine plan is designed to eliminate the need for sheeting or matting materials. Erosion control BMP's will be used if necessary to protect areas susceptible to erosion.**

Water control systems used for erosion control during segmental reclamation will:

- Divert clean water around pit? ☒ yes ☐ no
- Trap sediment-laden runoff before it enters a stream? ☒ yes ☐ no
- Result in essentially natural conditions of volume, velocity, and turbidity? ☒ yes ☐ no
- Handle a 25-year, 24-hour peak event? ☒ yes ☐ no
- *(Have you attached calculation?)* **Calculations are included in the FEIS.** ☒ yes ☐ no
- Be removed or reclaimed? ☐ yes ☒ no

If any answers are no, explain: **Infiltration ponds will remain at the completion of mining.**

Will any water control systems be removed upon final reclamation? ☐ yes ☒ no

If yes, explain:

Water control measure will be established to prevent erosion of setbacks and neighboring properties? ☒ yes ☐ no

If yes, give details. If no, explain: **The pit is incised and all stormwater will infiltrate on site.**

Storm-water conveyance ditches and channels will be lined with vegetation or riprap? ☒ yes ☐ no

If yes, give details. If no, explain: **Ditches will be constructed in native gravel and cobbles.**

Natural and other drainage channels will be kept free of equipment, wastes, stockpiles, and overburden? ☒ yes ☐ no

If no, explain:

25. RECLAMATION TOPOGRAPHY

25A. Final Slopes

Final slopes will be created using the cut-and-fill method? ☐ yes ☒ no

Explain procedure to be used: **Cut method.**

Slopes will be created by mining to the final slope using the cut method? ☒ yes ☐ no

Explain procedure to be used: **Final slopes will be created by cutting to final grade with dozer.**

Slopes will vary in steepness? ☒ yes ☐ no

If no, explain:

Slopes will have a sinuous appearance in both profile and plan view? ☒ yes ☐ no

If no, explain:

Large rectilinear (that is, right angle, or straight, planar) areas will be eliminated? ☒ yes ☐ no

If no, explain:

Where reasonable, tracks of the final equipment pass will be preserved and oriented to trap moisture, soil, and seeds, and to inhibit erosion? ☒ yes ☐ no

If no, explain:

25B. Slope Requirements for Pits and Overburden/Waste Rock Dumps (non-saleable products)

If the mine is a quarry or in hard rock, skip to Quarry section (25C).

Slopes will vary between 2 and 3 feet horizontal to 1 foot vertical or flatter, except in limited areas where steeper slopes are necessary to create sinuous topography and control drainage? ☒ yes ☐ no

If no, explain:

For pits, slopes will not exceed 2 feet horizontal to 1 foot vertical except as necessary to blend with adjacent natural slopes? ☒ yes ☐ no

Give details: **Slopes will be cut at 2:1, no blending will be required because the mine will be incised.**

Slope stability analysis required? ☐ yes ☒ no

If yes, see "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".

Slope stability analysis provided by: **Slope stability of reclaimed mine slopes were evaluated in the FEIS.**

25C. Slope Requirements for Quarries and Hardrock Metal Mines

If mine is a pit in unconsolidated materials covered by Section 25B, go to Section 25D

Check the appropriate box(es)

☐ Slopes will not exceed 2 feet horizontal to 1 foot vertical.

☐ Slopes steeper than 1 foot horizontal to 1 foot vertical are an acceptable subsequent land use as confirmed on Form SM-6.

☐ Hazardous slopes or cliffs are indigenous to the immediate area and already present a potential threat to human life. Photo and maps attached to document presence of cliffs.

☐ Geologic or topographic characteristics of the site preclude slopes being reclaimed at a flatter angle and are an acceptable subsequent land use as confirmed on Form SM-6.

Slope stability analysis required? ☐ yes ☐ no

If yes, see "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".

Slope stability analysis provided by

Measures will be taken to limit access to the top and bottom of hazardous slopes? ☐ yes ☐ no

Describe measures, or if no, explain:

Selective blasting will be used to remove benches and walls and to create chutes, buttresses, spurs, scree slopes, and rough cliff faces that appear natural? ☐ yes ☐ no

Describe procedures, or if no, explain:

Reclamation blasting will be used to reduce the entire highwall to a scree or rubble slope less than 2 feet horizontal to 1 foot vertical? ☐ yes ☐ no

Blasting plan is attached? ☐ yes ☐ no

If no, explain:

Access to benches will be maintained for reclamation blasting? ☐ yes ☐ no

If no, explain:

Small portions of benches will be left to provide habitat for raptors and other cliff-dwelling birds? ☐ yes ☐ no

25D. Backfilling

Slopes will require backfilling? ☐ yes ☒ no

Depth of backfilling is N/A feet.

Slope stability compaction analysis required? ☐ yes ☒ no

Compaction analysis provided by **N/A.**

Backfilling plan and (or) permits are attached? If no, explain: **N/A.**	☐ yes ☒ no
Backfilling will be done with overburden material after topsoil has been separated? **N/A** If no, describe composition and source of backfill material: **N/A** Explain method of placement of fill: **N/A**	☐ yes ☒ no
Locations of stockpiles are shown on maps and will be marked on the ground with permanent boundary markers? **No backfill is required.**	☐ yes ☒ no
Will backfill be imported? **N/A** If yes, give volumes needed to meet reclamation plan:	☐ yes ☒ no
Areas to be backfilled are shown on maps? If no, explain: **N/A**	☐ yes ☒ no
All grading/backfilling will be done with clean, inert, non-organic solids? If yes, give details. If no, explain: **N/A**	☐ yes ☒ no
Backfilled slopes will be compacted? If yes, give details. If no, explain: **N/A**	☐ yes ☒ no
Will you be backfilling into water? **N/A** If yes, is slope stability analysis attached? **N/A** If yes, describe method:	☐ yes ☒ no ☐ yes ☒ no
25E. Mine Floors	
Flat areas will be formed into gently rolling mounds? If yes, give details. If no, explain: **Flat areas will be formed with features consistent with future land use. See attached narrative.**	☐ yes ☒ no
Mine floor will be gently graded into sinuous drainage channels to preclude sheetwash erosion during intense precipitation? If yes, give details. If no, explain: **Ditches along the toe of the reclaimed slopes direct stormwater to infiltration ponds.**	☒ yes ☐ no
Mine floor and other compacted areas will be bulldozed, plowed, ripped, or blasted to foster revegetation? If yes, give details. If no, explain: **Ripping will implemented on the slopes as necessary, floor will not be revegetated as its final use is residential.**	☒ yes ☐ no
25F. Lakes, Ponds, and Wetlands	
Is water currently present in the area or will the mining penetrate the water table? ***If no, go to Section 25G.***	☐ yes ☒ no
Reclaimed areas below the permanent low water table in soil, sand, gravel, and other unconsolidated material will have a slope no steeper than 1.5 feet horizontal to 1 foot vertical? If yes, give details. If no, explain:	☐ yes ☐ no
If not already present, soils, silts, and clay-bearing material will be placed below water level to enhance revegetation? If yes, give details. If no, explain:	☐ yes ☐ no
Some parts of pond and lake banks will be shaped so that a person can escape from the water?	☐ yes ☐ no
Armored spillways or other measures to prevent undesirable overflow or seepage will be provided to stabilize bodies of water and adjacent slopes? If yes, give details. If no, explain:	☐ yes ☐ no

Wildlife habitat will be developed, incorporating such measures as:

- Sinuous and irregular shorelines? ☐ yes ☐ no
- Varied water depths? ☐ yes ☐ no
- Shallow areas less than 18 inches deep? ☐ yes ☐ no
- Islands and peninsulas? ☐ yes ☐ no

Give details:

Ponds or basins will:

- Be located in stable areas? ☐ yes ☐ no
- Have sufficient volume for expected runoff? ☐ yes ☐ no
- Have an emergency overflow spillway? ☐ yes ☐ no
- Spillways and outfalls will be protected (for example, rock armor) to prevent failure and erosion? ☐ yes ☐ no

If any answers are no, explain:

Proper measures will be taken to prevent seepage from water impoundments that could cause flooding outside the permitted area or adversely affect the stability of impoundment dams or adjacent slopes? ☐ yes ☐ no

If yes, give details. If no, explain:

Written approval from other agencies with jurisdiction to regulate impoundment of water is attached? ☐ yes ☐ no

If no, explain:

25G. FINAL DRAINAGE CONFIGURATION

Drainage will be capable of carrying the peak flow of the 25-year, 24-hour precipitation event? ☒ yes ☐ no
(*Data are available at DNR Region offices*)

If yes, are calculations attached? ☒ yes ☐ no

If yes, give details. If no, explain: **Drainage designed for 100-year event. Calculations are included in the FEIS.**

Drainages will be constructed on each reclaimed segment to control surface water, erosion, and siltation? ☒ yes ☐ no

Clean runoff is directed to a safe outlet? ☒ yes ☐ no

If either yes, give details. If no, explain: **Mine will create a closed depression where stormwater will infiltrate, existing stormwater system will remain in place (refer to narrative).**

Are these shown on maps? ☒ yes ☐ no

The grade of ditches and channels will be constructed to limit erosion and siltation? ☒ yes ☐ no

If yes, give details. If no, explain: **The ditches direct runoff at a very gentle grade to infiltration ponds.**

Natural-appearing drainage channels will be established upon reclamation? ☒ yes ☐ no

If yes, give details. If no, explain: **Drainage channels will be shallow vegetated ditches in native gravel.**

26. SITE CLEANUP AND PREPARATION FOR REVEGETATION

26A. Dealing with Hazardous Materials

Hazardous materials are present at the mine site? ☐ yes ☒ no

If no, go to Section 26B

The final ground surface drains away from any hazardous natural materials? ☐ yes ☐ no

If yes, give details. If no, explain:

Plan for handling hazardous mineral wastes indigenous to the site is attached? ☐ yes ☐ no

If no, written approval from all appropriate solid waste regulatory agencies attached? ☐ yes ☐ no

26B. Removal of Debris

All debris (garbage, 'bone piles', treated wood, old mining equipment, etc.) will be removed from the mine site? ☒ yes ☐ no

All sheds, scale houses, and other structures will be removed from the site? ☒ yes ☐ no

If either answer is yes, give details. If no, explain: **The Conveyor may stay in place at the completion of mining should the processing facility remain in the existing mine.**

APPLICATION FOR RECLAMATION PERMIT

27. REVEGETATION

The mine site is in: ☐ eastern Washington ☒ western Washington

The mine site is: ☐ wet ☒ dry?

The average precipitation is **39 inches** per year.

Revegetation will start during the first proper growing season (fall for grasses and legumes, fall or late winter for trees and shrubs) following restoration of slopes? ☒ yes ☐ no

If yes, give details. If no, explain: **Reforestation will occur prior to bud break, typically before April 15th.**

Test plots will be used to determine optimum vegetation plans? **N/A** ☐ yes ☒ no

The site will not be revegetated because:

☐ It is a rural area with a rainfall exceeding 30 inches annually and erosion will not be a problem (requires approval of DNR).

☐ Demonstration plots and areas will be used to show that active revegetation is not necessary.

☒ Revegetation is inappropriate for the approved subsequent use of this surface mine.

Explain: **It is inappropriate to revegetated the mine floor as its subsequent use is residential. Slopes will be reforested.**

Documentation is attached? ☐ yes ☒ no

27A. Recommended Pioneer Species

In the Sections below, check the species that will be planted at your mine site:

**** indicates nitrogen-fixing species***

Western Washington Dry Areas

☐ alfalfa*	☐ lupine*	☐ clover*	☐ orchard grass
☐ cereal rye	☐ perennial rye	☐ colonial bent grass	☐ ponderosa pine
☐ creeping red fescue	☒ red alder*	☒ Douglas fir	☐ shore pine
☐ ground cover	☐ shrubs	☒ other **Volunteer Madrone and shrub seedlings will naturally propagate the site.**	

Western Washington Wet Areas

☐ birdsfoot trefoil	☐ sedges	☐ cedar	☐ tubers
☐ cottonwood	☐ wetland grasses	☐ creeping red fescue	☐ willow
☐ red alder*	☐ other		

Eastern Washington Dry Areas

☐ alder*	☐ grasses	☐ alfalfa*	☐ juniper
☐ black locust	☐ lodgepole pine	☐ clover	☐ lupine*
☐ deciduous trees	☐ ponderosa pine	☐ shrubs	☐ deep-rooted ground cover
☐ diverse evergreens	☐ other		

Eastern Washington Wet Areas

☐ alder*	☐ cottonwood	☐ poplar	☐ sedges
☐ serviceberry	☐ tubers	☐ willow	
☐ other			

Give planting details (stems/acres of trees and shrubs, see Forest Practices manual; lbs/acre of grass, legume, or forb mixture):

Refer to revegetation specifications in narrative.

Describe weed control plan:

Deleterious species such as Scotts broom, Himalayan and Evergreen blackberry will be controlled so that they do not become competitive with the reforested slopes. Once the tree canopy closes, deleterious species are shaded out and are not of concern.

27B. Planting Techniques

Revegetation at this site will require:

Ripping and tilling?	☐ yes	☒ no
Blasting to create permeability?	☐ yes	☒ no
Mulching?	☐ yes	☒ no
Irrigation?	☐ yes	☒ no
Fertilization?	☐ yes	☒ no
Importation of clay- or humus-bearing soils?	☐ yes	☒ no
Other soil conditioners or amendments?	☒ yes	☐ no

Give details: **Refer to the narrative.**

Trees and shrubs will be planted in topsoil or in subsoil amended with generous amounts of organic matter?	☒ yes	☐ no

If yes, give details. If no, explain: **Topsoil may be amended with onsite process fines and wood chips as available.**

Mulch will be piled around the base of trees and shrubs?	☐ yes	☒ no
High quality stock will be used?	☒ yes	☐ no
Trees and shrubs will be planted while they are dormant?	☒ yes	☐ no
Stock will be properly handled, kept cool and moist, and planted as soon as possible?	☒ yes	☐ no
Seeds will be covered with topsoil or mulch no deeper than one-half inch? **N/A**	☐ yes	☒ no

If any answers are no, explain: **Mulching and seeding are not required to successfully reforest the slopes.**

28. FINAL CHECKLIST

All required maps are attached? (***See "Instructions for SM-8A" for detailed requirements.***)	☒ yes	☐ no
All required cross sections are attached? (***See "Instructions for SM-8A" for detailed requirements.***)	☒ yes	☐ no
Geologic map attached (if required)? (***See "Instructions for SM-8A" for detailed requirements.***)	☒ yes	☐ no
All documents submitted have the date, the name and address of the permit holder, and the application number on every page of the material?	☒ yes	☐ no
The plan contains predominantly relevant information?	☒ yes	☐ no
Have you completed the SM-6 and has it been signed by the local jurisdiction?	☒ yes	☐ no
Have you provided the SEPA checklist?	☒ yes	☐ no
Have you provided a copy of the SEPA determination (DNS, MDNS, or DS)?	☒ yes	☐ no
Have you attached photographs?	☐ yes	☒ no
Are additional supplemental studies included?	☐ yes	☐ no

If yes, check the appropriate box(es) below:

☐ Archeological ☒ Geohydrologic ☐ Backfill ☒ Slope stability
☐ Topsoil ☐ Flood plain ☐ Conservational ☐ Vegetation
☐ Other

Other permits required? ☒ yes ☐ no

If yes, check the appropriate box(es) below:

☐ Shoreline Permit ☐ Water Discharge Permit ☐ Solid Waste Permit
☐ Air Quality Permit ☐ NPDS or General Discharge Permit ☐ Hydraulic Project Approval
☐ Special or Conditional Use Permit ☒ Other **Forest Practices Permit, City of DuPont Site Plan**

APPLICATION FOR RECLAMATION PERMIT

When signed by the applicant and approved by the Department of Natural Resources, this document and the associated maps, cross sections, reclamation narrative, and other attachments will be the approved reclamation plan for this permit that the permit holder must follow. Significant variations from the approved reclamation plan may require that a new plan be submitted to the Department for approval.

The applicant shall be considered as the permit holder for this surface mine and shall be responsible for compliance with Chapter 78.44 RCW, Chapter 332-18 WAC, the approved reclamation plan and attachments, and the conditions of the permit if issued by the Department of Natural Resources.

I hereby agree to comply with this plan. *Signature of applicant or company representative*	Name and Title of Company Representative *(Please print)*	Date signed
Scott Nicholson	Scott Nicholson Director	6/11/13

SURFACE OWNERSHIP

Give names, addresses, and signatures of all individuals with possessory interest in land. *(Attach signed copies of this page if more than one)*

I verify that the applicant has my permission to mine from my land.

Signature of landowner(s) — *Date signed*

Scott Nicholson for Calportland 6/11/13

I hereby verify that I have seen and approved this plan.

Signature of landowner(s) — *Date signed*

Scott Nicholson for Calportland 6/11/13

OWNERSHIP OF RIGHTS TO REMOVE MINERALS BY SURFACE MINING

Give names, addresses, and signatures of all individuals with rights. *(Attach signed copies of this page if more than one)*

I verify that the applicant has my permission to mine this land.

Signature of rights owner(s) — *Date signed*

Scott Nicholson for Calportland 6/11/13

I hereby verify that I have seen and approved this plan.

Signature of rights owner(s) — *Date signed*

Scott Nicholson for Calportland 6/11/13

FOR DEPARTMENTAL USE ONLY

Date accepted	Accepted by:	Title:	Reclamation Permit No.

Comments by Department:

Northwest Aggregates Co.
UBI Number: 601301145

11. Do you or any person, partnership, or corporation associated with you now hold, or have you held, a surface mining operating or reclamation permit? yes no

If you answered yes to the above, please list:

Permit Number	Active Operation?		Reclamation current/complete?	
	Yes	No	Yes	No
Concrete - 70-012195		X	X	
DuPont – 70-012668	X		X	
Mats Mats – 70-010170	X		X	
Maury Island – 70-010256		X	X	
Snoqualmie – 70-012558	X		X	
Vashon – 70-010271 (10 acres)	X		X	
Vashon – 70-010272 (26 acres)	X		X	
White River – 70-012865	X		x	

SHCS

14P1

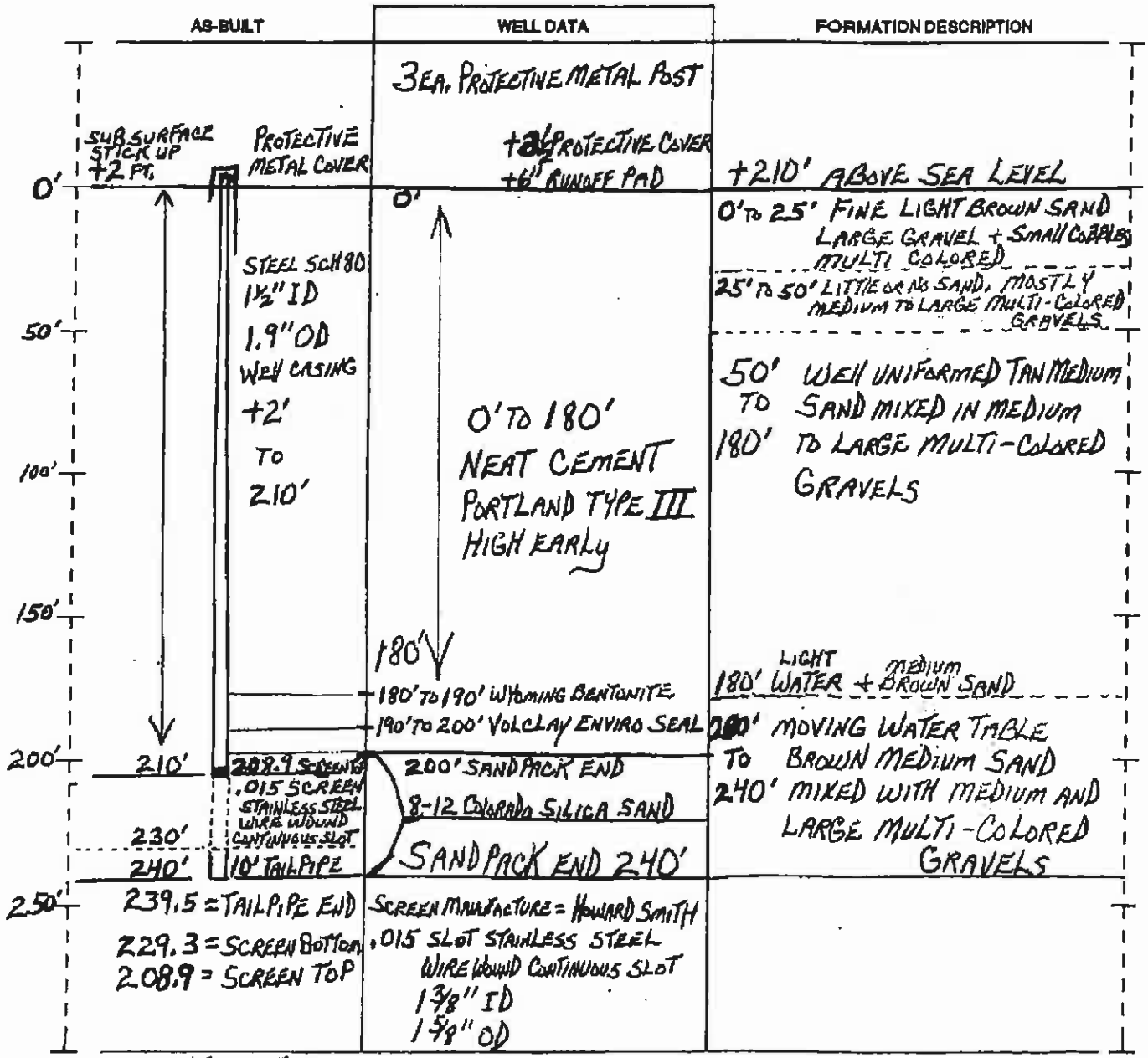
RECEIVED FEB 21 1991

RESOURCE PROTECTION WELL REPORT

START CARD NO. 063977

PROJECT NAME: LONE STAR NW OBSERVATION WELL
WELL IDENTIFICATION NO. LONE STAR #OB-1
DRILLING METHOD: REVERSE CIRCULATION ROTARY
DRILLER: DOUGLAS GRABOWSKI
FIRM: BECKER DRILLING
SIGNATURE: William L. Flaherty
CONSULTING FIRM: HART CROWSER
REPRESENTATIVE: TOM NOYES

COUNTY: PIERCE
LOCATION: SE¼ SW¼ Sec 14 Twn 19N R 1E
STREET ADDRESS OF WELL: NORTHWEST LANDING ANNEX DUPONT STEILACOOM ROAD DUPONT WASHINGTON
WATER LEVEL ELEVATION: 200 FT. STATIC
GROUND SURFACE ELEVATION: ±210
INSTALLED: FEBRUARY 15, 1991
DEVELOPED:



SCALE: 1" = 50 FEET

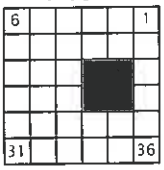
PAGE 1 OF 1

ECY 050-12 (Rev. 11/89)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report

FIGURES

T 19 N



R 1 E

SITE COORDINATES:

LATITUDE; 47° 87' 17 " N

LONGITUDE; 122° 38' 16" W

DIRECTIONS TO SITE:

THE DUPONT PIONEER AGGREGATES SITE IS LOCATED WITHIN THE CITY OF DUPONT. FROM EXIT 119 FROM INTERSTATE 5 TO DUPONT, DRIVE NORTHBOUND ON DUPONT-STEILACOOM ROAD. TURN LEFT (WEST) ONTO WHARF ROAD, THEN TURN RIGHT (NORTH) ONTO PIONEER AVENUE. SITE ACCESS IS LOCATED ON THE LEFT SIDE OF PIONEER AVENUE, ROUGHLY 1/2 MILE NORTH OF THE INTERSECTION OF WHARF ROAD AND PIONEER AVENUE.

LEGAL DESCRIPTION:

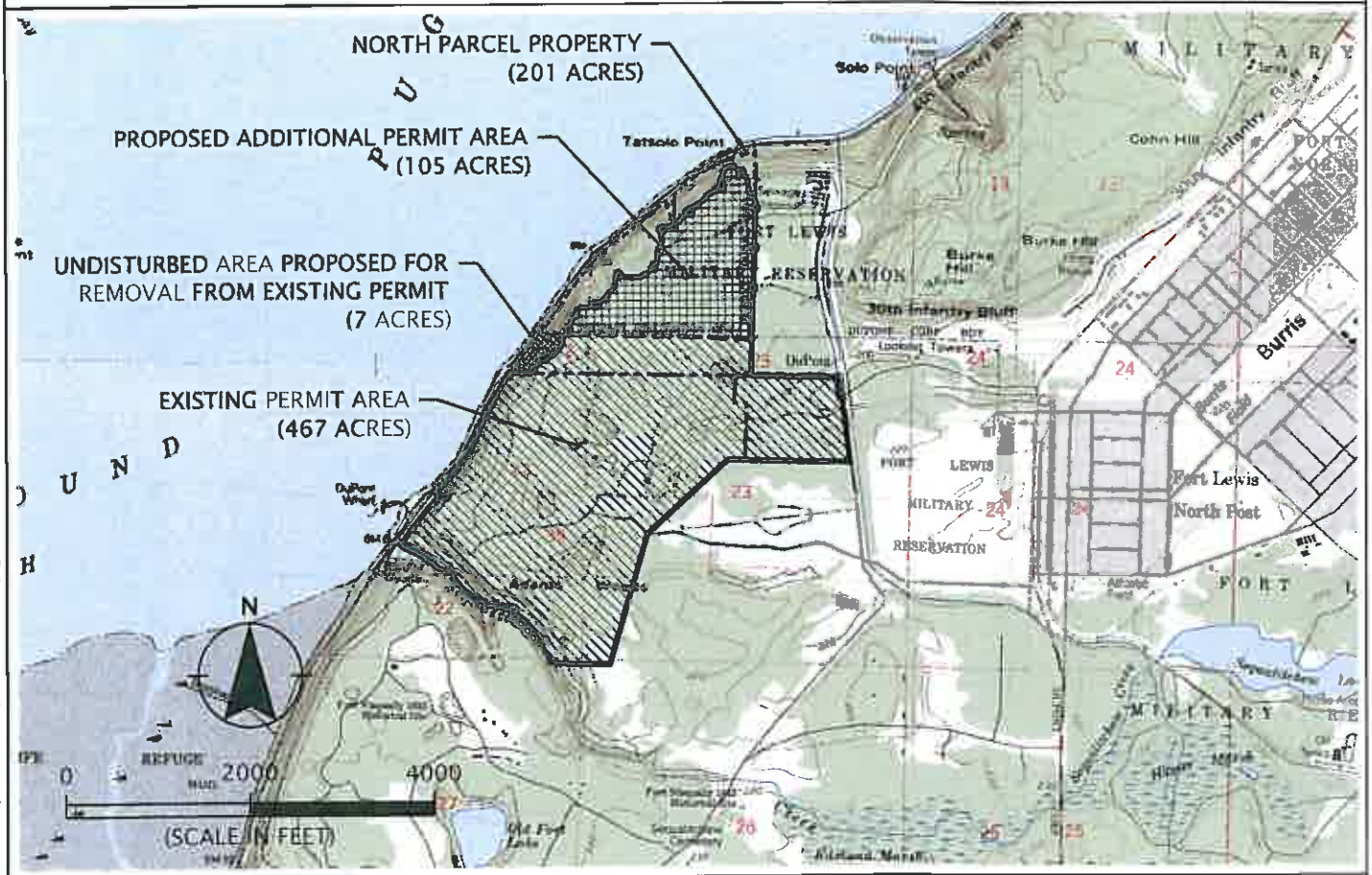
THE CURRENT PERMIT BOUNDARY AND NORTHERN EXPANSION PERMIT BOUNDARY ARE LOCATED IN PORTIONS OF THE FOLLOWING SECTIONS;

- NE QUARTER OF SECTION 22
- SE QUARTER OF SECTION 22
- NW QUARTER OF SECTION 23
- SW QUARTER OF SECTION 23
- NE QUARTER OF SECTION 23
- SW QUARTER OF SECTION 14
- SE QUARTER OF SECTION 15

WESTERN WASHINGTON

NOTE:

USGS TOPOGRAPHIC QUADRANGLE MAPS (MCNEIL ISLAND, STEILACOOM, FORT LEWIS, AND NISQUALLY) REPRODUCED USING MAPTECH TERRAIN NAVIGATOR PRO®



GEODESIGN INC 1157 3rd Avenue - Suite 2208 Longview, WA 98632 Off 360 200 4803 Fax 360 200 4803	GLACIER NW, INC. DBA CALPORTLAND	VICINITY MAP DUPONT PIONEER AGGREGATES (DNR #70-12668)
	CALPORTCO-1-02 JUNE 2013	CITY OF DUPONT, PIERCE COUNTY, WA SECTIONS 14, 15, 22, & 23, T19N, R1E, W.M. — FIGURE 1

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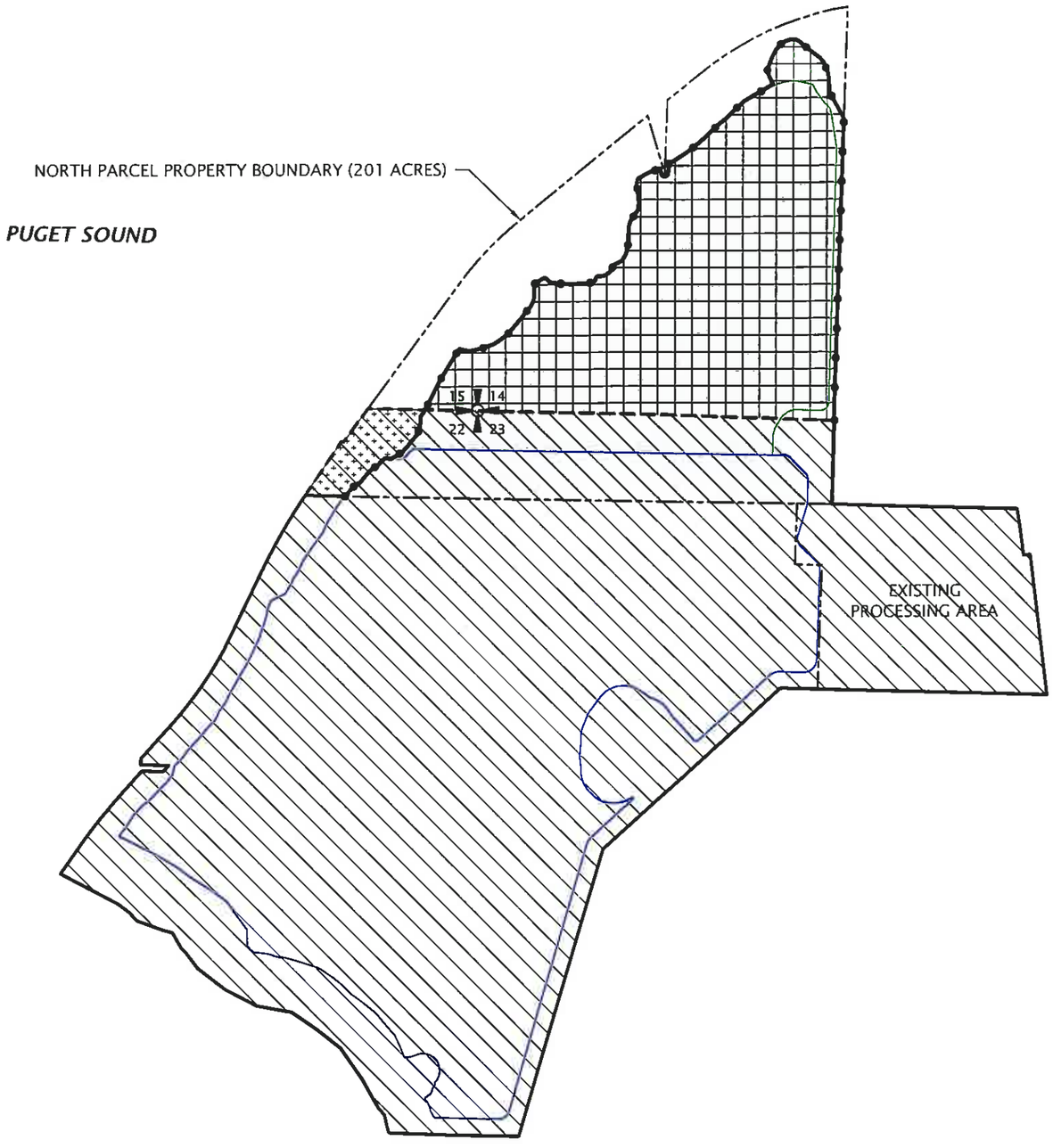

LEGEND:

- PROPOSED ADDITIONAL PERMIT AREA IN NORTH PARCEL (105 ACRES)
- EXISTING PERMIT AREA (467 ACRES)
- EXISTING PERMIT BOUNDARY TO BE RETAINED
- UNDISTURBED AREA PROPOSED FOR REMOVAL FROM EXISTING PERMIT (7 ACRES)
- EXISTING PERMIT BOUNDARY TO BE REMOVED
- PROPOSED NEW PERMIT BOUNDARY
- EXISTING PERMITTED EXTRACTION AREA (315 ACRES)
- PROPOSED ADDITIONAL EXTRACTION AREA (116 ACRES)
- EXISTING EXTRACTION AREA WHERE ADDITIONAL MINING IS PROPOSED TO FLATTEN SLOPE (NORTH PARCEL OVERLAP; 26 ACRES)
- PROPERTY LINE
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"

N

0 1000 2000

(SCALE IN FEET)

NOTES:

1. TOTAL PROPOSED PERMIT AREA = 565 ACRES (467 ACRES EXISTING PERMIT - 7 ACRES TO BE EXCLUDED + 105 PROPOSED ADDITIONAL ACRES).
2. TOTAL EXTRACTION AREA IN NORTH PARCEL = 142 ACRES (26 ACRES IN EXISTING EXTRACTION AREA + 116 ACRES IN PROPOSED EXTRACTION AREA)

SITE MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)
CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 2

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GEODESIGN INC
1157 3rd Avenue • Suite 220B
Longview, WA 98632
OH 360.200.4803 Fax 360.200.4803

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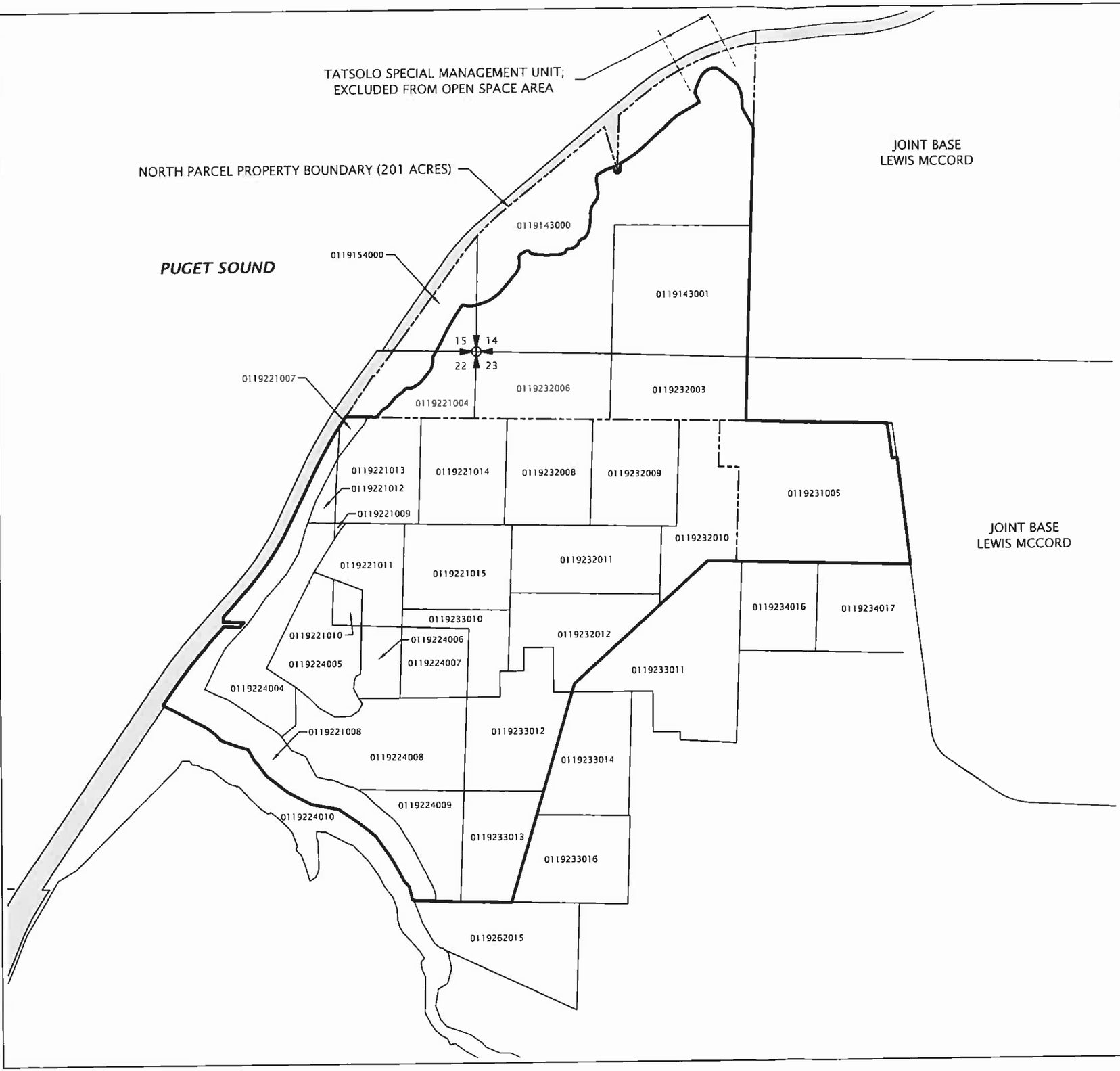

LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES; 460 ACRES EXISTING + 105 ACRES PROPOSED)
- BNSF RAILROAD ROW
- PROPERTY LINES
- PROPERTY PARCEL LINES
- 0119231005 — PROPERTY PARCEL NUMBERS
- 15 14 / 22 23 — GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"

N

0 1000 2000

(SCALE IN FEET)

NOTES:

1. SEE FIGURE 3B FOR PROPERTY OWNERSHIP INFORMATION.
2. PARCEL MAP AND PARCEL NUMBERS OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

PROPERTY OWNERSHIP MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 3A

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GEODESIGN INC
1157 3rd Avenue - Suite 2208
Longview, WA 98632
Off 360.200.4803 Fax 360.200.4803

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SUBJECT PROPERTY OWNERSHIP INFORMATION

PARCEL NUMBER	PROPERTY OWNER	OWNER ADDRESS
119231005	GLACIER NORTHWEST, INC.	2025 E FINANCIAL WAY GLENDORA, CA 91741-4692
0119232003 0119232006 0119221004 0119154000 0119143000 0119143001	NORTHWEST AGGREGATES CO.	2025 E FINANCIAL WAY GLENDORA, CA 91741-4692
0119221007 0119221013 0119221014 0119232008 0119232009 0119232010 0119232011 0119221015 0119221011 0119221012 0119221009 0119221010 0119233010 0119232012 0119233012 0119224008 0119224007 0119224006 0119224005 0119224004 0119221008 0119224009 0119233013	WPP LLC	5260 IRWIN RD HUNTINGTON, WV 25705-3247

ADJACENT PROPERTY OWNERSHIP INFORMATION

PARCEL NUMBER	PROPERTY OWNER	OWNER ADDRESS
0119224010	CITY OF DUPONT	1700 CIVIC DR DUPONT, WA 98327-9603
0119234017 0119234016	PIERCE COUNTY INVESTORS LLC	20415 72ND AVE S SUITE 210 KENT, WA 98032-2357
0119262015 0119233016 0119233014 0119233011	WPP LLC	5260 IRWIN RD HUNTINGTON, WV 25705-3247
JBLM (JOINT BASE LEWIS-MCCHORD)	USA	JBLM PUBLIC AFFAIRS OFFICE BOX 339500 MAIL STOP 14A JOINT BASE LEWIS-MCCHORD, WA 98433-9500
BNSF ROW	BURLINGTON-NORTHERN SANTA FE RAILROAD	TERRY FINN 2454 OCCIDENTAL AVE BLDG 1A SEATTLE, WA 98134

NOTES:

1. SEE FIGURE 3A FOR PROPERTY OWNERSHIP MAP.
2. PROPERTY OWNERSHIP INFORMATION OBTAINED ONLINE FROM PIERCE COUNTY ASSESSOR.

GEODESIGN INC
1157 3rd Avenue - Suite 220B
Longview, WA 98632
Off 360 200 4803 Fax 360 200 4803

GLACIER NW, INC.
DBA CALPORTLAND

PROPERTY OWNERSHIP INFORMATION TABLES
DUPONT PIONEER AGGREGATES (DNR #70-12668)

CALPORTCO-1-02
JUNE 2013

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, T19N, R1E, W.M.

FIGURE 3B

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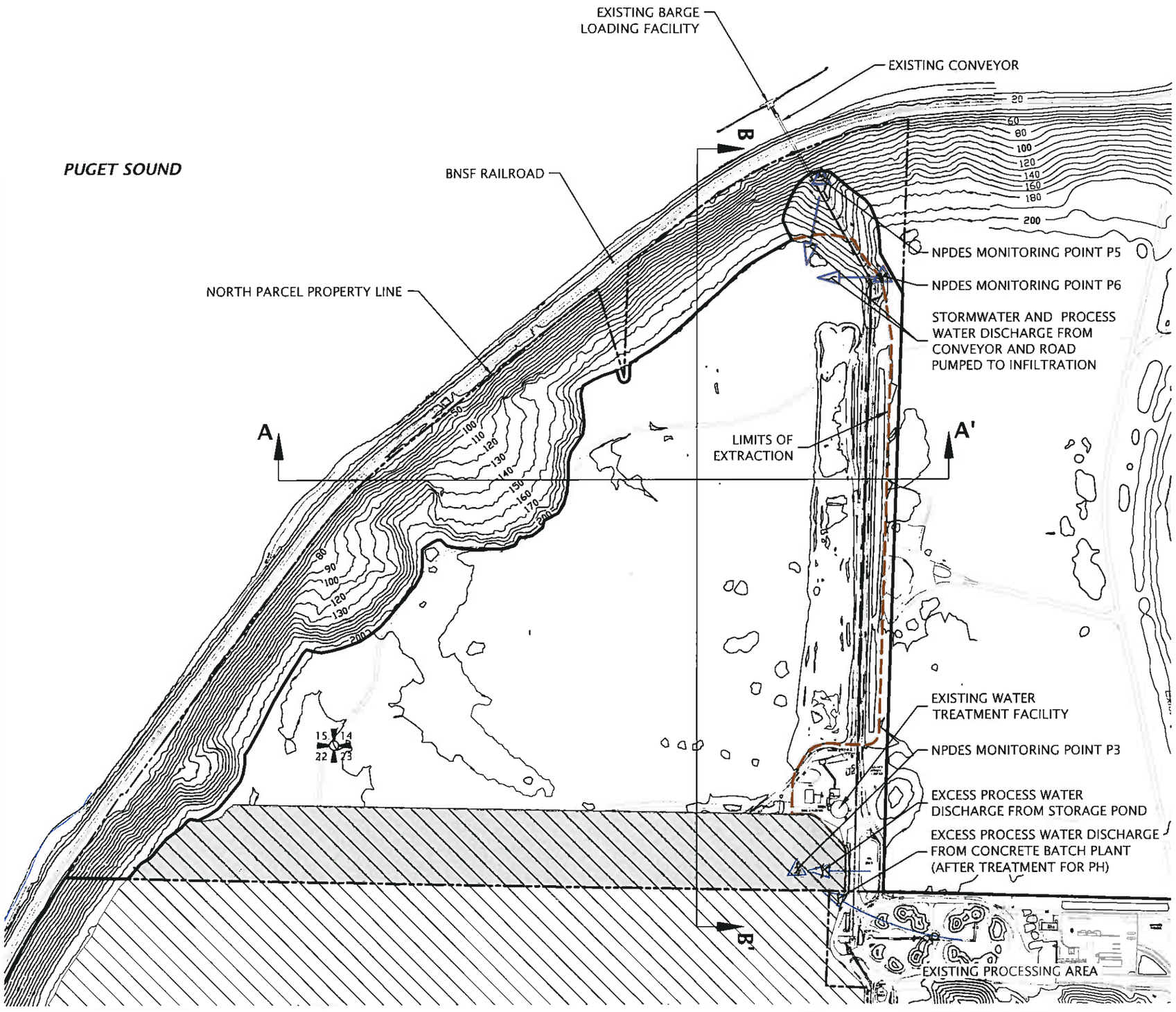

LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- PROPOSED NORTH PARCEL EXTRACTION LIMIT (142 ACRES)
- PROPERTY LINES
- EXISTING TOPOGRAPHY (10' INTERVALS)
- EXISTING PERMITTED EXTRACTION AREA
- EXISTING PERMITTED EXTRACTION AREA/ NORTH PARCEL OVERLAP
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"
- CROSS SECTION PROFILE LOCATIONS

N

0 500 1000

(SCALE IN FEET)

NOTE:

BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

EXISTING TOPOGRAPHY MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 4

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GEODESIGN INC
1157 3rd Avenue - Suite 220B
Longview, WA 98632
Off 360.200.4803 Fax 360.200.4803

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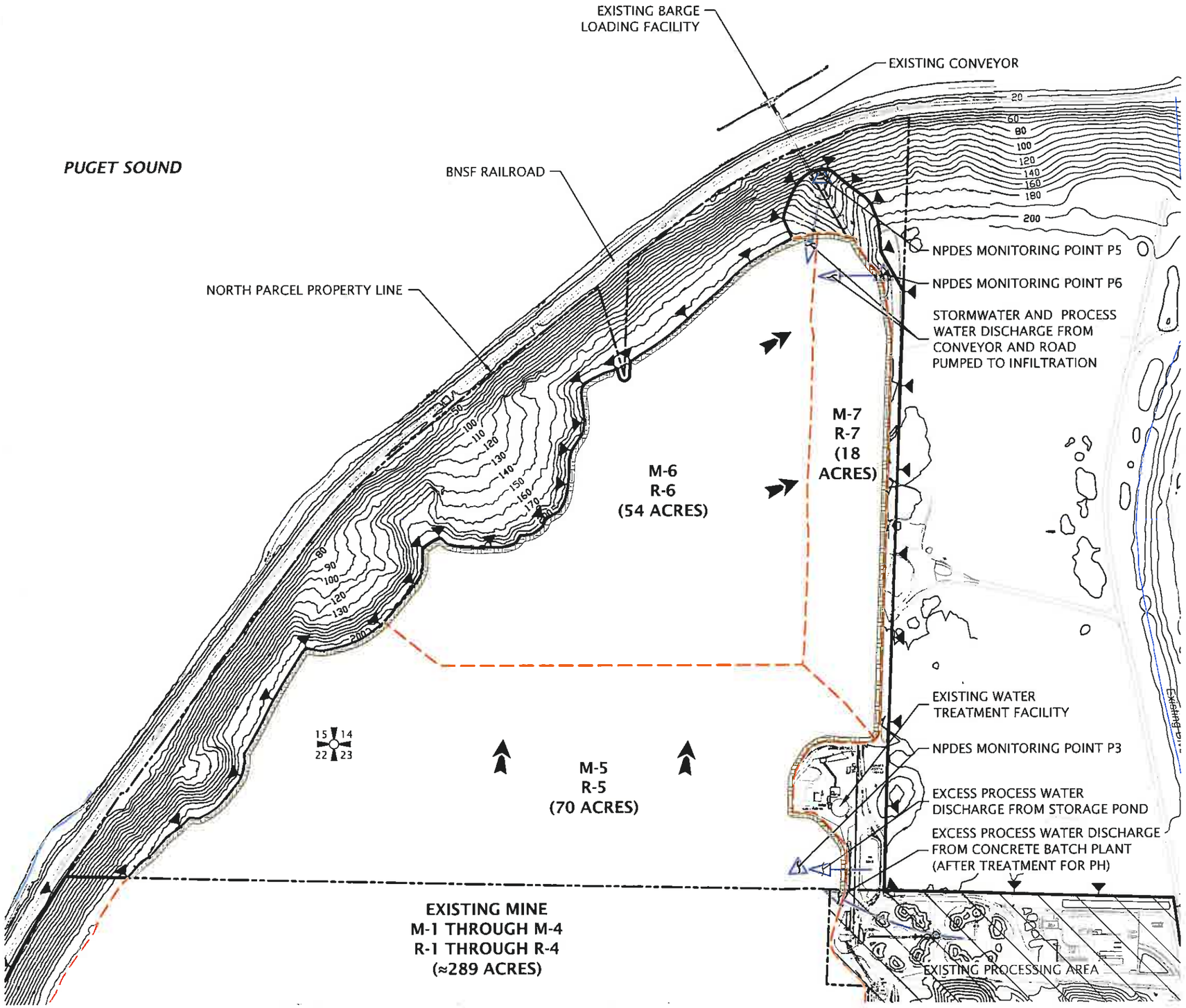

LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- PROPERTY LINES
- EXISTING TOPOGRAPHY (10' INTERVALS)
- TOPSOIL STOCKPILES
- M-1 MINING PHASE
- R-1 RECLAMATION SEQUENCE
- PHASE BOUNDARY
- DIRECTION OF MINING
- PERMANENT MARKER (LINE OF SIGHT)

N

0 500 1000

(SCALE IN FEET)

NOTE:

1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. STOCKPILED TOPSOIL WILL MEET INTERIM TACOMA SMELTER PLUME CLEANUP OBJECTIVES PRIOR TO PLACEMENT FOR RECLAMATION.
3. FOR STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE.

RECLAMATION SEQUENCE MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 5

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GEODESIGN INC
1157 3rd Avenue - Suite 2208
Longview, WA 98632
Off 360.200.4803 Fax 360.200.4803

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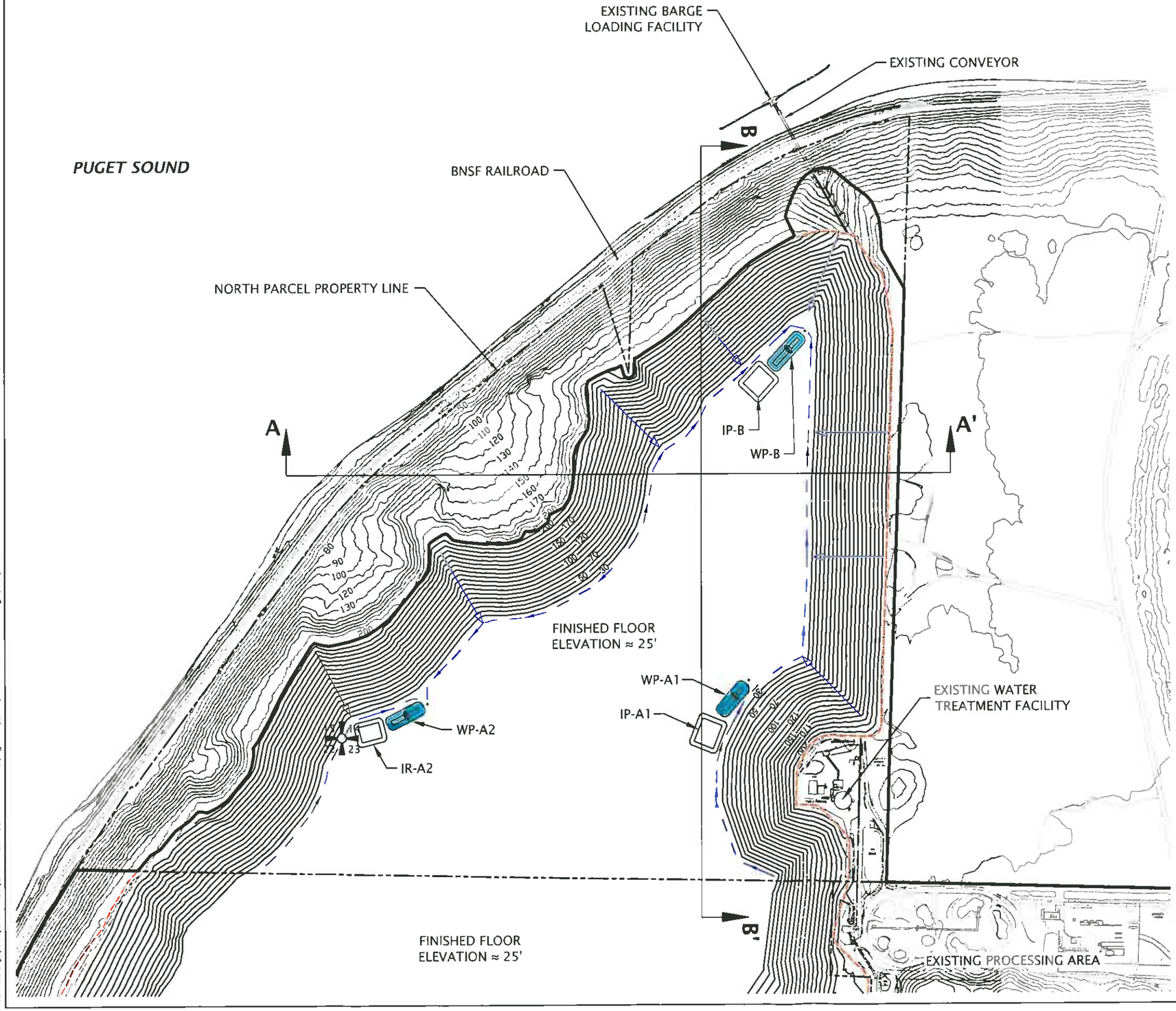
File Name: J:\A-D\CalPortCo\CalPortCo-1\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 - RS.dwg | Layout: FIGURE 5



LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- EXTRACTION LIMIT (431 ACRES TOTAL; 142 ACRES IN NORTH PARCEL)
- PROPERTY LINES
- RECLAIMED TOPOGRAPHY (10' INTERVALS)
- EXISTING TOPOGRAPHY (10' INTERVALS)
- ON-SITE DRAINAGE PATTERNS
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"
- WET POND
- INFILTRATION POND
- SWALE
- CROSS SECTION PROFILE LOCATIONS

N

0 500 1000

(SCALE IN FEET)

NOTE:

1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. FOR REVEGETATION AND PROPOSED SPECIES, SEE NARRATIVE.
3. FOR POSTMINING STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE. MAPPED FEATURES OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

FINAL TOPOGRAPHY MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

FIGURE 6

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

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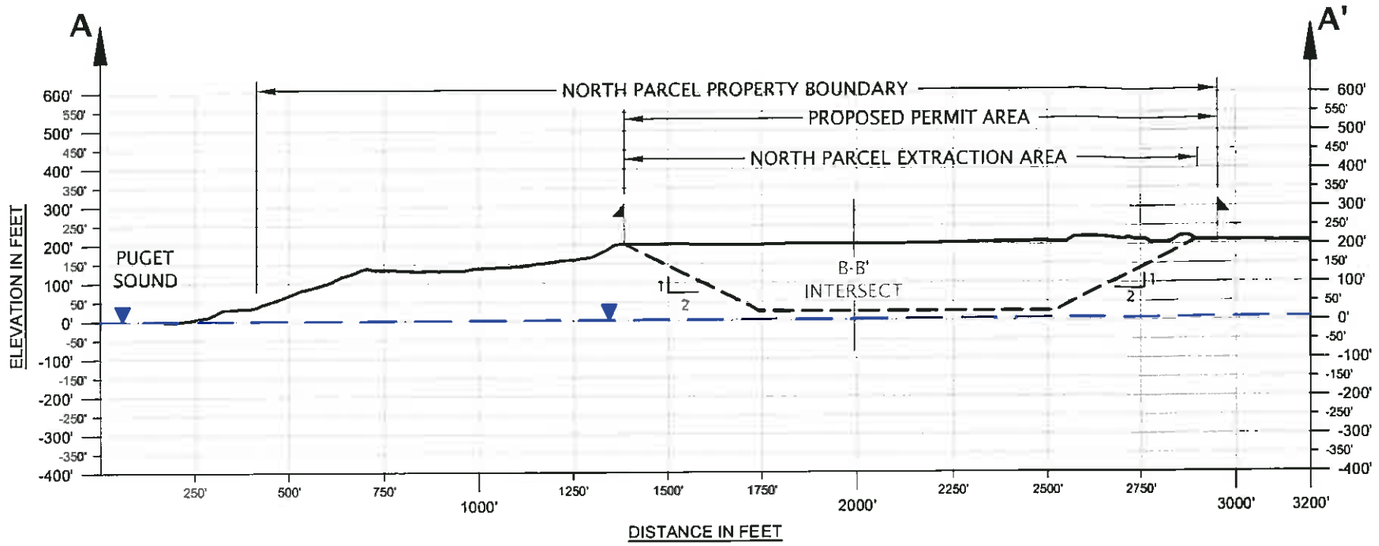
File Name J:\A-D\CalPortCo\CalPortCo-1\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 -FL.dwg | Layout FIGURE 6



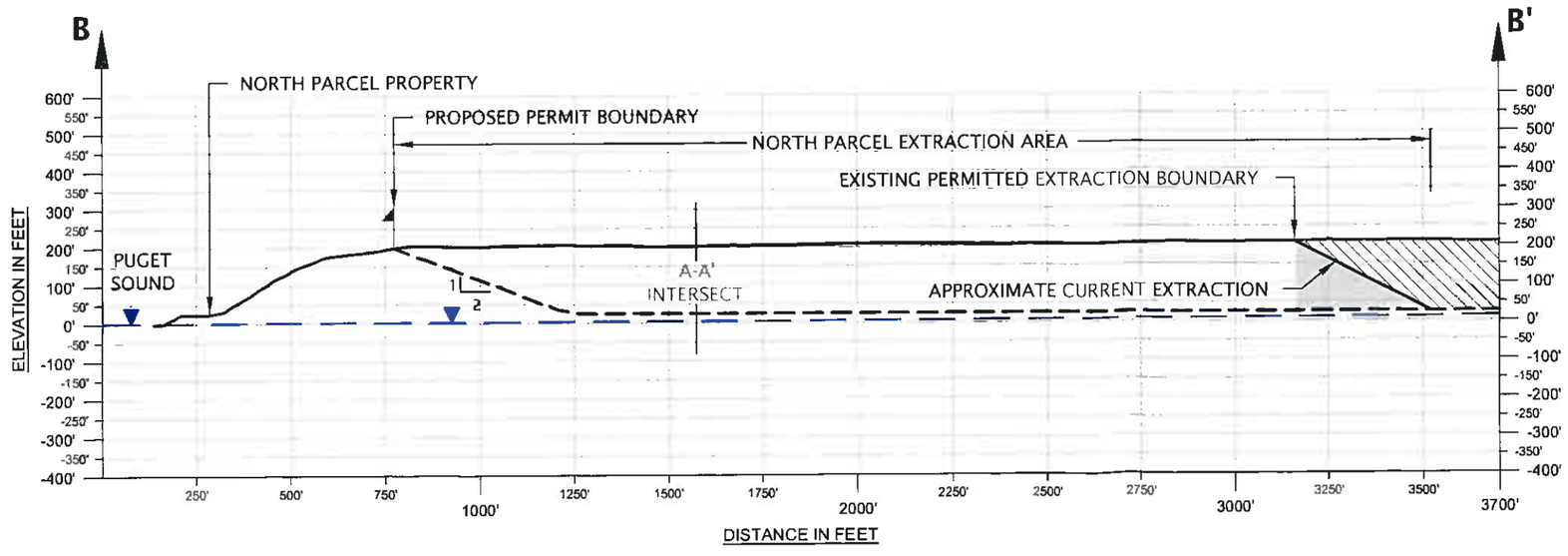
LEGEND:

- EXISTING TOPOGRAPHY
- RECLAIMED TOPOGRAPHY
- EXISTING PERMITTED EXTRACTION AREA
- EXISTING PERMITTED EXTRACTION AREA/ NORTH PARCEL OVERLAP AREA
- WATER

EXTRACTION CALCULATIONS	
EXTRACTION VOLUME*	≈26,600,000 CUBIC YARDS
MAXIMUM MINING DEPTH	185' (210' TO 25')

* DRAFT EIS

NOTE:
WATER LEVEL OBTAINED FROM ASPECT CONSULTING GROUNDWATER ELEVATIONS MAP DATED JANUARY 2013.



HORIZONTAL 0 400 800 (SCALE IN FEET)

VERTICAL 0 400 800 (SCALE IN FEET)

CROSS SECTIONS A-A' AND B-B'
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 7

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

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Longview, WA 98632
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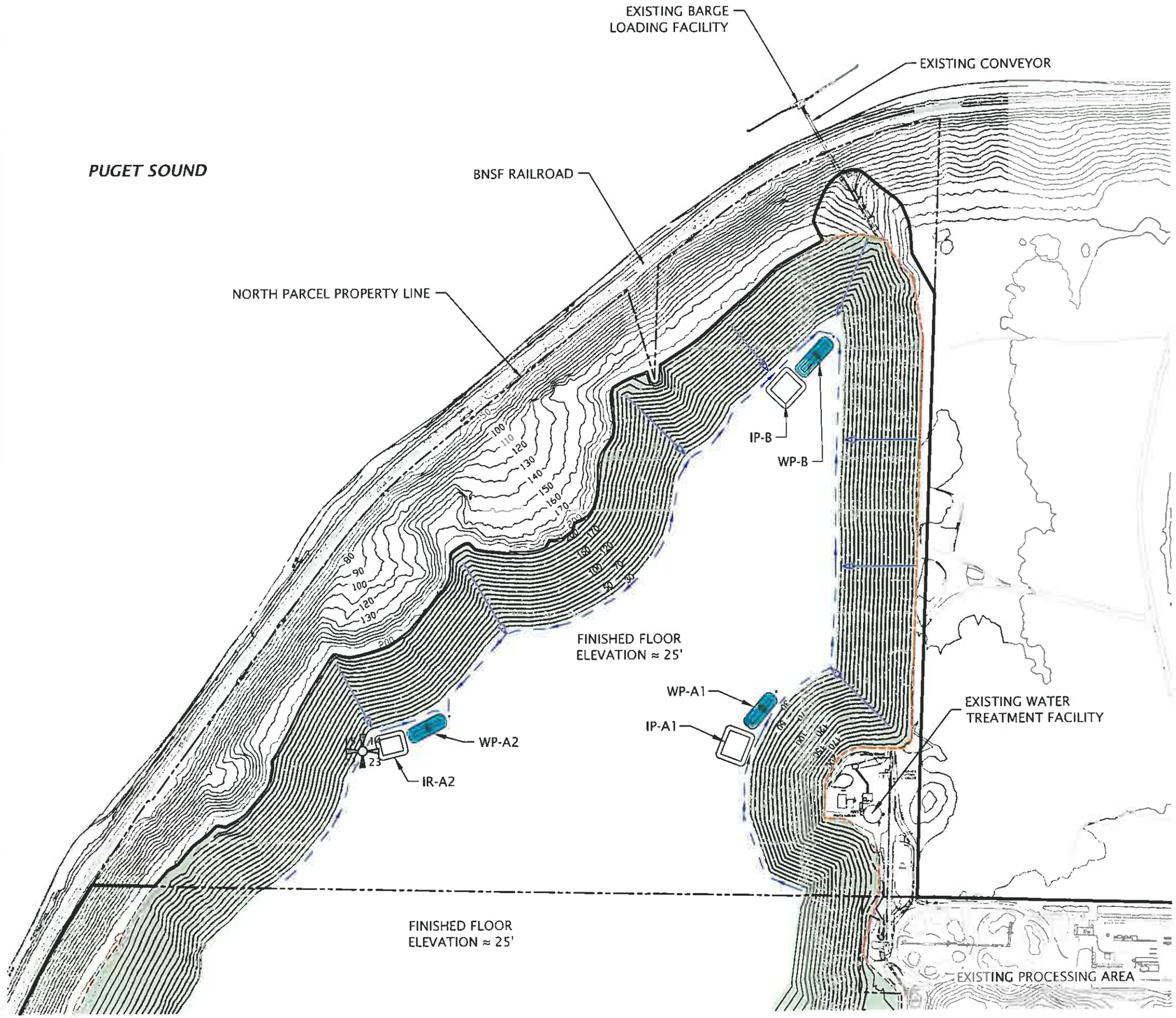
File Name: J:\A-D\CalPortCo\CalPortCo-1\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 - XS.dwg | Layout: FIGURE 7



LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- LIMITS OF EXTRACTION (431 ACRES TOTAL; 142 ACRES WITHIN NORTH PARCEL)
- PROPERTY LINES
- RECLAIMED TOPOGRAPHY (10' INTERVALS)
- EXISTING TOPOGRAPHY (10' INTERVALS)
- ON-SITE DRAINAGE PATTERNS
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"
- WET POND
- INFILTRATION POND
- SWALE
- REFORESTED AREA
  REVEGETATION SPECIFICATIONS: DOUGLAS FIR, RED ALDER MIX PLANTED AT 10-FT X 10-FT OR 430 TREES PER ACRE INCLUDING VOLUNTEER TREE SPECIES. RECOMMEND 1+1 DOUGLAS FIR SEEDLING STOCK AND PLUG 1 OR YEARLING PULL-UPS FOR RED ALDER SEEDLING.

N

0 500 1000

(SCALE IN FEET)

NOTE:

1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. FOR POSTMINING STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE. MAPPED FEATURES OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

RECLAMATION REVEGATATION MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 8

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

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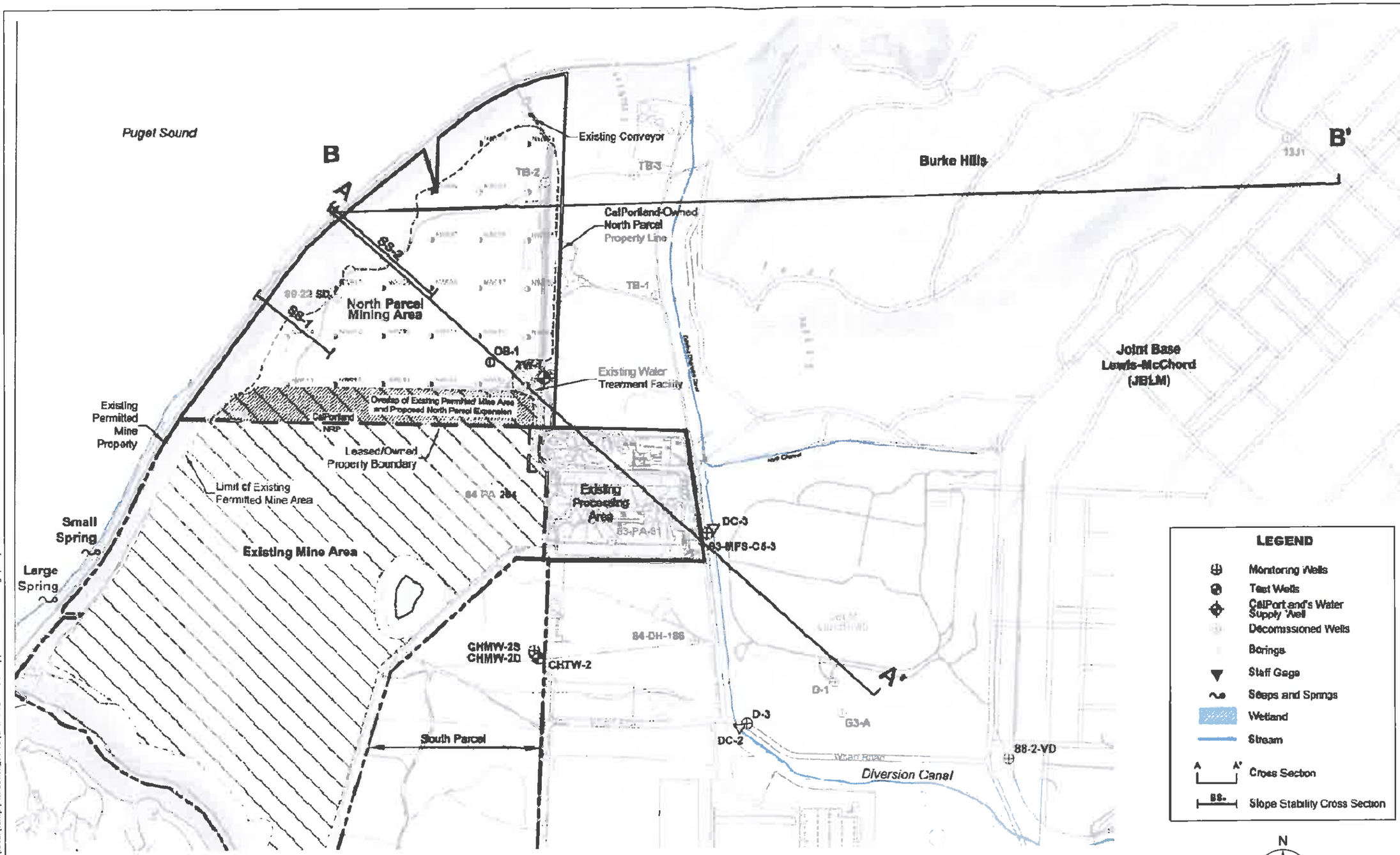
File Name: J:\A-D\CalPortCo\CalPortCo-1\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 -REVEG.dwg | Layout: FIGURE 8



Base Map Sources

1) **Glacier Northwest Mining Facility by ESM Consulting Engineers, June 2003**
2) **Northwest Landing Development by ESM Consulting Engineers, June 2002**
3) **DuPont Consent Decree Area by** ESM Consulting Engineers, April **2004**
4) **JBLM by** USGS DEM, *Nisqually* **and** *Fort Lewis* 1994 **and** USGS Digital Line Graphs *Hypsography* **and** *Transportation* **Fort Lewis** Military Reservation **1973**, McNeil Island, **1981**, Nisqually, 1981, and Steilacoom, **1993**

NOTE:
1. MAP BASED ON IMAGE PREPARED BY ASPECT CONSULTING, 2013.

EXPLORATION AND CROSS SECTION LOCATIONS
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

APPENDIX A

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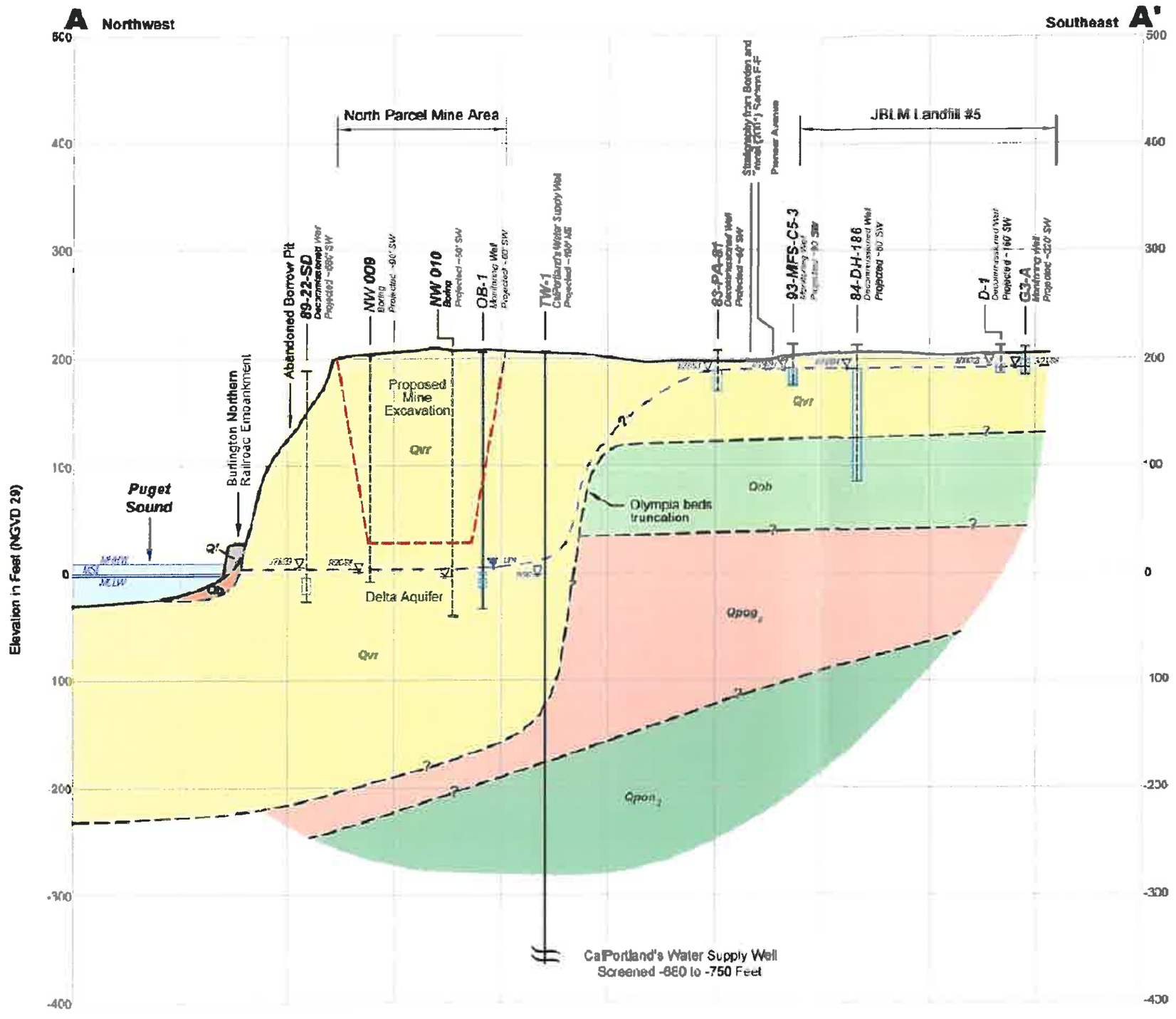

Legend

- Measured Static Water Level
- Water Level Observation at Time of Drilling (ATD)
- Monitoring Well Location
  Screen Interval
- Boring or Decommissioned Monitoring Well
  Former Screen Interval
- Qf (Fill)
  Artificial fill placed embankment. Likely consists primarily of crushed rock and rip-rap.
- Qb (Beach Deposits)
  Loose sand and gravel.
- Qvr (Recessional Glacial Outwash)
  Medium dense to dense, slightly silty to clean sand and gravel, and occasional silty beds. The majority of near-surface Vashon recessional outwash on the site is made up of the Steilacoom Gravel member, which is composed of sandy gravel and gravelly sand, with minor amounts of silt.
- Qob (Olympia Beds)
  The Olympia Beds Qob unit is generally composed of interbedded lacustrine silt and clay and fluvial deposits.
- Qpog3 (Third Glacial Drift)
  Very dense to hard sandy and gravelly glacial outwash and till with variable silt content.
- Qpon3 (Third Nonglacial Unit)
  Very dense to hard fluvial overbank deposits including lowerdale silt, peat, sand, and gravelly sand.

Tidal Elevations (NGVD 1929)

MHHW	5.96 ft
MSL	1.00 ft
MLLW	-6.67 ft

Additional References:

1.) Section E-E' from Borden and Troost (2001).

2.) Section A-A' from Hart Crowser (1991).

3.) Figure 3 from CH2M HILL (2000)

4.) Geologic Map of McNeil Island (Walsh, Logan, and Polenz 2003)

Scale: 1" = 1000' - Horiz
1" = 100' Vert
Vertical Exaggeration = 10x

HORIZONTAL 0 1000 2000 (SCALE IN FEET)

VERTICAL 0 100 200 (SCALE IN FEET)

NOTE:

1. MAP BASED ON IMAGE PREPARED BY ASPECT CONSULTING, 2013.

CROSS SECTION A-A'
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

APPENDIX B

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

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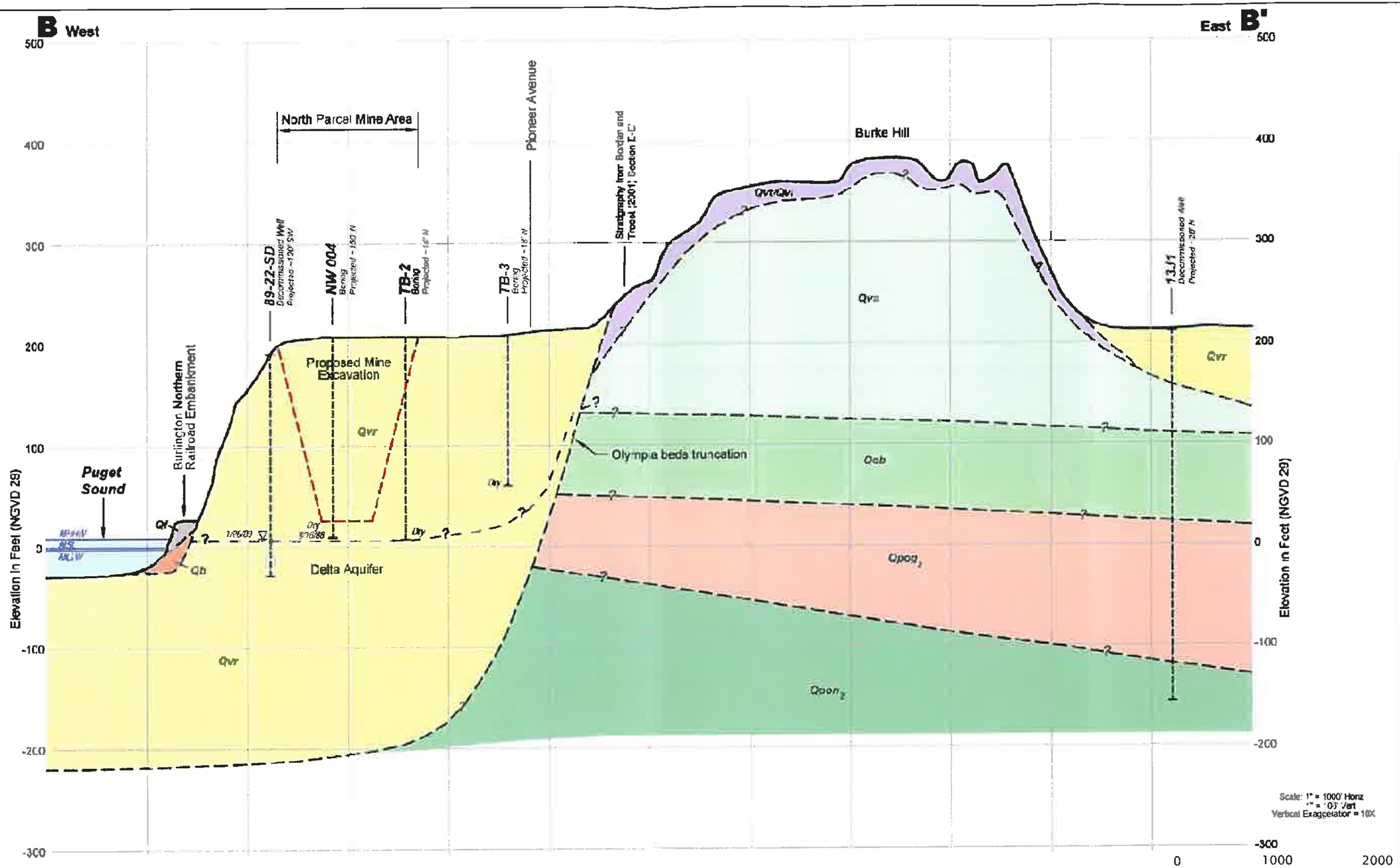

Legend

- Measured Static Water Level
- Water Level Observation at Time of Drilling (ATD)
- Boring or Decommissioned Well — Screen Interval
- Qf (Fill) — Artificial fill railroad embankment. Likely consists primarily of crushed rock and riprap
- Qb (Beach Deposits) — Loose sand and gravel
- Qva (Vashon Advance Outwash) — Sand and gravel, and Lacustrine clay, silt, and sand of northern source deposited during Vashon glacial advance
- Qvr (Recessional Glacial Outwash) — Medium dense to dense, slightly silty to clean sand and gravel and includes silty beds. The majority of near-surface Vashon recessional outwash on the site is made up of the Steilacoom Gravel member, which is composed of sandy gravel and gravelly sand with minor amounts of silt.
- Qvr/Qva (Till and Ice Contact Deposits) — Dense to very dense discontinuous layers of silty, sandy, and gravelly lodgment till. Ice contact deposits contain water-worked sands and gravels with interbeds and lenses of silty till-like deposits
- Qob (Olympia Beds) — The Olympia beds Qob unit is generally composed of interbedded lacustrine silt and clay and fluvial deposits
- Qpog2 (Third Glacial Unit) — Very dense to hard sandy and gravelly glacial outwash and till with variable silt content
- Qpon2 (Third Nonglacial Unit) — Very dense to hard fluvial overbank deposits including lacustrine silt, peat, sand, and gravelly sand

Tidal Elevations (NGVD 1929)

MHHW	5.96 ft
MSL	1.00 ft
MLLW	-5.87 ft

Additional References

1) Section E-E' from Borden and Troost (2001)
2) Section A-A from Hart Crowser (1991)
3) Figure 3 from CH2M HILL (2000)
4) Geologic Map of McNeil Island (Walsh, Logan, and Polenz 2003)

Scale: 1" = 1000' Horiz
1" = 100' Vert
Vertical Exaggeration = 10X

HORIZONTAL 0 1000 2000 (SCALE IN FEET)

VERTICAL 0 100 200 (SCALE IN FEET)

NOTE:
1. MAP BASED ON IMAGE PREPARED BY ASPECT CONSULTING, 2013.

CROSS SECTION B-B'
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

APPENDIX C

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GEODESIGN INC
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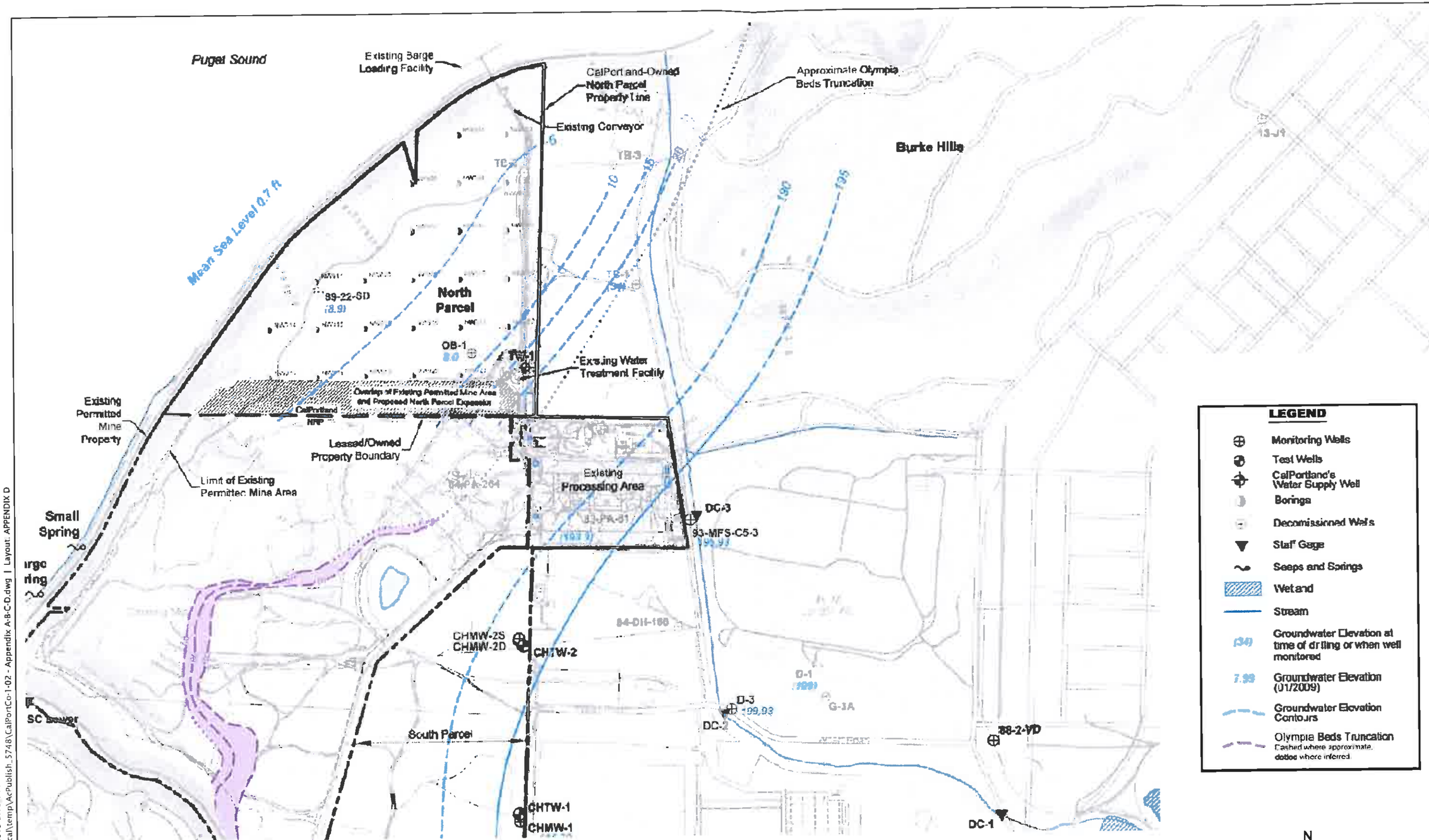

Note:
Elevation Datum NGVD 29

Base Map Sources
1.) Glacier Northwest Mining Facility by ESM Consulting Engineers, June 2003
2.) Northwest Landing Development by ESM Consulting Engineers, June 2002
3.) DuPont Consent Decree Area by ESM Consulting Engineers, April 2004
4.) BLM by USGS DEM, *Nisqually* and *Fort Lewis*, 1994, and USGS Digital Line Graphs, *Hypsography* and *Transportation*, Fort Lewis Military Reservation, 1073, McNeil Island, 1981, Nisqually, 1981, and Steilacoom, 1960

NOTE:
1. MAP BASED ON IMAGE OBTAINED FROM ASPECT CONSULTING, 2013.

GROUNDWATER ELEVATION CONTOUR MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

APPENDIX D

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GEODESIGN INC
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Longview, WA 98632
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Attachment 3.g

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

Caring for
your natural resources
... now and forever

September 4, 2013

Glacier Northwest, Inc. dba CalPortland
5975 E. Marginal Way South
Seattle, WA 98134-2414

RE: Surface Mine Reclamation Permit Number 70-012668

Gentlemen,

Enclosed is Surface Mine Reclamation Permit Number 70-012668, which authorizes surface mine reclamation within a 565-acre permitted area in a portion of the Northeast and Southeast quarters of Section 22 and the Northwest, Southwest and Northeast quarters of Section 23 and the Southwest quarter of Section 14 and the Southeast quarter of Section 15, Township 19 North, Range 1 East, Willamette Meridian, Pierce County. Please refer to the permit number listed above when submitting inquiries or reports.

RCW 78.44 requires that reclamation of each segment of the permitted area shall be completed within two years of cessation of mining in that segment. We strongly recommend, however, that reclamation of each segment occur concurrent with the removal of the minerals.

The Department acknowledges approval of reclamation performance security number 0142734 issued by Berkley Insurance Company in the amount of $403,500.00 dated December 28, 2009.

You are required to mail a Permit-Fee Invoice and Reclamation Report (Form SM-7) annually to Washington Department of Natural Resources. The form must be completed and returned to the department with the appropriate annual permit fee prior to the anniversary date of the permit.

Sincerely,

Rian Skov, LG
Senior Reclamation Geologist
Surface Mining Reclamation Program
Division of Geology & Earth Resources

enclosures: SM-9, Exhibit A, SM-8A, SM-6, Narrative, Maps
c: File No. 70-012668
City of DuPont Planning
Berkley Insurance Company

WASHINGTON STATE DEPARTMENT OF
Natural Resources

SURFACE MINING RECLAMATION PERMIT
(Form SM-9)

☐ new ■ expansion ☐ revision ☐ name change ☐ transfer

Permit Holder: Glacier Northwest, Inc. dba CalPortland
Mailing Address: 5979 E. Marginal Way S.
Seattle, WA 98134-2414

Pursuant to RCW 78.44, a Reclamation Permit hereby granted to the above-named permit holder to engage in surface mining on the property described in the application and material on file under this permit. The total area to be disturbed by surface mining, including the deposition of surface-mining refuse, shall be in accordance with the reclamation plan filed with and approved the by the Department of Natural Resources under this permit, and in accordance with the conditions and descriptions set forth in Exhibit "A" attached hereto and made a part hereof, and RCW 78.44.

TERM OF PERMIT
This permit shall be in effect from the date of issuance and shall remain in effect so long thereafter as the permit holder pays the annual basic fee for each site, complies with the Surface Mining Act and the rules promulgated thereunder, complies with the reclamation plan, and maintains a performance security as required by the Act.

CHANGE OR MODIFICATION OF RECLAMATION PLAN
The permit holder shall obtain written approval from the Department prior to any change or departure from the approved reclamation plan.

PERFORMANCE SECURITY
A performance security shall be submitted to and approved by the Department prior to commencement of surface mining. The permit holder may submit a cash deposit, assignment of a savings account or certificate of deposit, bank letter of credit, negotiable securities, or a corporate surety bond in the amount specified. The amount of the performance security shall be subject to adjustment according to RCW 78.44.

TRANSFER OF PERMIT
The transfer of this permit to another permit holder shall not be made unless approved in writing by the Department. A transfer shall not be approved unless the successor permit holder assumes all duties of the former permit holder to complete the reclamation of the land and the Department approves the successor permit holder's performance security.

PENALTIES
The Department may suspend surface mining or impose civil penalties if the permit holder conducts surface mining in any manner not authorized by RCW 78.44, the rules adopted thereunder, the approved reclamation plan, or this permit.

Permitted issued on January 19, 1994. Permit revised on September 4, 2013.

Signature
Name Rian Skov, L.G
Title Senior Reclamation Geologist
Division of Geology & Earth Resources

E 1/2	1/4, S	22	T	19	N, R	1 E	WM
W 1/2	1/4, S	23	T	19	N, R	1 E	WM
NE	1/4, S	23	T	19	N, R	1 E	WM
SW	1/4, S	14	T	19	N, R	1 E	WM
SE	1/4, S	15	T	19	N, R	1 E	WM

TOTAL ACREAGE AND DEPTH OF PERMIT AREA
(Include all acreage to be disturbed by mining, setbacks, buffers, and associated activities during the life of the mine. See SM-8A)

Total permit acreage 565
Maximum vertical depth below pre-mining topographic grade is 185 feet
Maximum depth of excavated mine floor is 25 feet relative to mean sea level

DNR Surface Mining Reclamation Permit No.
70-012668

EXHIBIT A

Conditions of the Permit

Surface Mining Reclamation Permit # 70-012668
September 4, 2013

1. This surface mining reclamation permit applies to the following permit area: within a 565-acre permitted area in a portion of the Northeast and Southeast quarters of Section 22 and the Northwest, Southwest and Northeast quarters of Section 23 and the Southwest quarter of Section 14 and the Southeast quarter of Section 15, Township 19 North, Range 1 East, Willamette Meridian, Pierce County.

2. All mining and reclamation shall comply with the rules and regulations pursuant to Chapter 78.44 RCW and Chapter 332-18 WAC.

3. All mining and reclamation shall comply with the reclamation plan dated June 11, 2013 by the permittee, and approved by the Department of Natural Resources on September 4, 2013. Any amendment or change to the plan must be submitted to and approved in writing by the Department. The Reclamation Plan consists of the following documents:

    - Permit Letter, dated September 4, 2013
    - Surface Mining Reclamation Permit (Form SM-9) dated September 4, 2013
    - Exhibit A, listing **14** conditions of the permit
    - Standard Reclamation Plan
        - Application for Reclamation Permit (Form SM-8A) dated by the permittee on June 11, 2013, date stamped received by Geology and Earth on June 18, 2013.
        - County or Municipality Approval for Surface Mining (Form SM-6) dated by the permittee on June 11, 2013, and approved by City of DuPont Planning on June 11, 2013, date stamped received by Geology and Earth on June 18, 2013.
        - Narrative, date stamped received by Geology and Earth on June 18, 2013.
        - Reclamation Plan Maps: Figures 1 thru 8 and Appendixes A thru D, each date stamped received by Geology and Earth on June 18, 2013.
        - Final Environmental Impact Statement (FEIS), dated June 24, 2013, date stamped received by Geology and Earth on June 25, 2013.

4. If there is any conflict between the conditions in Exhibit A and any other language of the approved reclamation permit (which includes the reclamation plan, maps, and supporting documents), the language in Exhibit A will prevail.

5. The permit holder shall mark the perimeter of the 565-acre permitted area with highly visible permanent marker posts as described in the Application for Reclamation Permit SM-8A. The markers will be used to delineate the permit boundary enabling the operator, permittee, and the Department of Natural Resources (DNR) to monitor the progress of

mining and reclamation. Permanent boundary markers shall be visible such that the entire perimeter of the site could be reestablished using the GPS, if any marker was destroyed.

6. The permitted depth at this site is 185 vertical feet from the original ground surface. No excavation shall occur below an elevation of 25 feet mean sea level (msl). If additional mining depth is anticipated the reclamation plan shall be revised prior to exceeding the permitted depth.

7. Reclamation slopes shall be created using the mine-to-grade method of slope creation. Backfilling to create reclamation slopes is not approved by this permit.

8. The site is to be mined dry; a minimum 10-foot separation between the mine floor and the Ordinary High Water Mark (OHWM) shall be maintained.

9. Reclaimed slopes will not exceed 2 ft horizontal and 1 ft to ensure that all slopes are stable and shall have a sinuous appearance in both plan and profile views.

10. A steep slope buffer shall be maintained on the west side of the site as described in the Reclamation Narrative; the buffer varies from 25 to 50-feet and is shown on Figure 3.1-5 in the FEIS. A 50-foot setback shall be maintained interior to the Permit Boundary on the east side of the site. Buffers and setbacks shall be marked on the ground to assist the Operator and DNR in ensuring no encroachment of the required buffers/setbacks occurs.

11. Topsoil shall be stockpiled along the top of slopes as shown on as shown on Reclamation Plan Map Figure 5. Stockpiles shall be seeded with grasses during storage and incorporate other Best Management Practices (BMPs) for erosion control as needed. Topsoil shall not be buried, removed or sold as a product from the permit area.

12. Topsoil used for reclamation must meet cleanup levels established by the Department of Ecology for soils affected by the Tacoma Smelter Plume (TSP) which allows an arsenic level of less than 20 ppm. Topsoil handling, stockpiling and sampling procedures shall be performed as outlined in the Reclamation Narrative. Prior to termination of the reclamation permit the Permit Holder shall provide DNR with documentation from Ecology that shows required TSP cleanup levels have been met.

13. Revegetation shall be completed as detailed in the narrative and in Form SM-8A. Noxious weeds shall not be considered acceptable vegetation and natural revegetation only shall not be deemed satisfactory. Prior to any variation from the revegetation plan, written approval must be obtained from the Department.

14. The permit holder or operator shall maintain a complete copy of this permit, including these conditions and the approved reclamation plan with additions and amendments, at the mine site during all mining and reclamation activities.

WASHINGTON STATE DEPARTMENT OF
Natural Resources

COUNTY OR MUNICIPALITY APPROVAL FOR SURFACE MINING (Form SM-6)

NAME OF COMPANY OR INDIVIDUAL APPLICANT(S)
Same as name of the exploration permit holder. *(Type or print in ink.)*

Glacier Northwest, Inc., dba CalPortland

MAILING ADDRESS

5975 E. Marginal Way South
Seattle, WA 98134-2414

Telephone 206-768-7636

TOTAL ACREAGE AND DEPTH OF PERMIT AREA
(Include all acreage to be disturbed by mining, setbacks, and buffers, and associated activities during the life of the mine.) *(See SM-8A.)*

Total area disturbed will be 565 acres

Maximum vertical depth below pre-mining topographic grade is 185 feet

Maximum depth of excavated mine floor is 25 feet relative to mean sea level

COUNTY Pierce

No attachments will be accepted. Legal description of permit area:

1/4	1/4	Section	Township	Range
Portions	NE/SE	22	19N	R1E
Portions	NW/SW	23	19N	R1E
Portions	NE	23	19N	R1E
Portions	SW	14	19N	R1E
Portions	SE	15	19N	R1E

Proposed subsequent use of site upon completion of reclamation

Residential Reserve (RR), Residential 4 (R-4), Open Space/Sensitive Areas (OS), Community Park (CP), Manufacturing and Research (MRP), Industrial (IND).

Signature of company representative or individual applicant(s)	Name and title of company representative *(please print)*	Date signed
Scott Nicholson	Scott Nicholson Director	6/11/13

TO BE COMPLETED BY THE APPROPRIATE COUNTY OR MUNICIPALITY:

Please answer the following questions 'yes' or 'no'.

	Yes	No
1. Has the proposed surface mine been approved under local zoning and land-use regulations?	X	
2. Is the proposed subsequent use of the land after reclamation consistent with the local land-use plan/designation?	X	

When complete, return this form to the appropriate Department of Natural Resources regional office.

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Name of planning director or administrative official *(please print)*
Bill Kingman

Signature
Bill Kingman

Title *(please print)*
DUPONT PLANNING MANAGER

Address
CITY OF DUPONT
1700 CIVIC DRIVE
DUPONT, WA 98327

Telephone 253-912-5393

Date 6/11/13

FOR DEPARTMENT USE ONLY

DNR Reclamation Permit No. 70-012668

GEODESIGN INC

June 18, 2013

Washington State Department of Natural Resources
Geology and Earth Resources Division
1111 Washington Street SE
Olympia, WA 98504-7007

Attention: Mr. Rian Skov

Reclamation Plan Narrative
CalPortland DuPont North Parcel Expansion
City of DuPont, Pierce County, Washington
GeoDesign Project: CalPortCo-1-02

Dear Rian Skov,

On behalf of our client, CalPortland, GeoDesign Inc. (GDI) is providing the attached documents for the DuPont North Parcel Expansion Surface Mine and Reclamation Permit. To minimize duplication, this submittal does not include the Final Environment Impact Statement (Final EIS) and associated studies. The Final EIS document can be found on City of DuPont or CalPortland websites. The Draft EIS (March 2013) is currently on these web sites and is expected to be finalized in the very near future. The following documents are included:

- Reclamation Plan Narrative
- Attachment A - SM-6
- Attachment B - SM-8A
- Figures 1-8 & Appendix A-D

Should you have any questions regarding the submittal information please call me at 360-431-5120 or Pete Stoltz at 206-768-7636.

Sincerely,

Roy Garrison
Principal – Mining Consulting

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Encl:
cc: Pete Stoltz - CalPortland

GEODESIGN INC

June 18, 2013

Washington State Department of Natural Resources
Geology and Earth Resources Division
1111 Washington Street SE
Olympia, WA 98504-7007

Attention: Mr. Rian Skov

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Reclamation Plan Narrative
CalPortland DuPont North Parcel Expansion
City of DuPont, Pierce County, Washington
GeoDesign Project: CalPortCo-1-02

INTRODUCTION

On behalf of Glacier Northwest, Inc., dba CalPortland, GeoDesign, Inc. has prepared this surface mine reclamation plan for the Washington State Department of Natural Resources (DNR). This reclamation plan, including the narrative, DNR forms, maps, and figures, is intended to satisfy the requirements of the State Surface Mining Act (*Chapter 78.44 Revised Code of Washington*). DNR Forms SM-6 and SM-8A are presented in Attachments A and B, respectively.

SITE DESCRIPTION

SITE LOCATION

The North Parcel area is located approximately 1.5 miles north of DuPont City Hall, Pierce County, Washington. The site is situated in Portions of the NE & SE quarters of Section 22, NW, NE & SW of Section 23, SW quarter of Section 14, and SE quarter of Section 15, Township 19 North, Range 1 East; Willamette Meridian (Figure 1). The North Parcel is within the city limits of DuPont and adjoins the existing Pioneer Aggregates pit (DNR permit #70-012668) to the south.

BACKGROUND

The North Parcel property (201 acres) is owned by Northwest Aggregates, and over laps into the northern portion of their existing Pioneer Aggregates mine (467 acres) to the south. Within the North Parcel property, the mine permit boundary is being expanded 105 acres. There are 7 acres of undisturbed area proposed for removal from the existing permit boundary. These 7 acres are located in the northwestern corner of the existing permit boundary that overlaps the southwestern corner of the North Parcel property (Figure 2). Coupled with the 105 acres being

expanded in the North Parcel and removal of 7 acres within the 467 acre existing permit boundary, the total permit boundary will encompass 565 acres.

The existing mine was originally leased from the Weyerhaeuser Company and is now leased by the current property owner, WPP LLC. Refer to Figures 3 and 3A. The existing mine has been in operation since 1997. The existing operation will sequentially transition into the North Parcel expansion area while continuing to process the high quality Steilacoom Gravels at the onsite facility located in the northeast portion of the existing pit. The majority of the processed aggregate will continue to be shipped from the processing plant via conveyor to CalPortland' s barge transport dock at Tatsolo Point on Puget Sound (Figure 4).

The northern expansion area is bordered to the west by Puget Sound and adjoining bluffs. The Burlington Northern-Santa Fe Railroad is located between the Puget Sound shoreline and the toe of the slope. These forested slopes will not be disturbed by the mine expansion, and a prescribed buffer between the mineral extraction and the crest of the slope will be maintained.

The proposed mine expansion in the North Parcel has been extensively reviewed in an Final Environmental Impact Statement (FEIS) under the State Environmental Policy Act (SEPA). To avoid replication and redundancy, studies from the FEIS will be referenced throughout this document.

SUBSEQUENT USE

As stated on Form SM-6, the subsequent use of the site after reclamation is Residential Reserve (RR), Residential 4 (R-4), Open Space/Sensitive Areas (OS), Community Park (CP), Manufacturing and Research (MRP), Industrial (IND), (Attachment A). Refer to Section 3.6 - Land Use of the FEIS for a full description of subsequent uses and there locations identified (FEIS Figures 3.6-2 and 3.6-3).

GEOLOGY AND GROUNDWATER

The geology and groundwater section has been prepared by Aspect Consulting. The geology and groundwater of the North Parcel and existing mine have been studied extensively and are presented in the Final Environmental Impact Statement (FEIS) for the existing mine (City of DuPont and Ecology, 1993) and the Final Environmental Impact Statement (FEIS) for the North Parcel (City of DuPont and Ecology, 2013).

The pre-mining topography consists of a gently rolling forested upland that generally slopes gradually down to the northwest, and then descends steeply to Puget Sound. Elevations range from approximately 215 feet (NGVD 29) in the southeast corner to approximately 200 feet to 125 feet (NGVD 29) along the western boundary. Within 300 to 400 feet of its northwestern boundary, the topography dips steeply down toward the barge loading conveyor and transport dock. The railroad was cut into the original slope and slope material was used to construct the railroad embankment. The embankment lies at about elevation 32 feet and is about 50 feet wide with an armored, steep embankment on the northwest side that continues downward into the intertidal zone.

The geology of the area was formed when the Puget Sound lowland was repeatedly glaciated, or covered with thick sheets of ice that also covered much of Alaska, Canada and the Northern United States, during the last two million years. Soil and rocks carved from the landscape and deposited by these ice sheets and glacial rivers and lakes are termed glacial deposits. Sediments deposited in lowland river, floodplain, lake, and forest bog environments during intervening periods between times when glacial ice sheets occupied the landscape, are recognized as non-glacial deposits. The most recent glacial period in the area is the Vashon stade of the Fraser glaciation.

Geologic units of glacial and non-glacial origin were deposited in the area before, during, and after the Vashon glaciation. In the area of the mine, the surface geology consists primarily of Vashon-age recessional sand and gravel locally known as Steilacoom Gravel. This recessional glacial unit is underlain by older Vashon age glacial deposits, pre-Vashon non-glacial deposits, and pre-Vashon glacial deposits, all comprised primarily of sand and gravel.

The uppermost pre-Vashon non-glacial sequence in the area is identified as the Olympia beds. These non-glacial deposits are generally marked by an increase in silt, organics, and wood fragments. The Olympia beds underlie the Steilacoom gravel in the eastern portion of the existing mine. The Olympia beds are not present in the western portion of the existing mine and the North Parcel.

The first (shallowest) aquifer in the existing mine occurs within the Vashon outwash deposits. The Vashon outwash deposits comprise a productive, highly permeable groundwater zone that occurs at relatively shallow depths of approximately 15 to 25 feet [190 to 200 feet in elevation (NGVD 29)].

Beneath the North Parcel, however, the aquifer occurs well below the ground surface and lies within the Steilacoom Gravel at a depth of roughly 200 feet or greater (near sea level elevation). This change in depth to groundwater is because the North Parcel lies west of the truncation of the Olympia beds.

All mining is, and will be, above the seasonal high groundwater level. The mine floor would be established at an elevation intended to maintain a minimum separation of 10 feet between ground surface and regionally high groundwater.

MINING AND RECLAMATION

The reclamation plan for the expansion area will include returning the mined slopes to forest and leaving a relatively flat mine floor for residential use. All mining will be dry and maintain a minimum 10-foot separation between the mine floor and the seasonal high groundwater table. At the conclusion of mining, insitu slopes (2 feet horizontal to 1 foot vertical, or flatter) will surround the mine floor and sinuously join the existing mined area to the south. The pit floor will be developed to slope gently toward perimeter drainage leading to the wetponds and infiltration ponds. Slope stability was evaluated in the FEIS documents for the existing mine and the expansion area.

The North Parcel expansion boundary is 105 acres of which approximately 99 acres will be disturbed by mineral extraction. Prior to the in inception of mining, reclamation preparation starts by logging and clearing stumps, followed by removing and stockpiling native topsoil which will be applied to the slopes once postmining topography is achieved. Topsoil will be directly placed when applicable or stockpiled for future placement. As with the existing mine, segmental mining and reclamation is planned for the entire expansion area (Figure 5). Topsoil will be redistributed on the slopes at the completion of mining each segment, providing foot rooting medium for young tree seedlings. Reclamation will occur as each mining segment is completed, creating a contemporaneous approach to reclaiming the site. Topsoil will not be handled in overly wet or dry conditions. Historically, topsoil has been handled throughout the entire year, due to the gravely/sandy texture and high infiltration capacity of the native soil. Topsoil will not be placed on the completed mine floor due to the subsequent use being residential.

The maximum vertical depth of mining at any given point is 185 feet below ground surface, occurring between elevations 210 feet and 25 feet above MSL. A cut method of mining will be utilized creating a postmining topography with overall 2 foot horizontal to 1 foot vertical insitu slopes and a gently sloping pit floor. Backfilling will not be required to reclaim the site using a cut slope method of mining. Figure 6 illustrates the final configuration of the reclaimed mine area upon completion of mining activities. Figure 7 illustrates cross sections through the site. The perimeter of the mining disturbance area will be sinuously joined to the existing contours surrounding the site.

Eight soil test pits on the relatively flat expansion area indicate the presence of approximately 20 inches of salvageable topsoil/rooting medium (average), which is consistent with the Natural Resources Conservation Service description for the Spanaway Gravelly Sandy Loam soil series (41A). Approximately 259,000 cubic yards of topsoil will be salvaged within the 99 acre expansion, which will be utilized for reclamation.

After mining is complete in a segment, topsoil previously stripped and stored in advance of mining will be replaced to an approximate depth of 3 feet on the slopes for reforestation. This will provide adequate and substantial rooting medium and aid in revegetating the slopes. Historically, wood chips from onsite vegetation, pond sediments and filter press fines have been used to augment topsoil. This topsoil augmentation practice has produced an excellent rooting medium for a successfully proven reforestation program. All though pond sediments are in much smaller quantity than the filter press fines, both provide additional moisture holding capacity to the native soil.

The following section is an excerpt from the Earth and Water Resource Report, Sections 2.1.4.4 and 2.2.4 (Aspect Consulting) referencing topsoil and the Tacoma Smelter Plume: *The North Parcel is located within the Tacoma Smelter Plume (TSP). The TSP is an approximately 1,000-square-mile area where pollutants emitted from a former Asarco smelter before 1986, most notably arsenic and lead, settled onto surface soils. The Washington State Department of Ecology (Ecology) predicts more than 730,000 properties are within the TSP, including the entire City of DuPont and the portions of the existing mine and the North Parcel where mining is proposed.*

Ecology developed a model to predict the concentration of arsenic in surface soil throughout the TSP using wind speed, wind direction, and empirical results obtained from soil samples collected across the TSP (Ecology, 2012). The model indicates the concentration of TSP-related metals decreases as the distance from the former smelter increases (Ecology, 2012). Ecology has also determined elevated concentrations of metals in undisturbed areas within the TSP are generally confined to the top 6 inches of soil (Ecology, 2012).

The North Parcel is within an area where Ecology predicts surface soil concentrations of arsenic are between 40 and 100 parts per million (ppm). Ecology considers areas with these concentrations to be "moderate" zones where immediate action is not necessary (Ecology, 2012). Ecology has pre-approved certain approaches to achieve the established cleanup levels at properties within the TSP. Mixing of impacted surface soils with deeper clean soils is one of the approved approaches under the Final Interim Action Plan (Ecology, 2012).

The proposed mining and reclamation activities will serve as a permanent and final remedy for any TSP-impacted soils at the existing mine and North Parcel. Under the Proposed Action, topsoil within the North Parcel would be removed to facilitate extraction, and conserved and maintained on site to be incorporated into the reclaimed mine landscape and support re-vegetation and reclamation of mined areas consistent with the anticipated subsequent residential land use identified in the City of DuPont Comprehensive Land Use Plan (2001). Stripping, stockpiling, and replacement of topsoil would be completed using methods and procedures that are generally the same as those used in the existing mine area, including employment of BMPs to control erosion and fugitive dust. Samples would be collected from stockpiled topsoil and analyzed in accordance with the Final Interim Action Plan for the TSP (Ecology, 2012). If the sample results indicate the topsoil does not contain arsenic in concentrations exceeding 20 ppm (the conservative cleanup level established by Ecology for the TSP), then the topsoil would be used in reclamation. If the sample results indicate the topsoil contains arsenic in concentrations equal to or greater than 20 ppm, then clean soil would be mixed with the topsoil to reduce the arsenic concentration. Stockpiled topsoil would not be used for reclamation until sample results confirm the concentration of arsenic is below 20 ppm.

Mitigation measures recommended by Ecology for potential contamination from the TSP on the CalPortland-owned North Parcel include the following:

1. The applicant shall operate the facility to meet health and safety requirements and to limit worker exposure to potentially contaminated soils. The applicant shall notify operators, employees and construction workers that the property is located within the Tacoma Smelter Plume (TSP) and may contain contaminated soils and duff.

2. Before undertaking any grading activities, the applicant shall enter into a Voluntary Cleanup Program (VCP) with the Department of Ecology pursuant to the Model Toxics Control Act (MTCA) RCW 70.105D and WAC 173-340.

3. The applicant shall develop a cleanup action plan for the disturbed area of the property consistent with Ecology requirements, and will include compliance sampling and a remediation plan for area of the property, approximately 20 acres, that are not proposed for mining or open space. The cleanup action plan will acknowledge that the

45-acre open space area will be addressed in the Settlement Agreement process. The cleanup action plan will also include compliance sampling and a remediation plan for area on the property not proposed for mining and open space (approx. 20 acres).

4. Prior to initiating grading, the applicant shall obtain an opinion letter from Ecology for property areas outside of the open space area. The opinion letter will state that the proposed duff and soil remediation, and the human health and environmental protections, will likely result in no further action under MTCA. The opinion letter will also acknowledge that the open space area will be addressed later as part of the Settlement Agreement process.

5. City-permitted site development plans shall be consistent with the plans that Ecology reviewed and deemed consistent with MTCA.

6. Because the soil and duff may be contaminated, appropriate best management practices (BMPs) shall be installed to avoid escaping dust, soil erosion and water pollution during clearing and grading activities.

7. If contamination is left on the property, the applicant shall record a notice on title about the contamination to notify future buyers. The notice on title shall be recorded prior to any public access to the property, including the open space area.

8. Prior to the public gaining any access to the property, including the open space area and any un-mined areas, the property owner shall obtain a "No Further Action" determination from Ecology indicating that the remediation plan and protections for human health and the environment were successfully implemented under MTCA.

9. Any imported soil shall follow the Tacoma Smelter Plume Model Remedies Guidance, Chapter 9: Imported Soil Sampling.

After application of topsoil, slopes would be re-forested. When reclamation is complete, heavy equipment would generally not operate on the reclaimed slopes except for construction or maintenance of pedestrian paths, access roads, utilities, or other permitted facilities.

SETBACKS

The steep slope buffer associated with the west side of the pit, as negotiated in the 2011 Settlement Agreement (Ecology, City of DuPont, CalPortland, and Environmental Coalition, 2011) varies from a minimum of 25 feet in some locations to approximately 120 feet in others. The City of DuPont Municipal Code requires a 50 foot buffer between proposed development activity and hillslopes of 40 percent. The proposed development maintains a 50 foot buffer from the top of slopes greater than 40 percent with the exception of two areas. These areas are the two scallop-shaped former borrow pits along the bluff slope west of the expansion. The slope in these areas is greater than 40 percent at the top, but then becomes much more gradual downslope. The average slope from the top of the bluff to the railroad embankment in these areas is less than 40 percent. According to the City of DuPont Municipal Code (DMC 25.105.070(2)), the development buffer can be reduced to a minimum of 25 feet if the Geotechnical Engineer demonstrates that four criteria are met. As discussed in the FEIS, the

proposed development meets all four criteria for a buffer reduction to 25 feet where the project borders the two former borrow pits. A 50 foot setback from mine excavation is established along the eastern boundary of the expansion.

STORMWATER

Existing stormwater and processing water collected in the processing area are pumped to a water treatment facility located within the processing area. All water is treated and most is reused for washing sand and gravel. During periods of heavy rainfall, the supply of treated water exceeds plant needs. Excess treated water is discharged from the treatment pond to NPDES discharge monitoring point P3, where it infiltrates to recharge groundwater. During dry periods, the supply of treated water in not sufficient to meet plant needs and is supplemented by adding water from CalPortland's onsite water supply well. Stormwater from the conveyor and road collects at two pump stations (NPDES discharge points P5 and P6) and is pumped to an infiltration area in the adjacent forest.

As the area is mined, it will form a closed depression so all stormwater generated within the mine will either infiltrate or evaporate. Stormwater runoff will be collected and conveyed to separate pond systems in each drainage basin for treatment and infiltration. Each pond system will consist of a two-celled lined wetpond designed to remove sediments and provide spill control and an infiltration pond to dispose of stormwater and recharge groundwater. The predicted stormwater flows presented above were used in preliminary design of the water quality and infiltration ponds. Pond locations and the conceptual drainage patterns are shown on Figure 6.

The wetponds were designed to treat 91 percent of the total runoff under developed conditions in accordance with Ecology guidance (Ecology, 2005). Key pond dimensions are shown in Table 4-5 of the FEIS. The ponds were designed to be 7 feet deep, which includes one foot of sediment storage at the bottom of the first cell, and one foot of freeboard in both cells.

The conveyance system would consist of a network of open ditches that collect and route stormwater to the water quality facilities described above. In places where the slope is less than 2.5 percent, the ditches would be vegetated. Steeper ditches would require lining with cobbles for slopes up to 5 percent, or rip rap for steeper.

The final drainage calculations are presented in the FEIS.

REVEGETATION

Once topsoil has been placed on the slopes, tree seedlings will be planted during the dormant season. Douglas fir and Red Alder will be planted at 10ft.x10ft. spacing, establishing a stocking level of approximately 430 trees per acre on the reclaimed slopes. Based on the success of the reforested slopes in the existing mine, Douglas fir (1+1 seedling stock) and Red Alder (plug 1 or yearling pull-ups) are recommended. Based on existing reclamation at the site, volunteer seedlings are expected to propagate on the topsoiled slopes in addition to the planting described above. The mature forests that buffer the western mine boundary provide an excellent seed source of other native deciduous and conifer species.

Due to the high porosity and low erosion potential of the native topsoil, grasses are not recommended as part of the reforestation prescription. Grass cover can be detrimental to reforestation due to the competition for moisture and nutrients. In addition, grass cover provides a habitat for rodents that chew the bark around the base of the seedlings (girdling) which leads to seedling mortality and potential disease.

As the reclaimed areas mature, a native understory of herbaceous and woody species will also propagate from seed and rhizomes naturally occurring in the redistributed topsoil. Reclaimed slopes along the western boundary of the site are designed in a sinuous fashion to mimic and blend with the native topography that parallels the Puget Sound.

Deleterious vegetation such as blackberry and Scotch Broom will be removed either mechanically or with the use of herbicides to allow tree establishment and release from shading and competition for nutrients and moisture.

The following table prescribes a recommended specification for temporary revegetation on stockpiled topsoil to minimize the potential for erosion to occur. A comparable seed mix can substitute this specification.

Temporary Revegetation Specifications

Species Common Name	Scientific Name	Planting Method	Planting Density (percent)	Planting Season
Big bluegrass	*Poa secunda*	broadcast	5	spring/fall
Creeping wild rye	*Elymus repens*	broadcast	10	spring/fall
Blue creeping rye	*Elmyus glaucus*	broadcast	20	spring/fall
Timothy	*Phleum pratense*	broadcast	10	spring/fall
Idaho fescue	*Festuca idahoensis*	broadcast	20	spring/fall
White clover	*Trifolium repens*	broadcast	25	spring/fall
Ladak alfalfa	*Medicago sativa*	broadcast	5	Spring/fall
Burnet	*Sanguisorba sp.*	broadcast	5	spring/fall

LIMITATIONS

The services described in this narrative were performed consistent with generally accepted professional consulting principles and practices. There are no other warranties, express or implied. The services performed were consistent with our agreement with our client. This narrative is prepared solely for the use of our client and may not be used or relied upon by a third party for any purpose. Any such use or reliance will be at such party's risk.

The opinions and recommendations contained in this narrative apply to conditions existing when services were performed. GeoDesign is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this narrative. GeoDesign does not warrant the accuracy of supplemental information that was supplied by others as incorporated in this narrative.

♦ ♦ ♦

Please call if you have questions concerning the information provided.

Sincerely,

GeoDesign, Inc.

Roy Garrison
Principal - Mining Consulting

cc: Pete Stolz, CalPortland, (two copies)

RLG:kt
Attachments
One copy submitted
Document ID: CalPortCo-1-02-061813-minl-reclamation-plan
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REFERENCES

Final Environmental Impact Statement (FEIS) for the existing mine (City of DuPont and Ecology, 1993).

Aspect Consulting. Earth and Water Resources Report, DuPont Mine North Expansion, January 22, 2013 Draft.

Final Environmental Impact Statement (FEIS), CalPortland DuPont North Parcel Mining (City of DuPont and Ecology, 2013), http--www.calportlandresources.com.

WASHINGTON STATE DEPARTMENT OF
Natural Resources

APPLICATION FOR RECLAMATION PERMIT (Form SM-8A)

Check appropriate box(es): ☐ new permit ☐ revision of existing permit ☐ transfer of permit ☒ expansion

NOTE: Do not attempt to complete this form until you have carefully read "Instructions for Form SM-8A".

1. NAME OF APPLICANT/PERMIT HOLDER(S)
Glacier Northwest, Inc., dba CalPortland

2. MAILING ADDRESS
5975 E. Marginal Way South
Seattle, WA 98134-2414

3. Telephone **206-768-7636** UBI No. **601301145 Location 7**

4. NAME OF MINE
DuPont Pioneer Aggregates

5. Street address and milepost of surface mine
4301 Pioneer Avenue
DuPont, WA 98327-7736

6. Distance (miles)	7. Direction from	8. Nearest community
1.5	North	DuPont City Hall

9. COUNTY **Pierce**
No attachments will be accepted. Legal Description of permit area:

1/4	1/4	Section	Township	Range
Portions	NE&SE	22	19N	R1E
Portions	NW&SW	23	19N	R1E
Portions	NE	23	19N	R1E
Portions	SW	14	19N	R1E
Portions	SE	15	19N	R1E

10. TOTAL ACREAGE OF PERMIT AREA APPLIED FOR:
(Include all acreage to be permitted. See Form SM-6.) 565 acres

11. Do you or any person, partnership, or corporation associated with you now hold, or have you held, a surface mining operating or reclamation permit? ☒ yes ☐ no
If you answered yes to the above, please list:

Permit Number	Active Operation?		Reclamation current/complete?	
	Yes	No	Yes	No
See Attached List	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐

12. Are all of these mines now in compliance with RCW 78.44, WAC 332-18, and conditions of the permits? ☒ yes ☐ no

13. Have you ever had a surface mine operating or reclamation permit revoked? ☐ yes ☒ no
Have you ever had a reclamation security forfeited? ☐ yes ☒ no
If you answered yes to either of the above, give permit number(s):

14. Type of proposed or existing mine: ☒ pit ☐ quarry
Material(s) to be mined: ☒ sand and gravel ☐ rock or stone
☐ clay ☐ metal ☐ limestone ☐ silica
☐ other

Deposit type: ☒ glacial ☐ river floodplain (alluvial)
☐ river channel deposits ☐ talus ☐ bedrock ☐ lode ☐ unknown
☐ other

15. Total disturbed acreage and maximum depth of permit area:
(Include all acreage to be disturbed by mining and reclamation during the life of the mine.)
Total area to be disturbed: 431 acres
Area to be disturbed in next 36 months: 116 acres.
Maximum vertical depth (thickness) mined below pre-mining topographic grade will be 185 feet.
Lowest elevation of excavated mine will be 25 feet (NGVD 29).
Highest elevation of excavated mine will be 210 feet (NGVD 29).

16. Expected start date of mining:	17. Estimated number of years:
2013	8-15

18. Total quantity to be mined over life of mine (estimated):	19. Estimated annual production:
26,600,000 ☐ tons or ☒ cu yds	2.8 million ☐ tons or ☒ cu yds

20. Subsequent land use: ☒ industrial ☐ commercial ☒ residential
☐ agricultural ☐ forestry ☐ wetlands and lakes
☒ other **Open Space/Sensitive Areas, Manufacturing and Research, Community Park.**
Reclaimed elevation of floor of mine: 25 feet relative to mean sea level
Reclaimed elevation is shown on cross sections? ☒ yes ☐ no
Subsequent land use is compatible with County or Municipal comprehensive plan? ☒ yes ☐ no
County or Municipality Approval for Surface Mining (Form SM-6) attached? ☒ yes ☐ no
SEPA Checklist required? ☒ yes ☐ no
If any answers are no, explain:

21. Application fee for a new reclamation permit is herewith attached? ☒ yes ☐ no

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APPLICATION FOR RECLAMATION PERMIT

22. SEGMENTAL RECLAMATION

Permit area has been divided into segments for mining and a mining schedule has been developed? ☒ yes ☐ no

If no, explain:

Permit area has been divided into segments for reclamation and a reclamation schedule has been developed? ☒ yes ☐ no

If no, explain:

23. SITE PREPARATION

23A. Permit and Disturbed Area Boundaries

Boundary of the permit area has been marked on the ground with permanent boundary markers? ☒ yes ☐ no

Explain boundary markers: **Metal tee posts with florescent painted tops.**

23B. Saving Topsoil, Subsoil, and Overburden for Reclamation

Thickness of topsoil is **1.67 (20 inches)** feet Thickness of subsoil is **0** feet Depth to bedrock is **1.67 (20 inches)** feet

Total volume of topsoil is **259,000** cubic yards Total volume of subsoil is **0** cubic yards

Volume of stored topsoil/subsoil is **86,000** cubic yards and will require **2-3** acres for storage.

Storage areas are shown on maps and have been marked on the ground with permanent boundary markers? ☒ yes ☐ no

Storage areas are shown on maps. Topsoil will be stored in berms at the top of the slopes in advance of mining which will not be staked since this material will be replaced on reclaimed slopes in a relatively short duration.

Topsoil will be salvaged? ☒ yes ☐ no

If no, explain:

Topsoil and overburden will be moved to reclaim an adjacent depleted segment? ☒ yes ☐ no

If no, explain:

Before materials are moved, vegetation will be cleared and drainage planned for soil storage areas? ☒ yes ☐ no

If no, explain:

Soil storage areas will be stabilized with vegetation to prevent erosion if materials will be stored for more than one season? ☒ yes ☐ no

If no, explain:

23C. Setbacks and Screens

The setback for this site will be **Varied** feet wide. **Refer to Setbacks Section of the Narrative.**

Is a permanent, undisturbed buffer planned for this site? ☒ yes ☐ no

If no, explain:

Setbacks are shown on maps and have been marked on the ground with permanent boundary markers? ☒ yes ☐ no

If no, explain:

Does this site have a backfilling plan that addresses the protection of adjacent property and how the final, stable slopes are to be achieved? ☐ yes ☒ no

If no, explain: **No backfill is planned.**

23D. Buffers to Protect Streams and Flood Plains

A stream buffer of at least 200 feet has been marked on the ground with permanent boundary markers? ☐ yes ☒ no

If yes, see "Additional Requirements for Mines in Flood Plains" in "Instructions for SM-8A".

A buffer of at least 200 feet from the 100-year flood plain has been marked on the ground with permanent boundary markers? ☐ yes ☒ no

If no, explain: **N/A**

Copy of Shoreline Permit from local government or the Department of Ecology is attached? **N/A** ☐ yes ☒ no

Hydraulic Project Approval from the Department of Fish and Wildlife is attached? **N/A** ☐ yes ☒ no

23E. Conservation Buffers

Conservation buffers will be established for the following purpose(s): *(Check all that apply)*

☐ unstable slopes ☐ wildlife habitat ☐ water quality ☐ other

Describe the nature and configuration of the conservation buffer(s): **N/A**

Conservation setbacks are shown on maps and have been marked on the ground with permanent boundary markers? **N/A** ☐ yes ☒ no

23F. Ground Water

EXISTING MINE:

High water table depth is **200** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Low water table depth is **5.73** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Annual fluctuation of water table is estimated at **5-10 feet.**

Direction of ground water flow: **Northwest**

Refer to narrative.

NORTH PARCEL

High water table depth is **9.59** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Low water table depth is **5.73** feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Annual fluctuation of water table is from **5.73** feet on **9/29/09** to **9.30** feet on **1/19/10**.

Direction of ground water flow: **Northwest**

Refer to narrative.

Are well logs attached? **Well OB-1** ☒ yes ☐ no

Is the aquifer perched? ☐ yes ☒ no

The shallowest aquifer is ☐ confined ☒ unconfined?

The site will be mined: ☐ wet ☒ dry ☐ both

Describe mining method: **Open pit mining will continue as in the existing mine south of the expansion. Concurrent clearing, mining, and reclamation will occur in increments.**

The site is in a: **N/A**

☐ critical aquifer recharge area ☐ sole source aquifer ☐ public water supply watershed

☐ wellhead protection area ☐ special protection area ☐ designated aquifer protection area

Ground water study attached? **Groundwater study in attached EIS.** ☒ yes ☐ no

If yes, see "Additional Requirements for Mines in Hydrologically Sensitive Areas" in "Instructions for SM-8A". If no, explain:

23G. Archeology

Are archeological/cultural resource sites present? ☐ yes ☒ no

If yes, describe how you will protect these resources:

24. MINING PRACTICES TO FACILITATE RECLAMATION

24A. Soil Replacement

Topsoil will be saved? ☒ yes ☐ no

If no, explain:

Up to 4 feet of topsoil and (or) subsoil will be restored? ☒ yes ☐ no

If "yes" give details. If "no", explain: **All salvaged topsoil will be replaced to approximately 3 feet on the pit slopes as rooting medium.**

Topsoil will be restored and seedbeds prepared as necessary to promote effective revegetation and to stabilize slopes and mine floor? If "yes" give details. If "no", explain: **Topsoil will be replaced on the slopes only and mine floor is for residential use.**	☒ yes ☐ no
Subsoil will be replaced to an approximate depth of 0 feet on the pit floor and a depth of 0 feet on slopes. Topsoil will be replaced to an approximate depth of 0 feet on the pit floor and a depth of 3 feet on slopes.	
Topsoil will be distributed evenly over the site? If no, explain: **Topsoil will be replaced on the slopes only and mine floor is for residential use.**	☐ yes ☒ no
If topsoil is in short supply, it will be strategically placed in depressions and low areas in adequate thickness to conserve moisture and promote revegetation? If no, explain: **There will be a sufficient supply of topsoil to distribute evenly over the slopes.**	☐ yes ☒ no
Topsoil will be moved when conditions are not overly wet or dry? If no, explain:	☒ yes ☐ no
Topsoil will be imported? If yes, describe source. If no, explain: **There will be a sufficient supply of topsoil to distribute evenly over the slopes.**	☐ yes ☒ no
Synthetic topsoil made from compost, biosolids, or other amendments will be used and (or) made on site to supplement existing topsoil? **Wood chips from onsite vegetation and filter press fines will be used to augment topsoil as appropriate.**	☒ yes ☐ no
Materials such as till, loess, and (or) silt are available on site that could be used to supplement topsoil for reclamation. If yes, explain: **As explained in the following two questions, filter press fines, silt and clay materials will be utilized as topsoil supplement.**	☒ yes ☐ no
Silt from settling ponds or a filter press will be used for reclamation? **As appropriate, filter press material will continue to be blended with the native topsoil for reclamation.**	☒ yes ☐ no
Settling pond clay slurries will be pumped or hauled to other segments for reclamation? If yes, explain: **Only small quantities are generated from pond clean out and will supplement topsoil as appropriate.**	☒ yes ☐ no
Topsoil will be replaced with equipment that will minimize compaction, or it will be plowed, disked, or ripped following placement? If no, explain:	☒ yes ☐ no
Topsoil will be immediately stabilized with grasses and legumes to prevent loss by erosion, slumping, or crusting? If no, explain:	☒ yes ☐ no
Topsoil stockpile areas are shown on maps and will be marked on the ground with permanent boundary markers to protect from loss? If no, explain: **Storage areas are shown on maps. Topsoil will be stored in berms at the top of the slopes in advance of mining which will not be staked since this material will be replaced on reclaimed slopes in a relatively short duration.**	☒ yes ☐ no
Segmental topsoil removal and replacement is shown on maps? If no, explain:	☒ yes ☐ no
Topsoil salvage and replacement plan included? **Refer to narrative.** If no, explain:	☒ yes ☐ no
24B. Removal of Vegetation	
Vegetation will be removed sequentially from areas to be mined to prevent unnecessary erosion? If no, explain:	☒ yes ☐ no

Small trees and other transplantable vegetation will be salvaged for use in revegetating other segments? ☐ yes ☒ no
If yes, give details. If no, explain: **No transplanting is planned, but topsoil will contain seed and rhizomes that will augment revegetation.**

Wood and other organic debris will be:
☒ recycled ☐ removed from site ☒ chipped ☐ burned ☐ buried ☒ used to synthesize topsoil or mulch
☐ other (*explain*)

Solid waste disposal, burning, and land use permits are attached? **N/A** ☐ yes ☒ no

Some coarse wood (logs, stumps) and other large debris will be salvaged for fish and wildlife habitats? ☒ yes ☐ no
If yes, give details. If no, explain: **Salvaged as needed for proposed stormwater ponds.**

24C. Erosion control for Reclamation

Pit floor will slope at gentle angles toward highwall, sediment retention pond, or proper drainage? ☒ yes ☐ no
If yes, give details. If no, explain: **Stormwater will be directed to infiltration ponds located at the toe of the reclaimed slopes. Refer to Figure 6. Refer to narrative for description of existing stormwater management.**

Revegetation, sheeting, and (or) matting will be used to protect areas susceptible to erosion? ☒ yes ☐ no
If yes, give details. If no, explain: **Reclaimed slopes will be reforested contemporaneously to minimize the potential for erosion. The mine plan is designed to eliminate the need for sheeting or matting materials. Erosion control BMP's will be used if necessary to protect areas susceptible to erosion.**

Water control systems used for erosion control during segmental reclamation will:

Divert clean water around pit?	☒ yes	☐ no
Trap sediment-laden runoff before it enters a stream?	☒ yes	☐ no
Result in essentially natural conditions of volume, velocity, and turbidity?	☒ yes	☐ no
Handle a 25-year, 24-hour peak event?	☒ yes	☐ no
(Have you attached calculation?) **Calculations are included in the FEIS.**	☒ yes	☐ no
Be removed or reclaimed?	☐ yes	☒ no

If any answers are no, explain: **Infiltration ponds will remain at the completion of mining.**

Will any water control systems be removed upon final reclamation? ☐ yes ☒ no
If yes, explain:

Water control measure will be established to prevent erosion of setbacks and neighboring properties? ☒ yes ☐ no
If yes, give details. If no, explain: **The pit is incised and all stormwater will infiltrate on site.**

Storm-water conveyance ditches and channels will be lined with vegetation or riprap? ☒ yes ☐ no
If yes, give details. If no, explain: **Ditches will be constructed in native gravel and cobbles.**

Natural and other drainage channels will be kept free of equipment, wastes, stockpiles, and overburden? ☒ yes ☐ no
If no, explain:

25. RECLAMATION TOPOGRAPHY

25A. Final Slopes

Final slopes will be created using the cut-and-fill method? ☐ yes ☒ no
Explain procedure to be used: **Cut method.**

Slopes will be created by mining to the final slope using the cut method? ☒ yes ☐ no
Explain procedure to be used: **Final slopes will be created by cutting to final grade with dozer.**

Slopes will vary in steepness? ☒ yes ☐ no
If no, explain:

Slopes will have a sinuous appearance in both profile and plan view? ☒ yes ☐ no
If no, explain:

Large rectilinear (that is, right angle, or straight, planar) areas will be eliminated? ☒ yes ☐ no

If no, explain:

Where reasonable, tracks of the final equipment pass will be preserved and oriented to trap moisture, soil, and seeds, and to inhibit erosion? ☒ yes ☐ no

If no, explain:

25B. Slope Requirements for Pits and Overburden/Waste Rock Dumps (non-saleable products)

If the mine is a quarry or in hard rock, skip to Quarry section (25C).

Slopes will vary between 2 and 3 feet horizontal to 1 foot vertical or flatter, except in limited areas where steeper slopes are necessary to create sinuous topography and control drainage? ☒ yes ☐ no

If no, explain:

For pits, slopes will not exceed 2 feet horizontal to 1 foot vertical except as necessary to blend with adjacent natural slopes? ☒ yes ☐ no

Give details: **Slopes will be cut at 2:1, no blending will be required because the mine will be incised.**

Slope stability analysis required? ☐ yes ☒ no

If yes, see "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".

Slope stability analysis provided by: **Slope stability of reclaimed mine slopes were evaluated in the FEIS.**

25C. Slope Requirements for Quarries and Hardrock Metal Mines

If mine is a pit in unconsolidated materials covered by Section 25B, go to Section 25D

Check the appropriate box(es)

☐ Slopes will not exceed 2 feet horizontal to 1 foot vertical.

☐ Slopes steeper than 1 foot horizontal to 1 foot vertical are an acceptable subsequent land use as confirmed on Form SM-6.

☐ Hazardous slopes or cliffs are indigenous to the immediate area and already present a potential threat to human life. Photo and maps attached to document presence of cliffs.

☐ Geologic or topographic characteristics of the site preclude slopes being reclaimed at a flatter angle and are an acceptable subsequent land use as confirmed on Form SM-6.

Slope stability analysis required? ☐ yes ☐ no

If yes, see "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".

Slope stability analysis provided by

Measures will be taken to limit access to the top and bottom of hazardous slopes? ☐ yes ☐ no

Describe measures, or if no, explain:

Selective blasting will be used to remove benches and walls and to create chutes, buttresses, spurs, scree slopes, and rough cliff faces that appear natural? ☐ yes ☐ no

Describe procedures, or if no, explain:

Reclamation blasting will be used to reduce the entire highwall to a scree or rubble slope less than 2 feet horizontal to 1 foot vertical? ☐ yes ☐ no

Blasting plan is attached?

If no, explain:

Access to benches will be maintained for reclamation blasting? ☐ yes ☐ no

If no, explain:

Small portions of benches will be left to provide habitat for raptors and other cliff-dwelling birds? ☐ yes ☐ no

25D. Backfilling

Slopes will require backfilling? ☐ yes ☒ no

Depth of backfilling is N/A feet.

Slope stability compaction analysis required? ☐ yes ☒ no

Compaction analysis provided by N/A.

Backfilling plan and (or) permits are attached? If no, explain: **N/A.**	☐ yes ☒ no
Backfilling will be done with overburden material after topsoil has been separated? **N/A** If no, describe composition and source of backfill material: **N/A** Explain method of placement of fill: **N/A**	☐ yes ☒ no
Locations of stockpiles are shown on maps and will be marked on the ground with permanent boundary markers? **No backfill is required.**	☐ yes ☒ no
Will backfill be imported? **N/A** If yes, give volumes needed to meet reclamation plan:	☐ yes ☒ no
Areas to be backfilled are shown on maps? If no, explain: **N/A**	☐ yes ☒ no
All grading/backfilling will be done with clean, inert, non-organic solids? If yes, give details. If no, explain: **N/A**	☐ yes ☒ no
Backfilled slopes will be compacted? If yes, give details. If no, explain: **N/A**	☐ yes ☒ no
Will you be backfilling into water? **N/A** If yes, is slope stability analysis attached? **N/A** If yes, describe method:	☐ yes ☒ no ☐ yes ☒ no
25E. Mine Floors	
Flat areas will be formed into gently rolling mounds? If yes, give details. If no, explain: **Flat areas will be formed with features consistent with future land use. See attached narrative.**	☐ yes ☒ no
Mine floor will be gently graded into sinuous drainage channels to preclude sheetwash erosion during intense precipitation? If yes, give details. If no, explain: **Ditches along the toe of the reclaimed slopes direct stormwater to infiltration ponds.**	☒ yes ☐ no
Mine floor and other compacted areas will be bulldozed, plowed, ripped, or blasted to foster revegetation? If yes, give details. If no, explain: **Ripping will implemented on the slopes as necessary, floor will not be revegetated as its final use is residential.**	☒ yes ☐ no
25F. Lakes, Ponds, and Wetlands	
Is water currently present in the area or will the mining penetrate the water table? ***If no, go to Section 25G.***	☐ yes ☒ no
Reclaimed areas below the permanent low water table in soil, sand, gravel, and other unconsolidated material will have a slope no steeper than 1.5 feet horizontal to 1 foot vertical? If yes, give details. If no, explain:	☐ yes ☐ no
If not already present, soils, silts, and clay-bearing material will be placed below water level to enhance revegetation? If yes, give details. If no, explain:	☐ yes ☐ no
Some parts of pond and lake banks will be shaped so that a person can escape from the water?	☐ yes ☐ no
Armored spillways or other measures to prevent undesirable overflow or seepage will be provided to stabilize bodies of water and adjacent slopes? If yes, give details. If no, explain:	☐ yes ☐ no

Wildlife habitat will be developed, incorporating such measures as:

- Sinuous and irregular shorelines? ☐ yes ☐ no
- Varied water depths? ☐ yes ☐ no
- Shallow areas less than 18 inches deep? ☐ yes ☐ no
- Islands and peninsulas? ☐ yes ☐ no

Give details:

Ponds or basins will:

- Be located in stable areas? ☐ yes ☐ no
- Have sufficient volume for expected runoff? ☐ yes ☐ no
- Have an emergency overflow spillway? ☐ yes ☐ no
- Spillways and outfalls will be protected (for example, rock armor) to prevent failure and erosion? ☐ yes ☐ no

If any answers are no, explain:

Proper measures will be taken to prevent seepage from water impoundments that could cause flooding outside the permitted area or adversely affect the stability of impoundment dams or adjacent slopes? ☐ yes ☐ no

If yes, give details. If no, explain:

Written approval from other agencies with jurisdiction to regulate impoundment of water is attached? ☐ yes ☐ no

If no, explain:

25G. FINAL DRAINAGE CONFIGURATION

Drainage will be capable of carrying the peak flow of the 25-year, 24-hour precipitation event? ☒ yes ☐ no
(*Data are available at DNR Region offices*)

If yes, are calculations attached? ☒ yes ☐ no

If yes, give details. If no, explain: **Drainage designed for 100-year event. Calculations are included in the FEIS.**

Drainages will be constructed on each reclaimed segment to control surface water, erosion, and siltation? ☒ yes ☐ no

Clean runoff is directed to a safe outlet? ☒ yes ☐ no

If either yes, give details. If no, explain: **Mine will create a closed depression where stormwater will infiltrate, existing stormwater system will remain in place (refer to narrative).**

Are these shown on maps? ☒ yes ☐ no

The grade of ditches and channels will be constructed to limit erosion and siltation? ☒ yes ☐ no

If yes, give details. If no, explain: **The ditches direct runoff at a very gentle grade to infiltration ponds.**

Natural-appearing drainage channels will be established upon reclamation? ☒ yes ☐ no

If yes, give details. If no, explain: **Drainage channels will be shallow vegetated ditches in native gravel.**

26. SITE CLEANUP AND PREPARATION FOR REVEGETATION

26A. Dealing with Hazardous Materials

Hazardous materials are present at the mine site? ☐ yes ☒ no

If no, go to Section 26B

The final ground surface drains away from any hazardous natural materials? ☐ yes ☐ no

If yes, give details. If no, explain:

Plan for handling hazardous mineral wastes indigenous to the site is attached? ☐ yes ☐ no

If no, written approval from all appropriate solid waste regulatory agencies attached? ☐ yes ☐ no

26B. Removal of Debris

All debris (garbage, 'bone piles', treated wood, old mining equipment, etc.) will be removed from the mine site? ☒ yes ☐ no

All sheds, scale houses, and other structures will be removed from the site? ☒ yes ☐ no

If either answer is yes, give details. If no, explain: **The Conveyor may stay in place at the completion of mining should the processing facility remain in the existing mine.**

APPLICATION FOR RECLAMATION PERMIT

27. REVEGETATION

The mine site is in: ☐ eastern Washington ☒ western Washington

The mine site is: ☐ wet ☒ dry?

The average precipitation is **39 inches** per year.

Revegetation will start during the first proper growing season (fall for grasses and legumes, fall or late winter for trees and shrubs) following restoration of slopes? ☒ yes ☐ no

If yes, give details. If no, explain: **Reforestation will occur prior to bud break, typically before April 15th.**

Test plots will be used to determine optimum vegetation plans? N/A ☐ yes ☒ no

The site will not be revegetated because:

☐ It is a rural area with a rainfall exceeding 30 inches annually and erosion will not be a problem (requires approval of DNR).

☐ Demonstration plots and areas will be used to show that active revegetation is not necessary.

☒ Revegetation is inappropriate for the approved subsequent use of this surface mine.

Explain: **It is inappropriate to revegetated the mine floor as its subsequent use is residential. Slopes will be reforested.**

Documentation is attached? ☐ yes ☒ no

27A. Recommended Pioneer Species

In the Sections below, check the species that will be planted at your mine site:

**** indicates nitrogen-fixing species***

Western Washington Dry Areas

☐ alfalfa*	☐ lupine*	☐ clover*	☐ orchard grass
☐ cereal rye	☐ perennial rye	☐ colonial bent grass	☐ ponderosa pine
☐ creeping red fescue	☒ red alder*	☒ Douglas fir	☐ shore pine
☐ ground cover	☐ shrubs	☒ other **Volunteer Madrone and shrub seedlings will naturally propagate the site.**	

Western Washington Wet Areas

☐ birdsfoot trefoil	☐ sedges	☐ cedar	☐ tubers
☐ cottonwood	☐ wetland grasses	☐ creeping red fescue	☐ willow
☐ red alder*	☐ other		

Eastern Washington Dry Areas

☐ alder*	☐ grasses	☐ alfalfa*	☐ juniper
☐ black locust	☐ lodgepole pine	☐ clover	☐ lupine*
☐ deciduous trees	☐ ponderosa pine	☐ shrubs	☐ deep-rooted ground cover
☐ diverse evergreens	☐ other		

Eastern Washington Wet Areas

☐ alder*	☐ cottonwood	☐ poplar	☐ sedges
☐ serviceberry	☐ tubers	☐ willow	
☐ other			

Give planting details (stems/acres of trees and shrubs, see Forest Practices manual; lbs/acre of grass, legume, or forb mixture):

Refer to revegetation specifications in narrative.

Describe weed control plan:

Deleterious species such as Scotts broom, Himalayan and Evergreen blackberry will be controlled so that they do not become competitive with the reforested slopes. Once the tree canopy closes, deleterious species are shaded out and are not of concern.

27B. Planting Techniques

Revegetation at this site will require:

Ripping and tilling?	☐ yes	☒ no
Blasting to create permeability?	☐ yes	☒ no
Mulching?	☐ yes	☒ no
Irrigation?	☐ yes	☒ no
Fertilization?	☐ yes	☒ no
Importation of clay- or humus-bearing soils?	☐ yes	☒ no
Other soil conditioners or amendments?	☒ yes	☐ no

Give details: **Refer to the narrative.**

Trees and shrubs will be planted in topsoil or in subsoil amended with generous amounts of organic matter? ☒ yes ☐ no

If yes, give details. If no, explain: **Topsoil may be amended with onsite process fines and wood chips as available.**

Mulch will be piled around the base of trees and shrubs?	☐ yes	☒ no
High quality stock will be used?	☒ yes	☐ no
Trees and shrubs will be planted while they are dormant?	☒ yes	☐ no
Stock will be properly handled, kept cool and moist, and planted as soon as possible?	☒ yes	☐ no
Seeds will be covered with topsoil or mulch no deeper than one-half inch? **N/A**	☐ yes	☒ no

If any answers are no, explain: **Mulching and seeding are not required to successfully reforest the slopes.**

28. FINAL CHECKLIST

All required maps are attached? (***See "Instructions for SM-8A" for detailed requirements.***)	☒ yes	☐ no
All required cross sections are attached? (***See "Instructions for SM-8A" for detailed requirements.***)	☒ yes	☐ no
Geologic map attached (if required)? (***See "Instructions for SM-8A" for detailed requirements.***)	☒ yes	☐ no
All documents submitted have the date, the name and address of the permit holder, and the application number on every page of the material?	☒ yes	☐ no
The plan contains predominantly relevant information?	☒ yes	☐ no
Have you completed the SM-6 and has it been signed by the local jurisdiction?	☒ yes	☐ no
Have you provided the SEPA checklist?	☒ yes	☐ no
Have you provided a copy of the SEPA determination (DNS, MDNS, or DS)?	☒ yes	☐ no
Have you attached photographs?	☐ yes	☒ no
Are additional supplemental studies included?	☐ yes	☐ no

If yes, check the appropriate box(es) below:

☐ Archeological ☒ Geohydrologic ☐ Backfill ☒ Slope stability
☐ Topsoil ☐ Flood plain ☐ Conservational ☐ Vegetation
☐ Other

Other permits required? ☒ yes ☐ no

If yes, check the appropriate box(es) below:

☐ Shoreline Permit ☐ Water Discharge Permit ☐ Solid Waste Permit
☐ Air Quality Permit ☐ NPDS or General Discharge Permit ☐ Hydraulic Project Approval
☐ Special or Conditional Use Permit ☒ Other **Forest Practices Permit, City of DuPont Site Plan**

APPLICATION FOR RECLAMATION PERMIT

When signed by the applicant and approved by the Department of Natural Resources, this document and the associated maps, cross sections, reclamation narrative, and other attachments will be the approved reclamation plan for this permit that the permit holder must follow. Significant variations from the approved reclamation plan may require that a new plan be submitted to the Department for approval.

The applicant shall be considered as the permit holder for this surface mine and shall be responsible for compliance with Chapter 78.44 RCW, Chapter 332-18 WAC, the approved reclamation plan and attachments, and the conditions of the permit if issued by the Department of Natural Resources.

I hereby agree to comply with this plan. *Signature of applicant or company representative*	Name and Title of Company Representative *(Please print)*	Date signed
Scott Nicholson	Scott Nicholson Director	6/11/13

SURFACE OWNERSHIP

Give names, addresses, and signatures of all individuals with possessory interest in land. *(Attach signed copies of this page if more than one.)*

I verify that the applicant has my permission to mine from my land.

Signature of landowner(s) — *Date signed*

Scott Nicholson for Cal Portland 6/11/13

I hereby verify that I have seen and approved this plan.

Signature of landowner(s) — *Date signed*

Scott Nicholson for Cal Portland 6/11/13

OWNERSHIP OF RIGHTS TO REMOVE MINERALS BY SURFACE MINING

Give names, addresses, and signatures of all individuals with rights. *(Attach signed copies of this page if more than one.)*

I verify that the applicant has my permission to mine this land.

Signature of rights owner(s) — *Date signed*

Scott Nicholson for Cal Portland 6/11/13

I hereby verify that I have seen and approved this plan.

Signature of rights owner(s) — *Date signed*

Scott Nicholson for Cal Portland 6/11/13

FOR DEPARTMENTAL USE ONLY

Date accepted	Accepted by:	Title:	Reclamation Permit No.
9/4/13		SENIOR RECLAMATION GEOLOGIST	70-012668

Comments by Department:

RECEIVED
JUN 18 2013
Geology and Earth

Northwest Aggregates Co.
UBI Number: 601301145

11. Do you or any person, partnership, or corporation associated with you now hold, or have you held, a surface mining operating or reclamation permit? yes no

If you answered yes to the above, please list:

Permit Number	Active Operation?		Reclamation current/complete?	
	Yes	No	Yes	No
Concrete - 70-012195		X	X	
DuPont – 70-012668	X		X	
Mats Mats – 70-010170	X		X	
Maury Island – 70-010256		X	X	
Snoqualmie – 70-012558	X		X	
Vashon – 70-010271 (10 acres)	X		X	
Vashon – 70-010272 (26 acres)	X		X	
White River – 70-012865	X		x	

SHES

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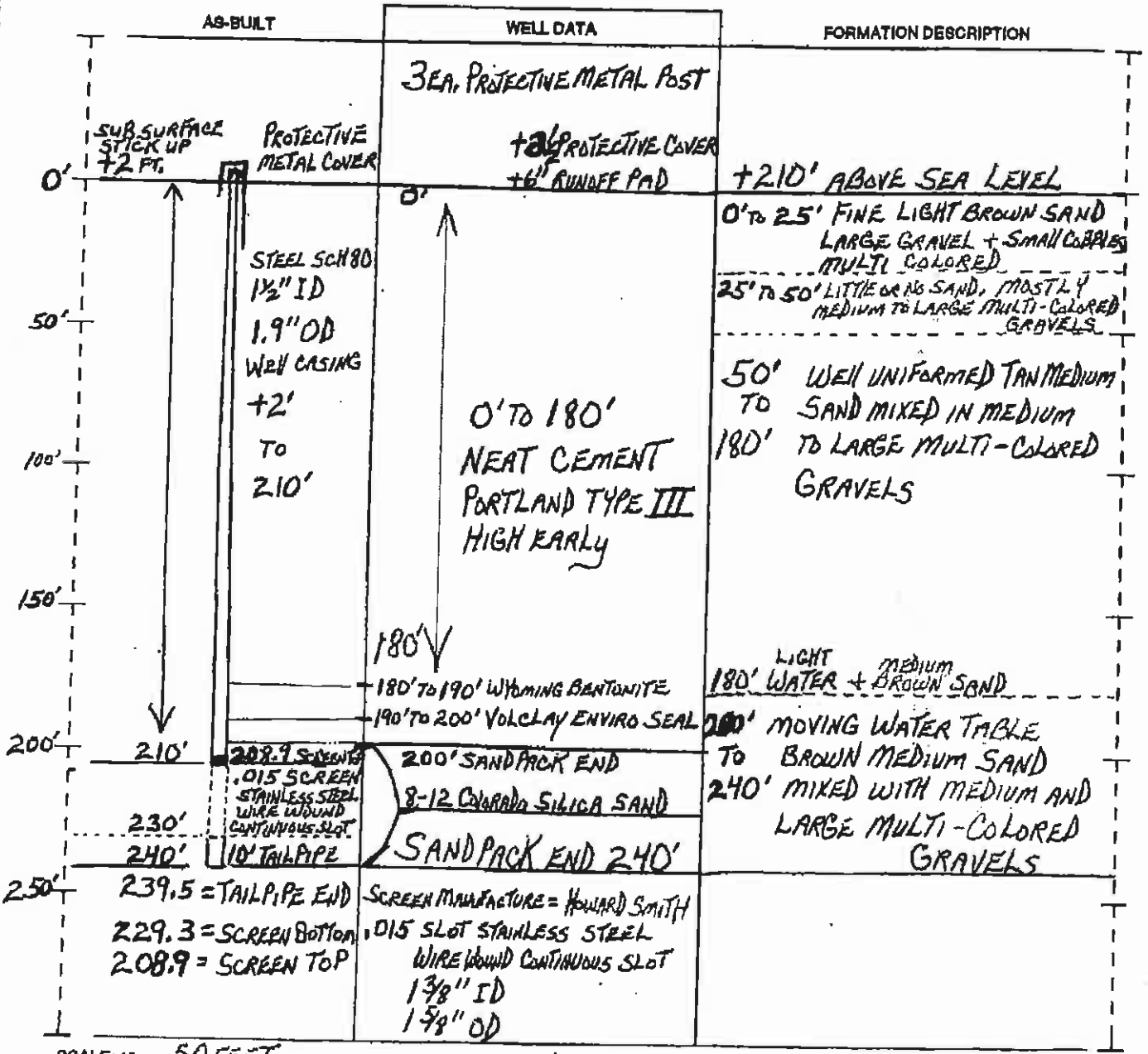
21 FEB 96

RESOURCE PROTECTION WELL REPORT

START CARD NO. 063977

PROJECT NAME: LONESTAR NW OBSERVATION WELL
WELL IDENTIFICATION NO. LONE STAR OB-1
DRILLING METHOD: REVERSE CIRCULATION ROTARY
DRILLER: DOUGLAS GRABOWSKI
FIRM: BECKER DRILLS INC.
SIGNATURE: William J. Flatley
CONSULTING FIRM: HART CROWSER
REPRESENTATIVE: TOM NOYES

COUNTY: PIERCE
LOCATION: SE¼ SW¼ Sec 14 Twn 19N R 1E
STREET ADDRESS OF WELL: NORTHWEST LANDING ANNEX DUPONT STEILACOOM ROAD DUPONT WASHINGTON
WATER LEVEL ELEVATION: 200 FT. STATIC
GROUND SURFACE ELEVATION: +210
INSTALLED: FEBRUARY 15, 1991
DEVELOPED:

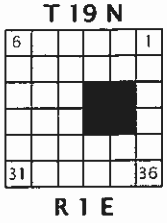


SCALE: 1" = 50 FEET

PAGE 1 OF 1

ECY 050-12 (Rev. 11/89)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report



SITE COORDINATES:

LATITUDE: 47° 87' 17 " N

LONGITUDE; 122° 38' 16" W

DIRECTIONS TO SITE:

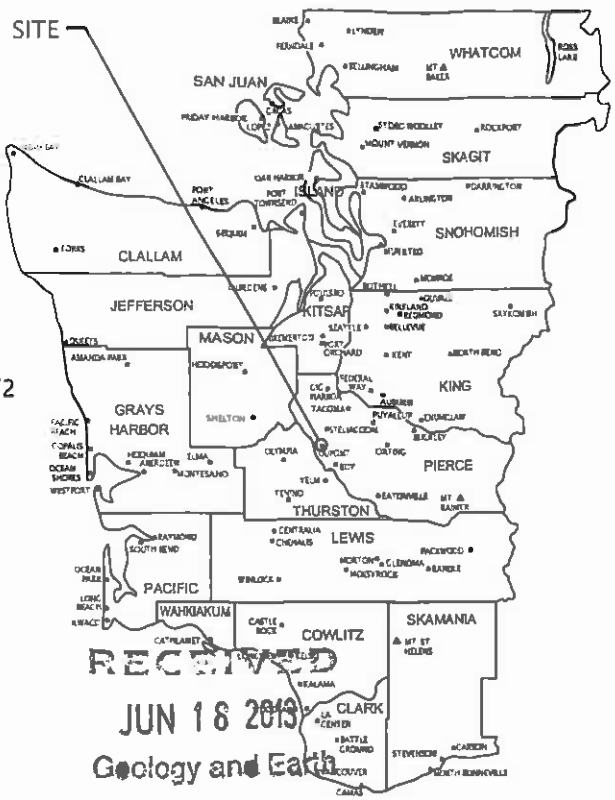
THE DUPONT PIONEER AGGREGATES SITE IS LOCATED WITHIN THE CITY OF DUPONT. FROM EXIT 119 FROM INTERSTATE 5 TO DUPONT, DRIVE NORTHBOUND ON DUPONT-STEILACOOM ROAD. TURN LEFT (WEST) ONTO WHARF ROAD, THEN TURN RIGHT (NORTH) ONTO PIONEER AVENUE. SITE ACCESS IS LOCATED ON THE LEFT SIDE OF PIONEER AVENUE, ROUGHLY 1/2 MILE NORTH OF THE INTERSECTION OF WHARF ROAD AND PIONEER AVENUE.

LEGAL DESCRIPTION:

THE CURRENT PERMIT BOUNDARY AND NORTHERN EXPANSION PERMIT BOUNDARY ARE LOCATED IN PORTIONS OF THE FOLLOWING SECTIONS;

- NE QUARTER OF SECTION 22
- SE QUARTER OF SECTION 22
- NW QUARTER OF SECTION 23
- SW QUARTER OF SECTION 23
- NE QUARTER OF SECTION 23
- SW QUARTER OF SECTION 14
- SE QUARTER OF SECTION 15

WESTERN WASHINGTON



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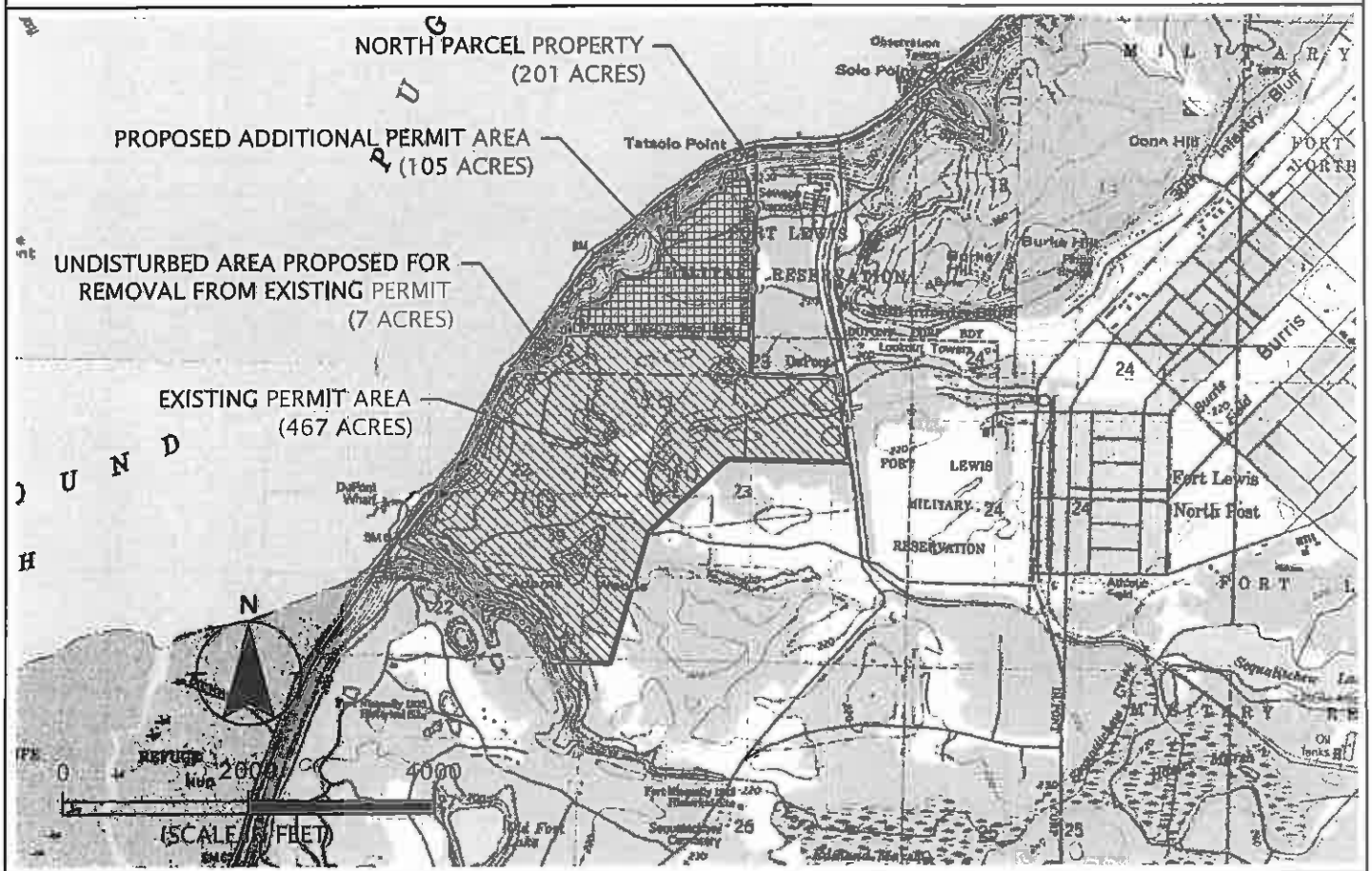
NOTE:

USGS TOPOGRAPHIC QUADRANGLE MAPS (MCNEIL ISLAND, STEILACOOM, FORT LEWIS, AND NISQUALLY) REPRODUCED USING MAPTECH TERRAIN NAVIGATOR PRO®



GEODESIGN INC 1157 3rd Avenue - Suite 2208 Longview, WA 98632 Off 360 200.4803 Fax 360 200.4803	GLACIER NW, INC. DBA CALPORTLAND	**VICINITY MAP** DUPONT PIONEER AGGREGATES (DNR #70-12668)
	CALPORTCO-1-02 JUNE 2013	CITY OF DUPONT, PIERCE COUNTY, WA SECTIONS 14, 15, 22, & 23, T19N, R1E, W.M. — **FIGURE 1**

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File Name: J:\A-D\CalPortCo\CalPortCo-1\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 - VM-AP.dwg | Layout: FIGURE 1

SUBJECT PROPERTY OWNERSHIP INFORMATION

PARCEL NUMBER	PROPERTY OWNER	OWNER ADDRESS
119231005	GLACIER NORTHWEST, INC.	2025 E FINANCIAL WAY GLENDORA, CA 91741-4692
0119232003 0119232006 0119221004 0119154000 0119143000 0119143001	NORTHWEST AGGREGATES CO.	2025 E FINANCIAL WAY GLENDORA, CA 91741-4692
0119221007 0119221013 0119221014 0119232008 0119232009 0119232010 0119232011 0119221015 0119221011 0119221012 0119221009 0119221010 0119233010 0119232012 0119233012 0119224008 0119224007 0119224006 0119224005 0119224004 0119221008 0119224009 0119233013	WPP LLC	5260 IRWIN RD HUNTINGTON, WV 25705-3247

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ADJACENT PROPERTY OWNERSHIP INFORMATION

PARCEL NUMBER	PROPERTY OWNER	OWNER ADDRESS
0119224010	CITY OF DUPONT	1700 CIVIC DR DUPONT, WA 98327-9603
0119234017 0119234016	PIERCE COUNTY INVESTORS LLC	20415 72ND AVE S SUITE 210 KENT, WA 98032-2357
0119262015 0119233016 0119233014 0119233011	WPP LLC	5260 IRWIN RD HUNTINGTON, WV 25705-3247
JBLM (JOINT BASE LEWIS-MCCHORD)	USA	JBLM PUBLIC AFFAIRS OFFICE BOX 339500 MAIL STOP 14A JOINT BASE LEWIS-MCCHORD, WA 98433-9500
BNSF ROW	BURLINGTON-NORTHERN SANTA FE RAILROAD	TERRY FINN 2454 OCCIDENTAL AVE BLDG 1A SEATTLE, WA 98134

NOTES:

1. SEE FIGURE 3A FOR PROPERTY OWNERSHIP MAP.
2. PROPERTY OWNERSHIP INFORMATION OBTAINED ONLINE FROM PIERCE COUNTY ASSESSOR.

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GLACIER NW, INC. DBA CALPORTLAND	**PROPERTY OWNERSHIP INFORMATION TABLES** DUPONT PIONEER AGGREGATES (DNR #70-12668)	
CALPORTCO-1-02 JUNE 2013	CITY OF DUPONT, PIERCE COUNTY, WA SECTIONS 14, 15, 22, & 23, T19N, R1E, W.M.	**FIGURE 3B**

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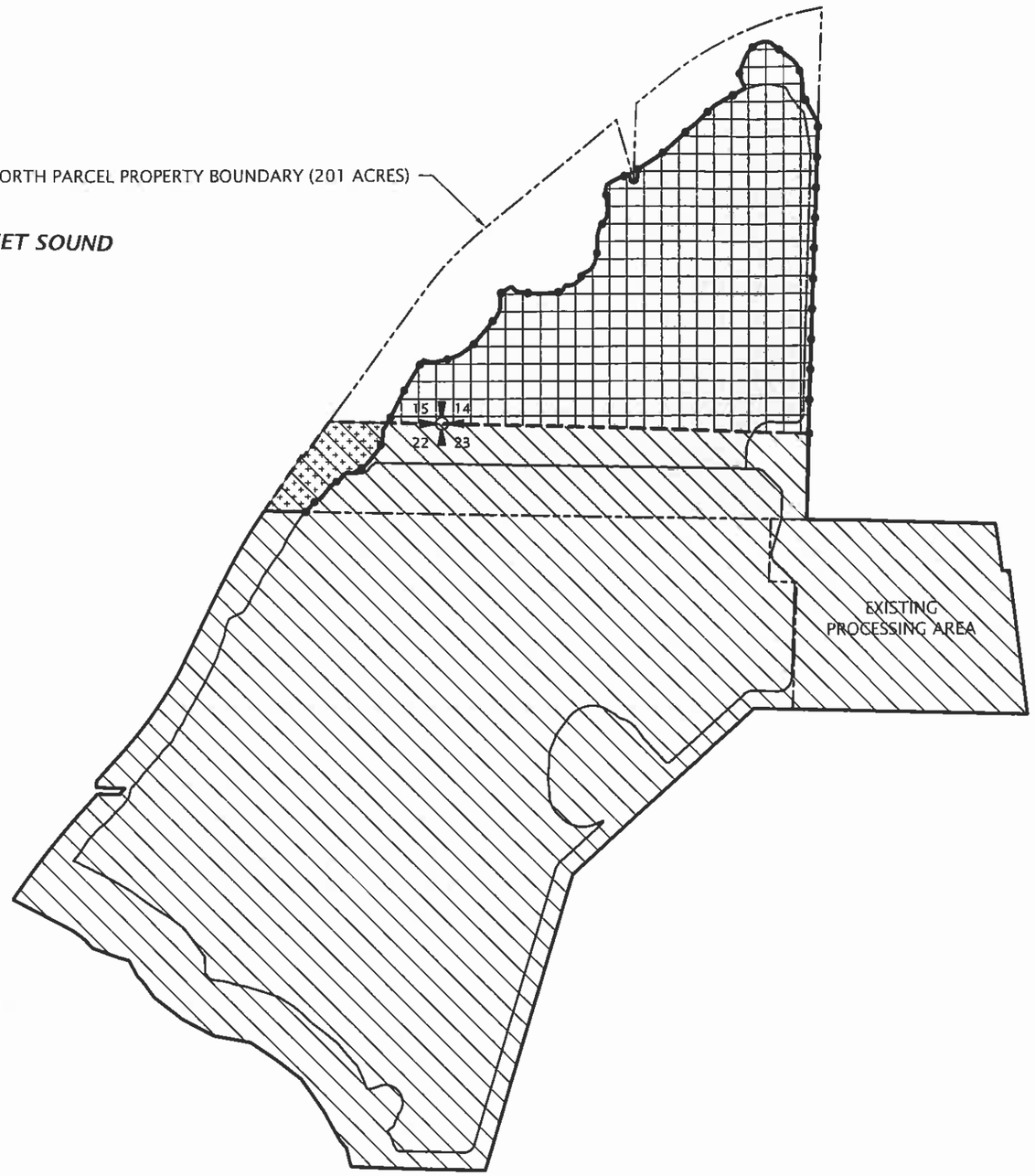

LEGEND:

- PROPOSED ADDITIONAL PERMIT AREA IN NORTH PARCEL (105 ACRES)
- EXISTING PERMIT AREA (467 ACRES)
- EXISTING PERMIT BOUNDARY TO BE RETAINED
- UNDISTURBED AREA PROPOSED FOR REMOVAL FROM EXISTING PERMIT (7 ACRES)
- EXISTING PERMIT BOUNDARY TO BE REMOVED
- PROPOSED NEW PERMIT BOUNDARY
- EXISTING PERMITTED EXTRACTION AREA (315 ACRES)
- PROPOSED ADDITIONAL EXTRACTION AREA (116 ACRES)
- EXISTING EXTRACTION AREA WHERE ADDITIONAL MINING IS PROPOSED TO FLATTEN SLOPE (NORTH PARCEL OVERLAP; 26 ACRES)
- PROPERTY LINE
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"

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(SCALE IN FEET)

NOTES:

1. TOTAL PROPOSED PERMIT AREA = 565 ACRES (467 ACRES EXISTING PERMIT - 7 ACRES TO BE EXCLUDED + 105 PROPOSED ADDITIONAL ACRES).
2. TOTAL EXTRACTION AREA IN NORTH PARCEL = 142 ACRES (26 ACRES IN EXISTING EXTRACTION AREA + 116 ACRES IN PROPOSED EXTRACTION AREA)

SITE MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 2

GLACIER NORTHWEST, INC.
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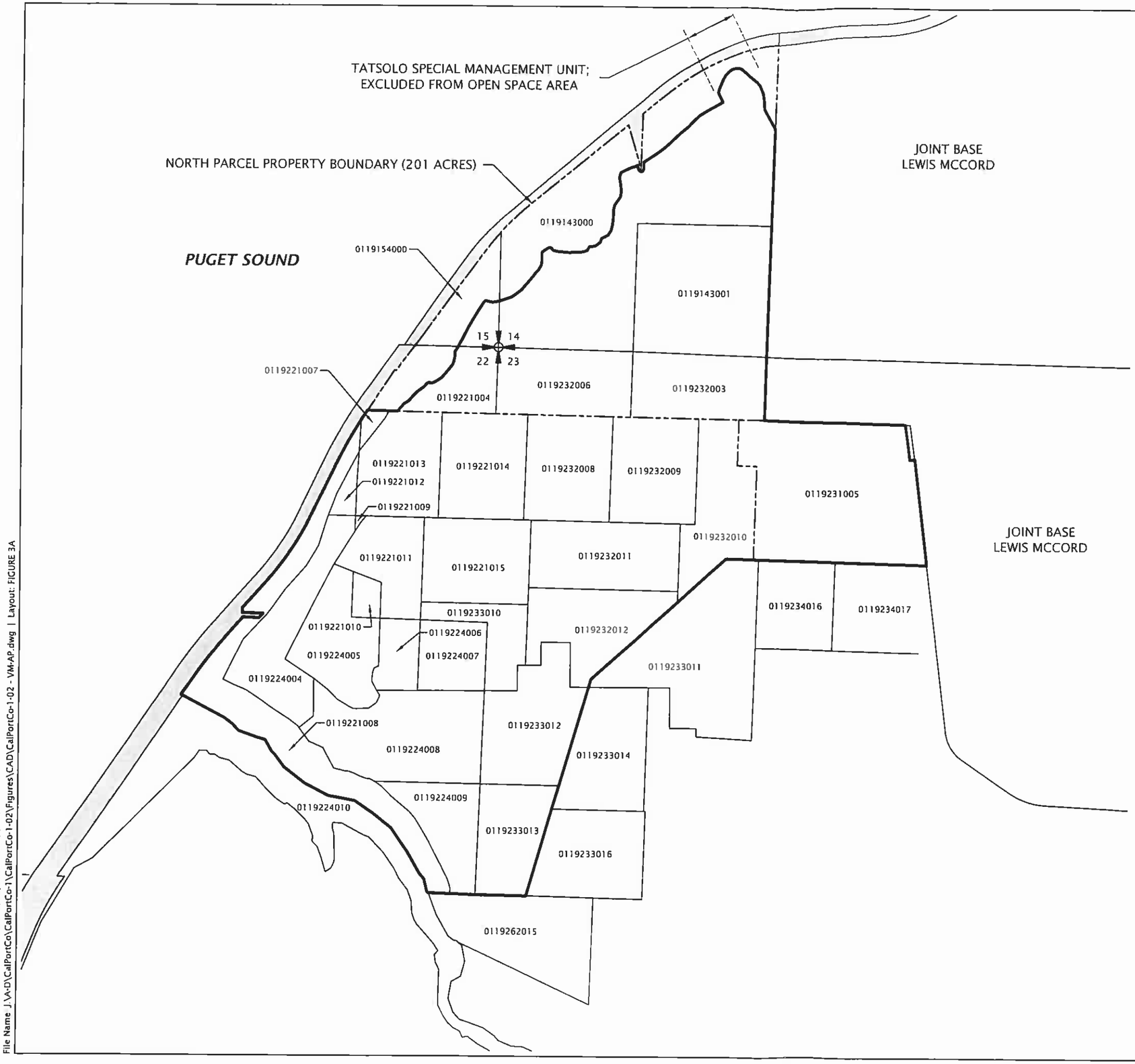
File Name: J:\VA-D\CalPortCo\CalPortCo-1\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 - VM-AP.dwg | Layout: FIGURE 2



LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES; 460 ACRES EXISTING + 105 ACRES PROPOSED)
- BNSF RAILROAD ROW
- PROPERTY LINES
- PROPERTY PARCEL LINES
- 0119231005 — PROPERTY PARCEL NUMBERS
- 15 14 / 22 23 — GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"

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NOTES:

1. SEE FIGURE 3B FOR PROPERTY OWNERSHIP INFORMATION.
2. PARCEL MAP AND PARCEL NUMBERS OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

PROPERTY OWNERSHIP MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 3A

GLACIER NORTHWEST, INC.
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CALPORTCO-1-02
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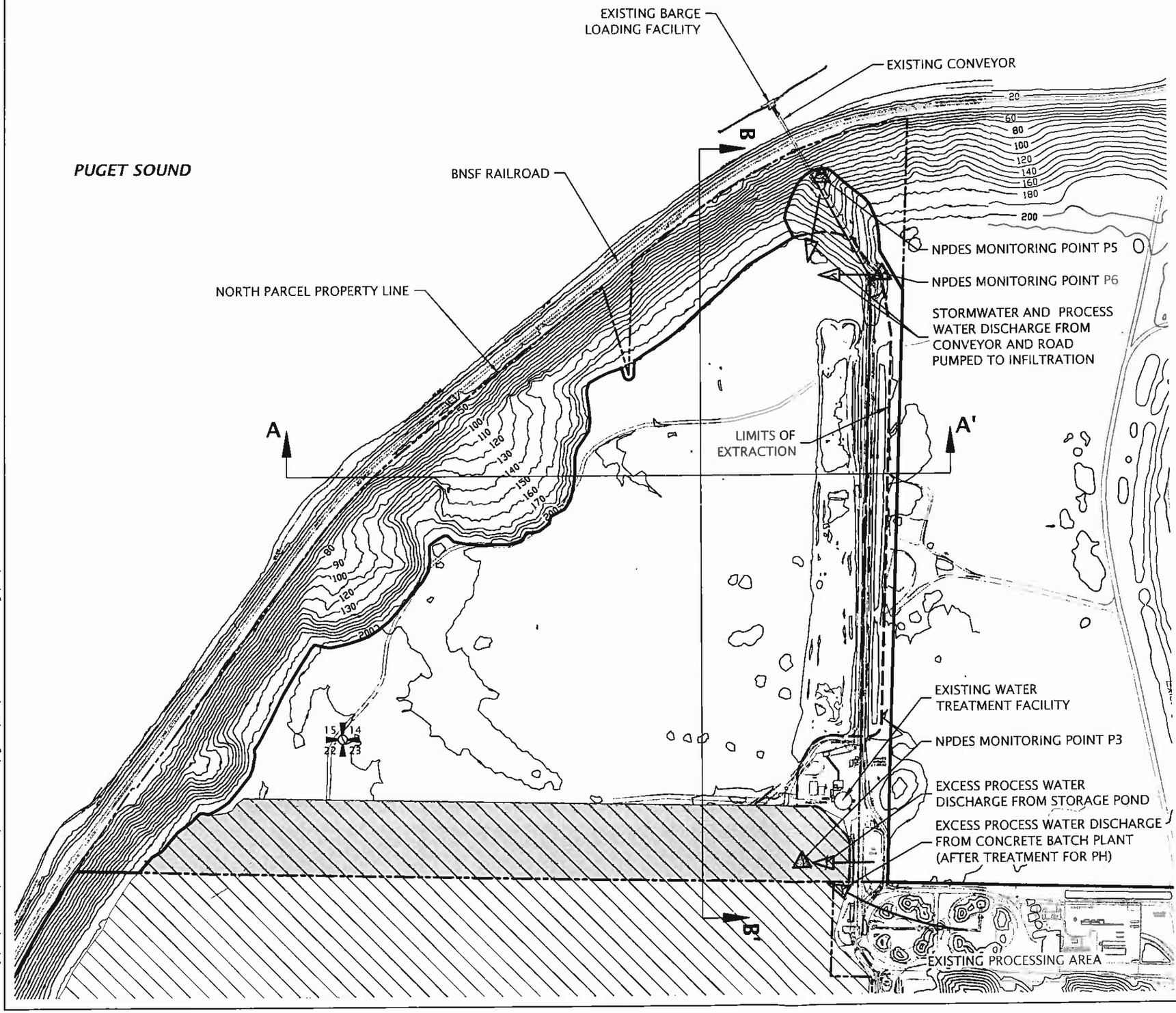

LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- PROPOSED NORTH PARCEL EXTRACTION LIMIT (142 ACRES)
- PROPERTY LINES
- EXISTING TOPOGRAPHY (10' INTERVALS)
- EXISTING PERMITTED EXTRACTION AREA
- EXISTING PERMITTED EXTRACTION AREA/ NORTH PARCEL OVERLAP
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"
- CROSS SECTION PROFILE LOCATIONS

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NOTE:
BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

EXISTING TOPOGRAPHY MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

FIGURE 4

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

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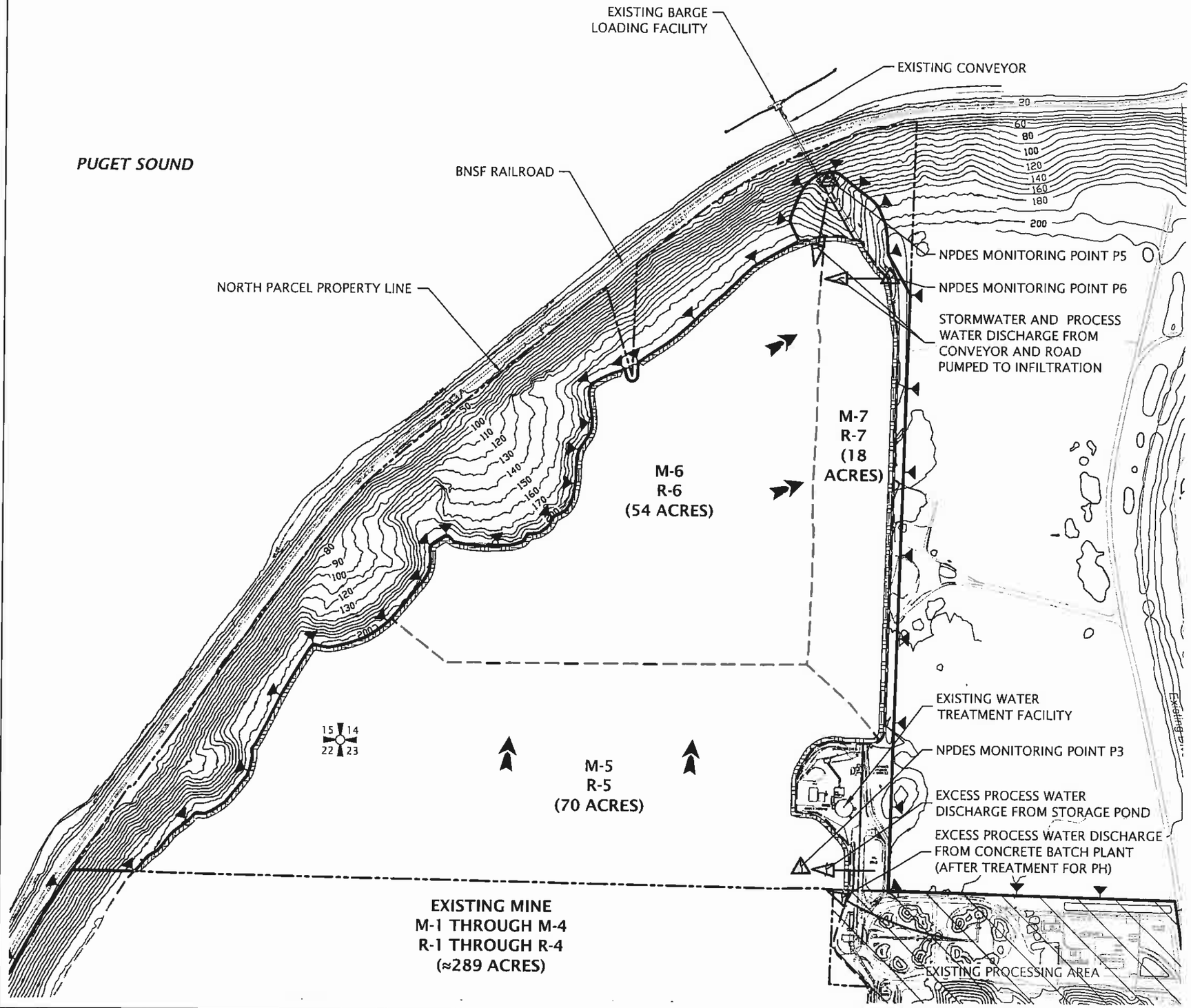

LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- PROPERTY LINES
- EXISTING TOPOGRAPHY (10' INTERVALS)
- TOPSOIL STOCKPILES
- M-1 MINING PHASE
- R-1 RECLAMATION SEQUENCE
- PHASE BOUNDARY
- DIRECTION OF MINING
- PERMANENT MARKER (LINE OF SIGHT)

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NOTE:

1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. STOCKPILED TOPSOIL WILL MEET INTERIM TACOMA SMELTER PLUME CLEANUP OBJECTIVES PRIOR TO PLACEMENT FOR RECLAMATION.
3. FOR STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE.

RECLAMATION SEQUENCE MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 5

GLACIER NORTHWEST, INC.
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CALPORTCO-1-02
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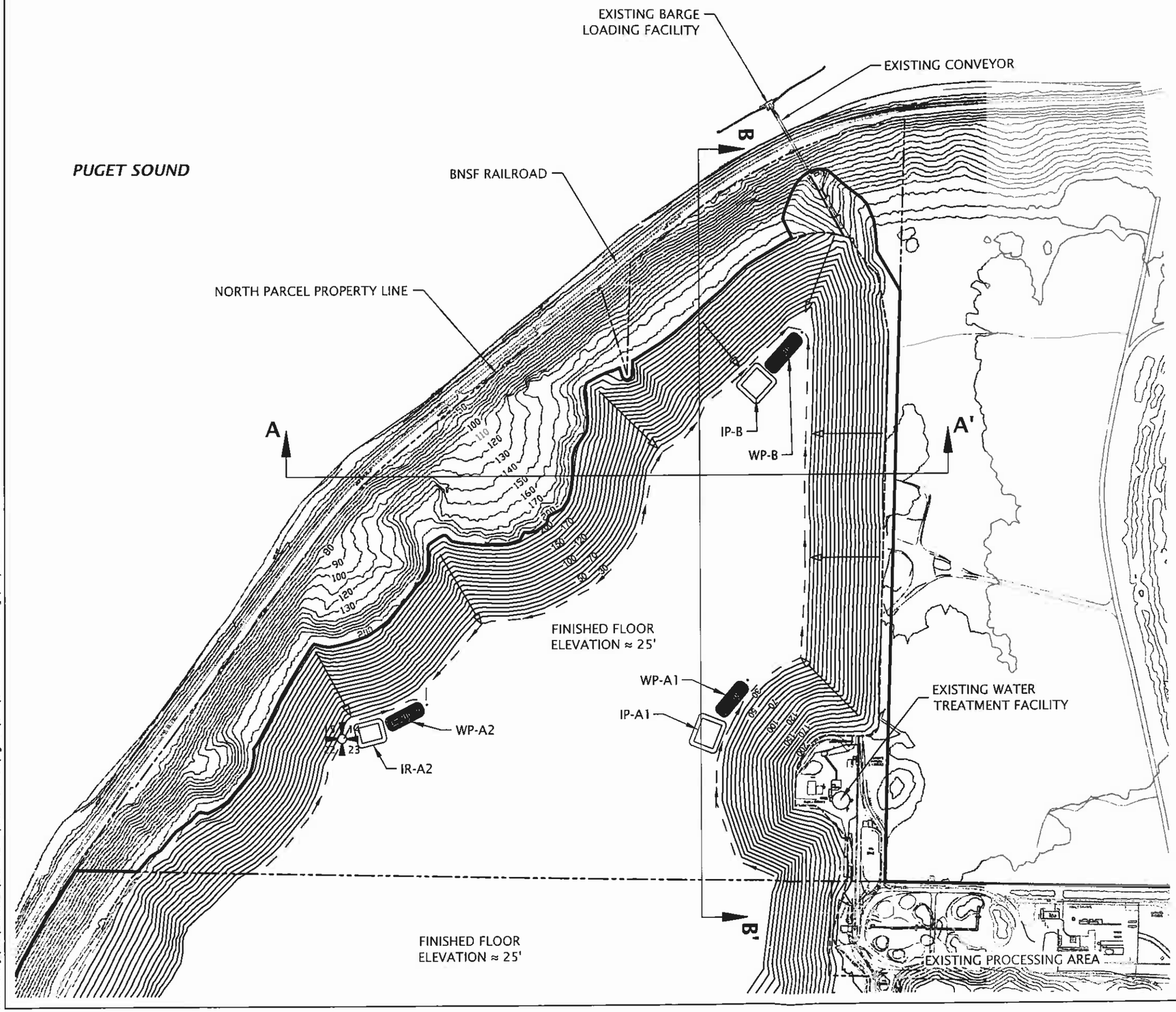

LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- EXTRACTION LIMIT (431 ACRES TOTAL; 142 ACRES IN NORTH PARCEL)
- PROPERTY LINES
- RECLAIMED TOPOGRAPHY (10' INTERVALS)
- EXISTING TOPOGRAPHY (10' INTERVALS)
- ON-SITE DRAINAGE PATTERNS
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"
- WET POND
- INFILTRATION POND
- SWALE
- CROSS SECTION PROFILE LOCATIONS

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NOTE:

1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. FOR REVEGETATION AND PROPOSED SPECIES, SEE NARRATIVE.
3. FOR POSTMINING STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE. MAPPED FEATURES OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

FINAL TOPOGRAPHY MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

FIGURE 6

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

GLACIER NORTHWEST, INC.
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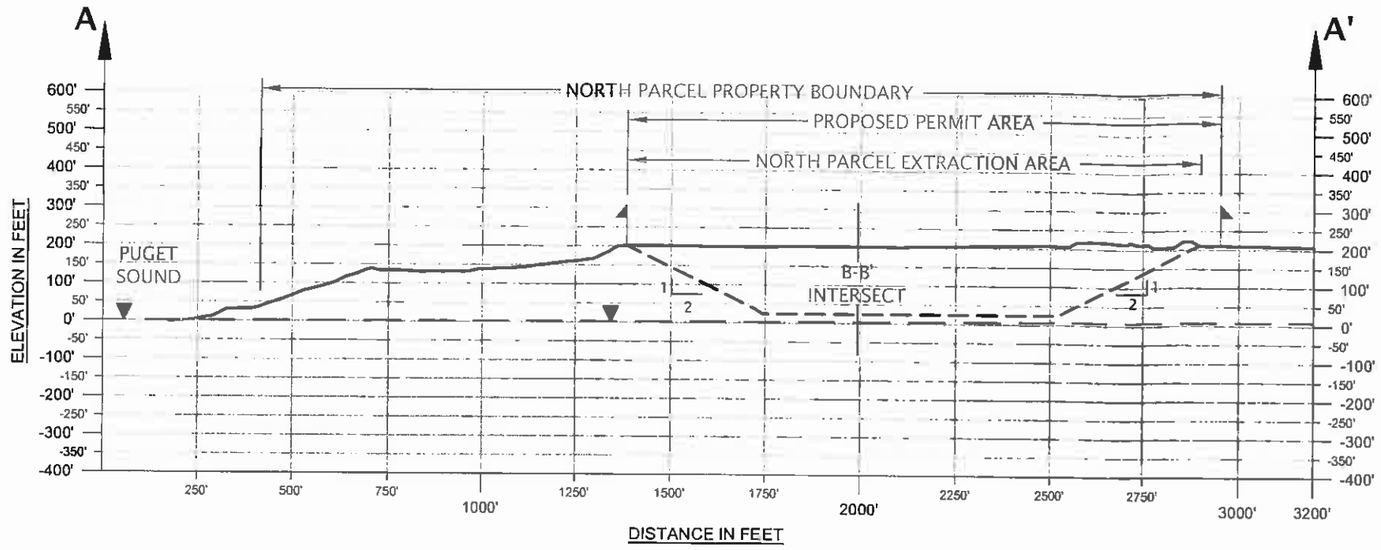

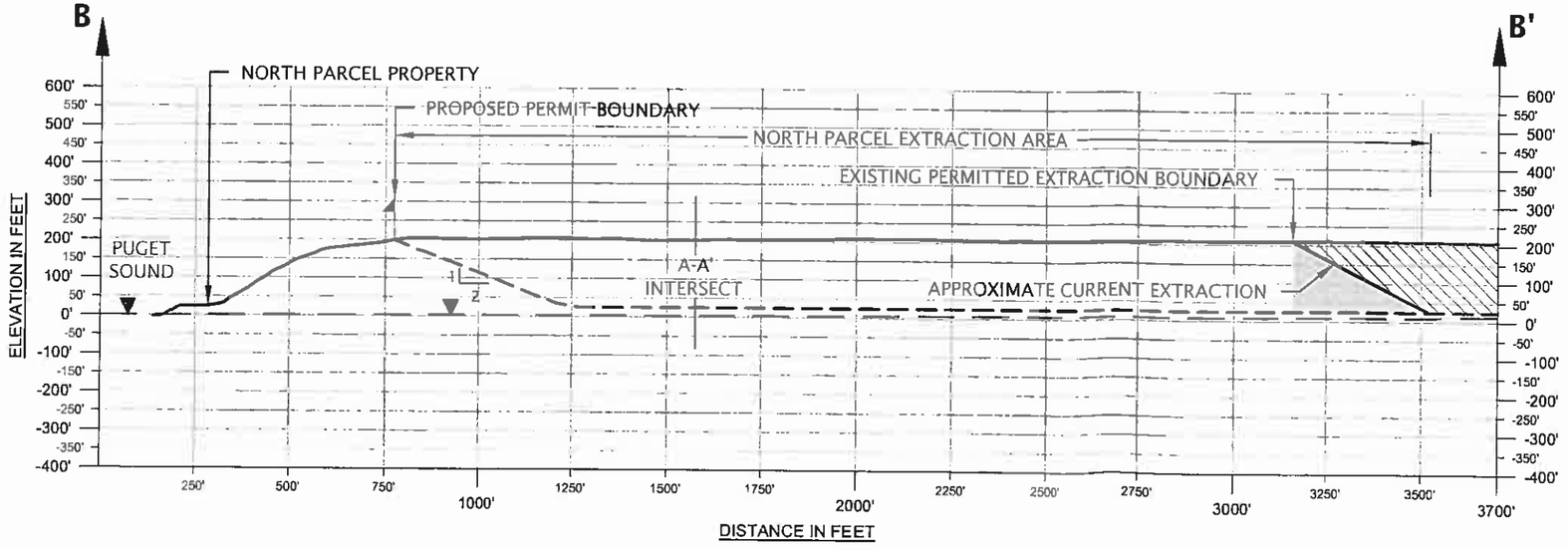

LEGEND:

- EXISTING TOPOGRAPHY
- RECLAIMED TOPOGRAPHY
- EXISTING PERMITTED EXTRACTION AREA
- EXISTING PERMITTED EXTRACTION AREA/ NORTH PARCEL OVERLAP AREA
- WATER

EXTRACTION CALCULATIONS	
EXTRACTION VOLUME*	**≈26,600,000 CUBIC YARDS**
MAXIMUM MINING DEPTH	185' (210' TO 25')

* DRAFT EIS

NOTE:
WATER LEVEL OBTAINED FROM ASPECT CONSULTING GROUNDWATER ELEVATIONS MAP DATED JANUARY 2013.

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HORIZONTAL 0 400 800 (SCALE IN FEET)

VERTICAL 0 400 800 (SCALE IN FEET)

CROSS SECTIONS A-A' AND B-B'
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 7

GLACIER NORTHWEST, INC.
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CALPORTCO-1-02
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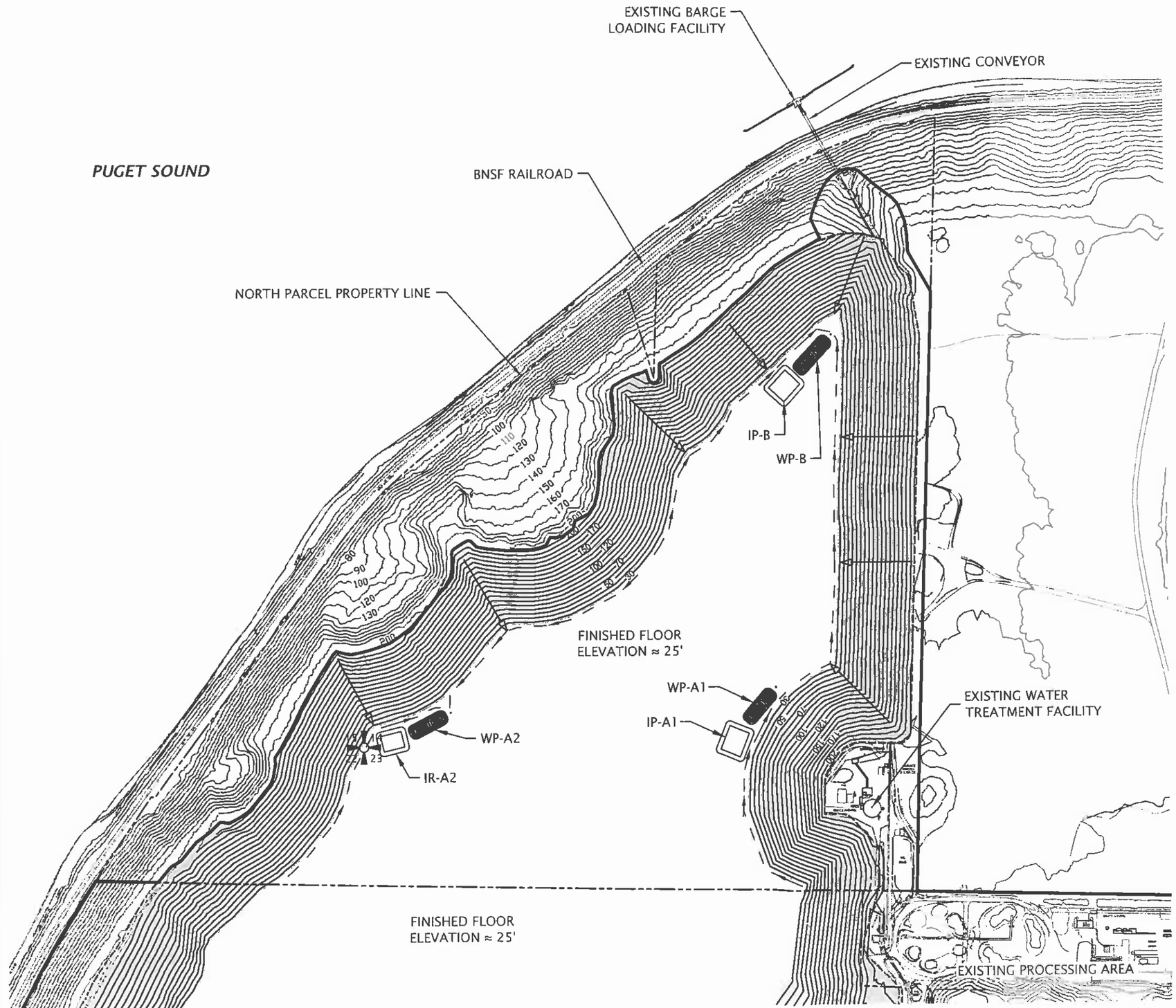

LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- LIMITS OF EXTRACTION (431 ACRES TOTAL; 142 ACRES WITHIN NORTH PARCEL)
- PROPERTY LINES
- RECLAIMED TOPOGRAPHY (10' INTERVALS)
- EXISTING TOPOGRAPHY (10' INTERVALS)
- ON-SITE DRAINAGE PATTERNS
- GEOREFERENCE - SECTION CORNER N47° 07' 35.16" W122° 39' 14.63"
- WET POND
- INFILTRATION POND
- SWALE
- REFORESTED AREA
  REVEGETATION SPECIFICATIONS: DOUGLAS FIR, RED ALDER MIX PLANTED AT 10-FT X 10-FT OR 430 TREES PER ACRE INCLUDING VOLUNTEER TREE SPECIES. RECOMMEND 1+1 DOUGLAS FIR SEEDLING STOCK AND PLUG 1 OR YEARLING PULL-UPS FOR RED ALDER SEEDLING.

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N

0 500 1000
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NOTE:

1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. FOR POSTMINING STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE. MAPPED FEATURES OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

RECLAMATION REVEGATATION MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

FIGURE 8

GLACIER NORTHWEST, INC.
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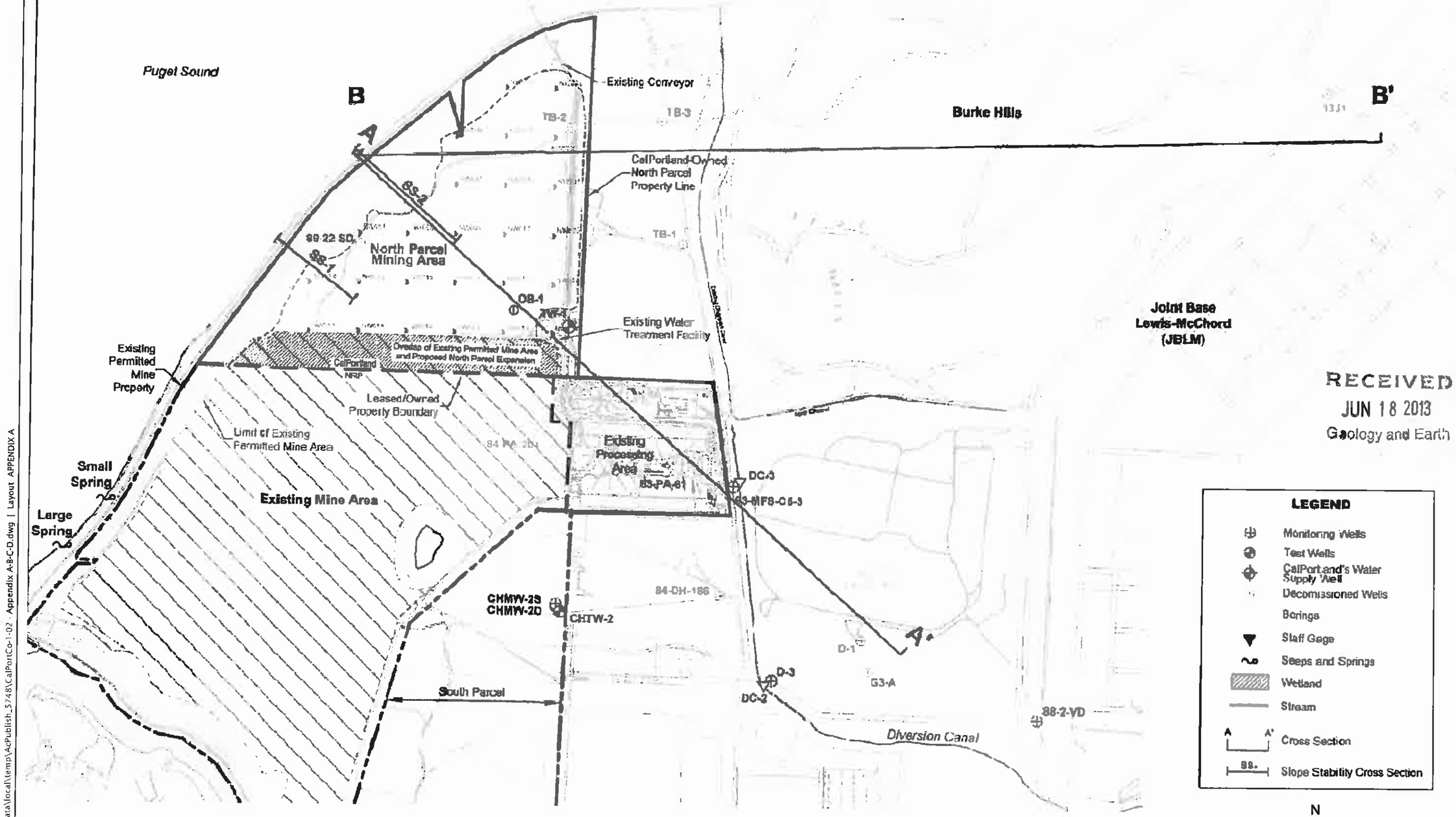

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LEGEND

- Monitoring Wells
- Test Wells
- CalPortland's Water Supply Well
- Decommissioned Wells
- Borings
- Staff Gage
- Seeps and Springs
- Wetland
- Stream
- Cross Section
- Slope Stability Cross Section

N

0 1000 2000
(SCALE IN FEET)

Base Map Sources

1) Glacier Northwest Mining Facility by ESM Consulting Engineers, June 2003
2) Northwest Landing Development by ESM Consulting Engineers, June 2002
3) DuPont Corsen: Decree Area by ESM Consulting Engineers, April 2004
4) JBLM by USGS DEM, *Nisqually* and *Fort Lewis* 1994 and USGS Digital Line Graphs. *Hypsography* and *Transportation* Fort Lewis Military Reservation, 1973. McNeil Island, 1981, Nisqually, 1981, and Steilacoom, 1993

NOTE:
1. MAP BASED ON IMAGE PREPARED BY ASPECT CONSULTING, 2013.

EXPLORATION AND CROSS SECTION LOCATIONS
DUPONT PIONEER AGGRECATES (DNR#70-12668)

APPENDIX A

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

GLACIER NORTHWEST, INC.
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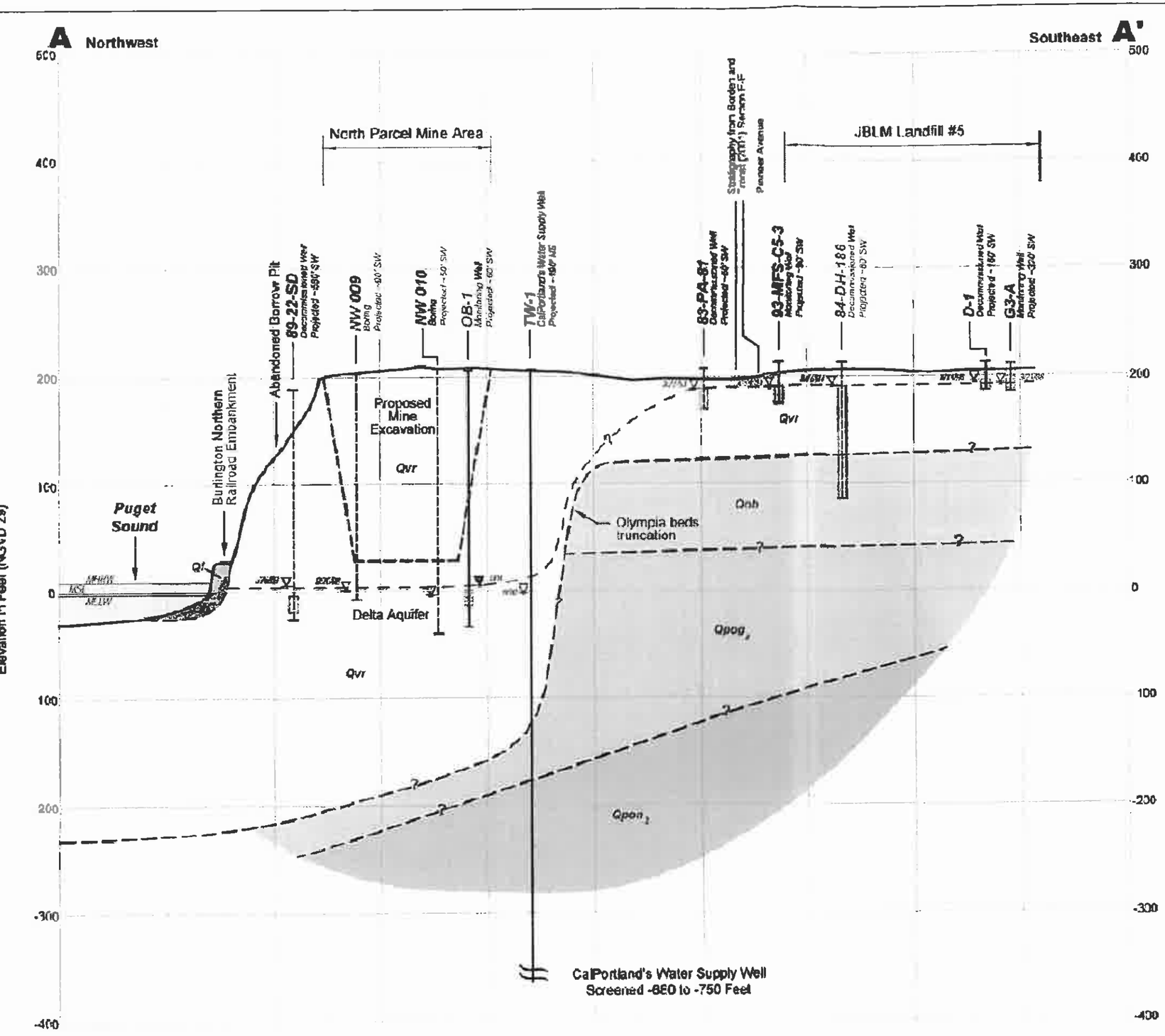
File Name C:\Users\mmiller\appdata\local\temp\AcPublish_5748\CalPortCo-1-02 - Appendix A-B-C-D.dwg | Layout APPENDIX A



Legend

- Measured Static Water Level
- Water Level Observation at Time of Drilling (ATD)
- Monitoring Well Location / Screen Interval
- Boring or Decommissioned Monitoring Well / Former Screen Interval
- Gf (Fill): Artificial fill material emplacement. Likely consists primarily of crushed rock and rip-rap.
- Qb (Beach Deposits): Loose sand and gravel.
- Qvr (Recessional Glacial Outwash): Medium dense to dense, slightly silty to clean sand and gravel, and occasional silty beds. The majority of near-surface Vashon recessional outwash on the site is made up of the Steilacoom Gravel member, which is composed of sandy gravel and gravelly sand, with minor amounts of silt.
- Qob (Olympia Beds): The Olympia Beds Qob unit is generally composed of interbedded lacustrine silt and clay and fluvial deposits.
- Qpog3 (Third Glacial Unit): Very dense to hard sandy and gravelly glacial outwash and till with variable silt content.
- Qpon3 (Third Nonglacial Unit): Very dense to hard fluvial overbank deposits including lowerdor silt, peat sand, and gravelly sand.

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Tidal Elevations (NGVD 1929)

MHHW	5.96 ft
MSL	1.00 ft
MLLW	-6.67 ft

Additional References:

1.) Section E-E' from Borden and Troost (2001)
2.) Section A-A' from Hart Crowser (1991).
3.) Figure 3 from CH2M HILL (2000)
4.) Geologic Map of McNeil Island (Walsh, Logan, and Polenz 2003)

Scale: 1" = 1000' -horiz
1" = 100' Vert
Vertical Exaggeration = 10x

HORIZONTAL 0 1000 2000 (SCALE IN FEET)

VERTICAL 0 100 200 (SCALE IN FEET)

NOTE:
1. MAP BASED ON IMAGE PREPARED BY ASPECT CONSULTING, 2013.

CROSS SECTION A-A'
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

APPENDIX B

GLACIER NORTHWEST, INC.
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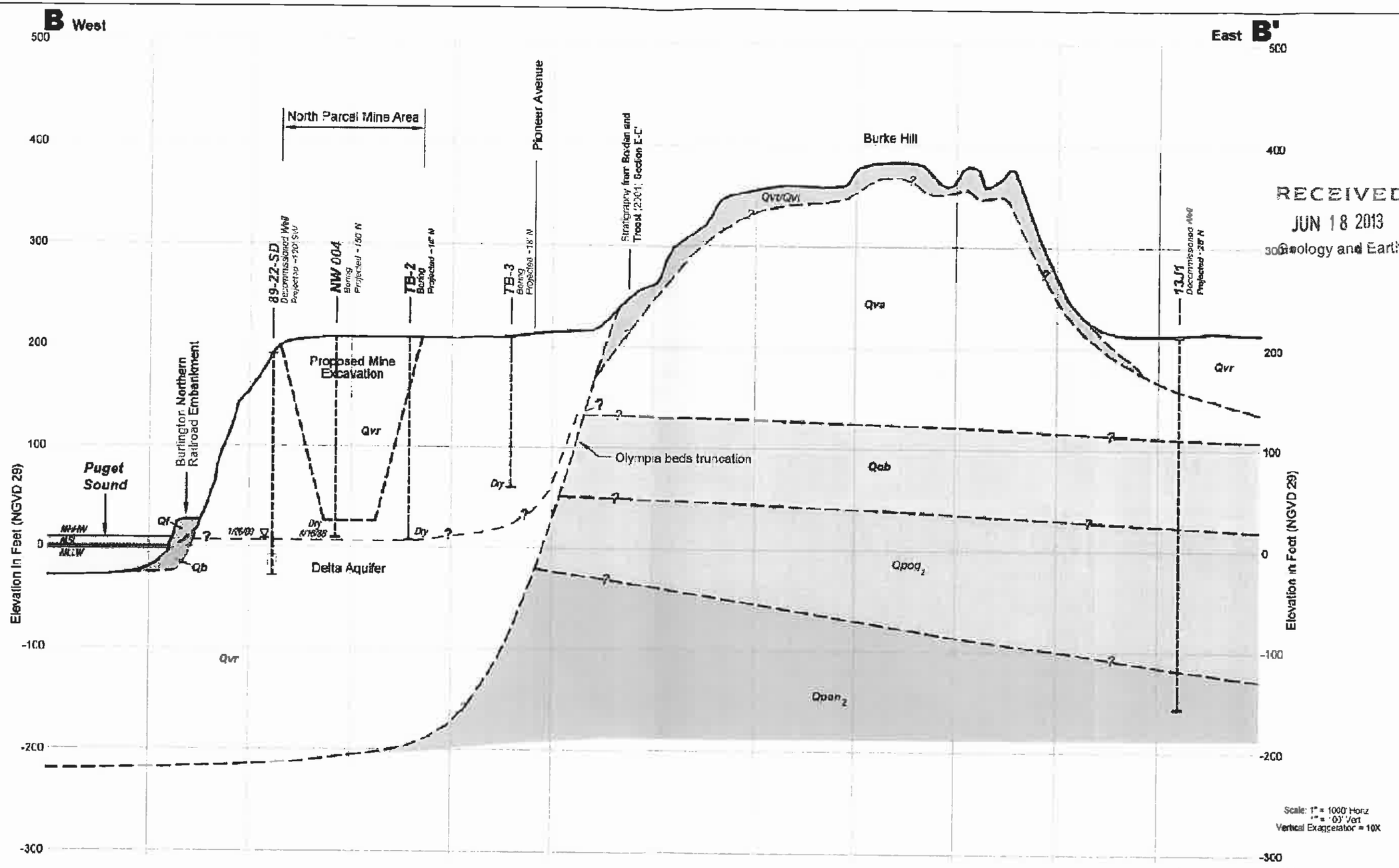

Legend

- Measured Static Water Level
- Water Level Observation at Time of Drilling (ATD)
- Boring or Decommissioned Well — Screen Interval
- Qf (Fill) — Artificial fill railroad embankment. Likely consists primarily of crushed rock and rip-rap
- Qb (Beach Deposits) — Loose sand and gravel
- Qva (Vashon Advance Outwash) — Sand and gravel and lacustrine clay silt and sand of northern source, deposited during Vashon glacial advance
- Qvr (Recessional Glacial Outwash) — Medium dense to dense, slightly silty to clean sand and gravel and indurated silty beds. The majority of near surface Vashon recessional outwash on the site is made up of the Steilacoom Gravel member which is composed of sandy gravel and gravelly sand, with minor amounts of silt
- Qvt/Qvi (Till and Ice Contact Deposits) — Dense to very dense diamicton (mixture of silt, sandy and gravelly lodgment till; ice contact deposits contain water-worked sands and gravels with interbeds and lenses of silty till-like deposits
- Qab (Olympia Beds) — The Olympia beds Qab unit is generally composed of interbedded diatomite, stone silt and clay and fluvial deposits
- Qpoq2 (Third Glacial Unit) — Very dense to hard sandy and gravelly glacial outwash and till with variable silt content
- Qpoa2 (Third Glaciofluvial Unit) — Very dense to hard fluvial sediments deposits including lacustrine silt, peat sand, and gravelly sand

Tidal Elevations (NGVD 1929)

MHHW	5.96 ft
MSL	1.00 ft
MLLW	-5.87 ft

Additional References:

1) Section E-E' from Borden and Troost (2001)
2) Section A-A' from Hart Crowser (1991)
3) Figure 3 from CH2M-HILL (2000)
4) Geologic Map of McNeil Island (Walsh, Logan, and Polenz 2003)

NOTE:
1. MAP BASED ON IMAGE PREPARED BY ASPECT CONSULTING, 2013.

CROSS SECTION B-B'
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

APPENDIX C

GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GeoDesign Inc
1157 3rd Avenue - Suite 220B
Longview, WA 98632
Off 360.700.4803 Fax 360.200.4803

Printed By: mmiller | Print Date: 6/10/2013 3:10:14 PM
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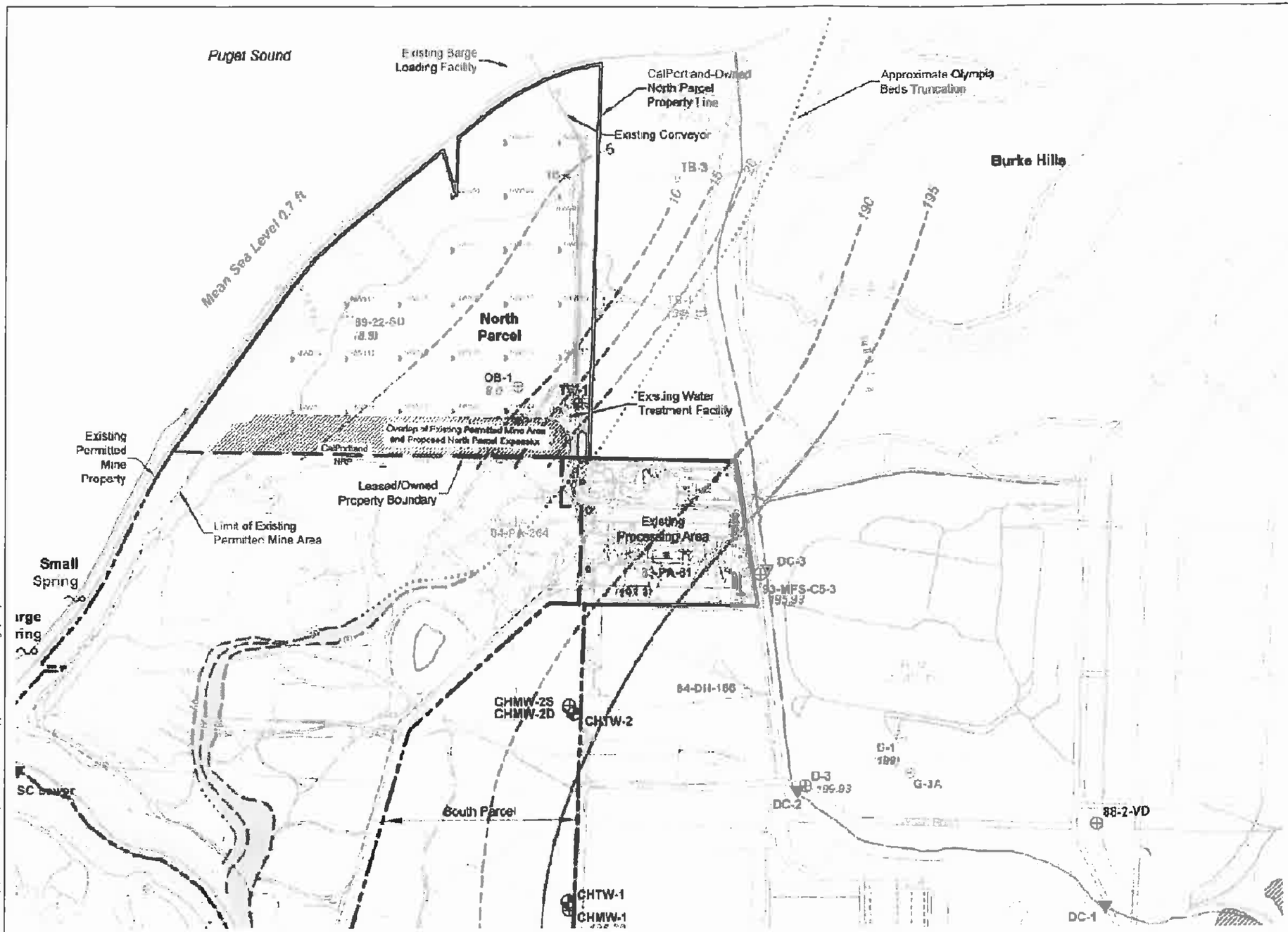


Note:
Elevation Datum NGVD 29

Base Map Sources

1.) Glacier Northwest Mining Facility by ESM Consulting Engineers, June 2003
2.) Northwest Landing Development by ESM Consulting Engineers, June 2002
3.) DuPont Consent Decree Area by ESM Consulting Engineers, April 2004
4.) LBLM by USGS DEM, *Nisqually* and *Fort Lewis*, 1994 and USGS Digital Line Graphs *Hypsography* and *Transportation* Fort Lewis Military Reservation 1073 McNeil Island 1081 Nisqually 1081 and Steilacoom 1060

NOTE:
1. MAP BASED ON IMAGE OBTAINED FROM ASPECT CONSULTING, 2013.

RECEIVED
JUN 18 2013
Geology and Earth

GROUNDWATER ELEVATION CONTOUR MAP
DUPONT PIONEER AGGREGATES (DNR#70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA
SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.

APPENDIX D

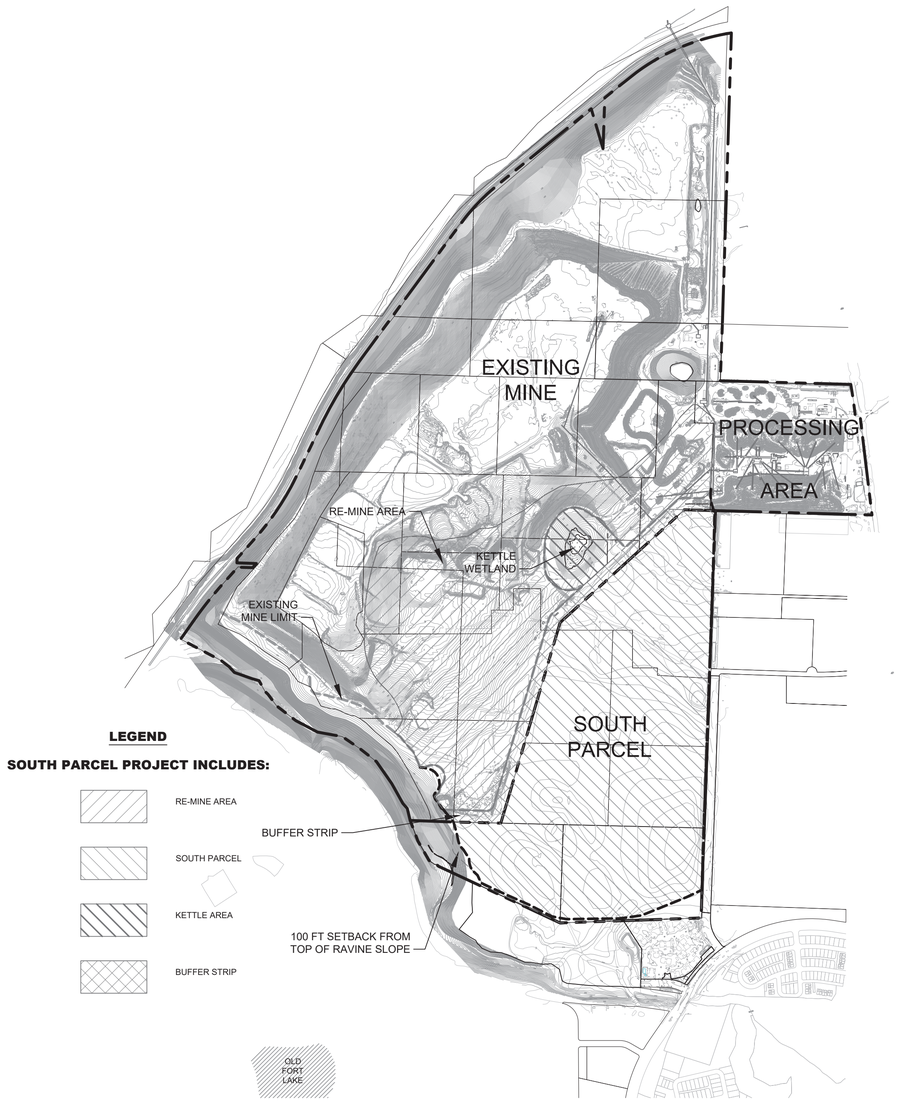
GLACIER NORTHWEST, INC.
DBA CALPORTLAND

CALPORTCO-1-02
JUNE 2013

GEODESIGN INC
1157 3rd Avenue - Suite 2208
Longview, WA 98632
Off 360.200.4803 Fax 360.200.4803

Printed By: mmiller | Print Date: 6/10/2013 3:10:14 PM
File Name: C:\Users\mmiller\appdata\local\temp\AcPublish_5748\CalPortCo-1-02 - Appendix A-B-C-D.dwg | Layout: APPENDIX D

PIONEER AGGREGATES
SOUTH PARCEL PROJECT



VICINITY MAP

TAX ACCOUNT NUMBERS:

SOUTH PARCEL LEASE AREA:
- 0119233011
- 0119233014
- 0119233015
- 0119233016
- 0119233017
- 0119262015
- 0119262016

PROCESSING AREA:
- 0119231005
- 0119232003

EXISTING MINE LEASE AREA:

0119221007	0119224006
0119221008	0119224007
0119221009	0119224008
0119221010	0119224009
0119221011	0119232008
0119221012	0119232009
0119221013	0119232010
0119221014	0119232011
0119221015	0119232012
0119223013	0119233010
0119224004	0119233012
0119221005	

NORTH PARCEL:
- 0119143000
- 0119143001
- 0119221004
- 0119232003
- 0119232006
- 0119154000

LEGAL DESCRIPTION OF 2006 ADDITION TO MINERAL RESOURCE OVERLAY AS MODIFIED IN 2018

THAT portion of Sections 23 and 26, Township 19 North, Range 1 East, W.M., City of DuPont, Pierce County, Washington, being more particularly described as follows:

BEGINNING at the southwest corner of said Section 23, as shown on that exempt segregation as depicted on Record of Survey recorded under Pierce County Recording No. 200609185006;
THENCE 3 88°47'45" E, 500.26 feet:
THENCE N 16°28'48" E, 2207.74 feet:
THENCE N 47°49'56" E, 1770.29 feet:
THENCE 3 88°24'40" E, 329.75 feet to the north-south centerline of said Section 23 as depicted on said exempt segregation;
THENCE along said north-south centerline, S 02°06'11" W, 3353.98 feet to the north quarter corner of said Section 26 as depicted on said exempt segregation:
THENCE 3 01°41'03" W, 949.13 feet to the southeasterly corner of Lot 23 of said exempt segregation;
THENCE along said southerly line, S 87°59'18" W, 1492.66 feet to the southerly corner common to said Lot 23 and Lot 22 of said segregation:
THENCE along the southerly line of said Lot 22, N 65°00'00" W, 897.54 feet:
THENCE N 25°58'31" W, 35.06 feet to the west line of said Section 26 as depicted on said exempt segregation;
THENCE along said west line, N 01°47'33" E, 297.73 feet to the POINT OF BEGINNING.

Containing 172.37 acres, more or less.

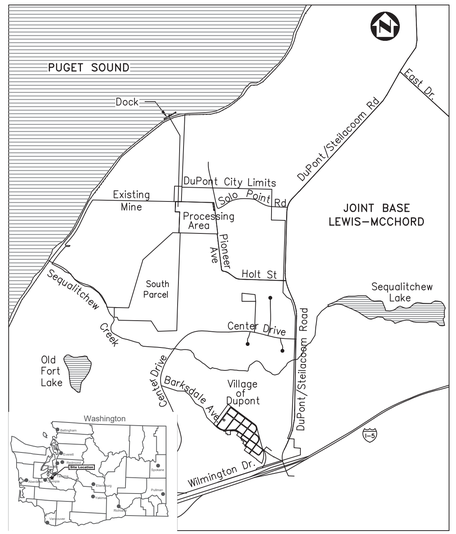
CONTACTS:

OWNER/APPLICANT: CALPORTLAND COMPANY
PETE STOLTZ
(206) 764-3000

AERIAL MAPPING: DAVID C. SMITH & ASSOCIATES, INC.
(503) 232-5285

GROUND SURVEY: ESM CONSULTING ENGINEERS, LLC
(253) 838-8113

ENGINEER: ASPECT CONSULTING, LLC
OWEN REESE, P.E.
(206) 838-5844



LOCATION MAP
NOT TO SCALE

PROJECT AREAS:

SOUTH PARCEL PROJECT:	312.7 AC
EXPANSION AREA:	187.5 AC
KETTLE AREA:	10.8 AC
BUFFER AREA:	9.2 AC
SOUTH PARCEL:	167.5 AC
RE-MINE AREA:	125.2 AC

DISTURBED AREA:

EXISTING MINE LIMIT:	494.8 AC
PROPOSED MINE LIMIT:	620 AC

OVERALL SITE AREAS:

SOUTH PARCEL LEASE:	178 AC
EXISTING MINE LEASE:	360 AC
NORTH PARCEL:	201 AC
PROCESSING AREA:	52 AC

SITE ADDRESS:

4301 PIONEER AVENUE
DUPONT, WASHINGTON 98327

SHEET INDEX:

G1	COVER SHEET AND VICINITY MAP
G2	EXISTING TOPOGRAPHY - 2021
G3	SENSITIVE AREAS
C1	FINAL SITE PLAN
C2	STORMWATER SITE PLAN
C3	CONSTRUCTION SEQUENCE
C4	CROSS SECTIONS
C5	DEWATERING SYSTEM
C6	BERM AND SLOPE DETAILS
C7	EROSION AND SEDIMENT CONTROL PLAN
	LANDSCAPE PLAN (ANCHOR QEA)

OWEN W. REESE III
SIGNED AND SEALED
REGISTERED PROFESSIONAL ENGINEER
38350
STATE OF WASHINGTON
06/09/2022

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/9/2022	OGR

CALPORTLAND

Aspect CONSULTING

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV
PROJECT NUMBER: 040001
REVISION: 1
DATE: JUN-2022

PIONEER AGGREGATES
SOUTH PARCEL PROJECT
COVER SHEET AND VICINITY MAP
CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:
G-1
SHEET 1 OF 11

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2022-06 PlanSet Update\040001-G01-603_r2022.dwg G1 || Date Saved: Jun 20, 2022 10:20pm || User: oreese

DATUM:

HORIZONTAL DATUM: STATE PLANE COORDINATE SYSTEM
WASHINGTON SOUTH ZONE, NAD 83/91,US FEET

VERTICAL DATUM: NGVD 29

MAPPING WAS DESIGNED TO MEET NATIONAL MAP ACCURACY STANDARDS FOR A 1"=100', 2' CONTOUR INTERVAL MAP. DATA INSIDE OBSCURE LINES MAY NOT MEET THIS ACCURACY.

MAPPING FROM AERIAL PHOTOGRAPHY TAKEN ON OCTOBER 30, 2021.

AERIAL MAPPING BY:
DAVID C. SMITH & ASSOCIATES, INC.
PHOTOGRAMMETRIC MAPPING PROFESSIONALS
1734 SE TACOMA ST.
PORTLAND, OR 97202
INFO@DAVIDSMITHMAPPING.COM
(503) 232-5265

06/09/2022
DAVID W. REESE III
EXPIRES: 12/31/2022
38380
REGISTERED PROFESSIONAL ENGINEER
STATE OF WASHINGTON

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/9/2022	OGR

CALPORTLAND

Aspect CONSULTING

DATE: JUN-2022
REVISION: 1
PROJECT NUMBER: 040001
DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

PIONEER AGGREGATES SOUTH PARCEL PROJECT EXISTING TOPOGRAPHY 2021

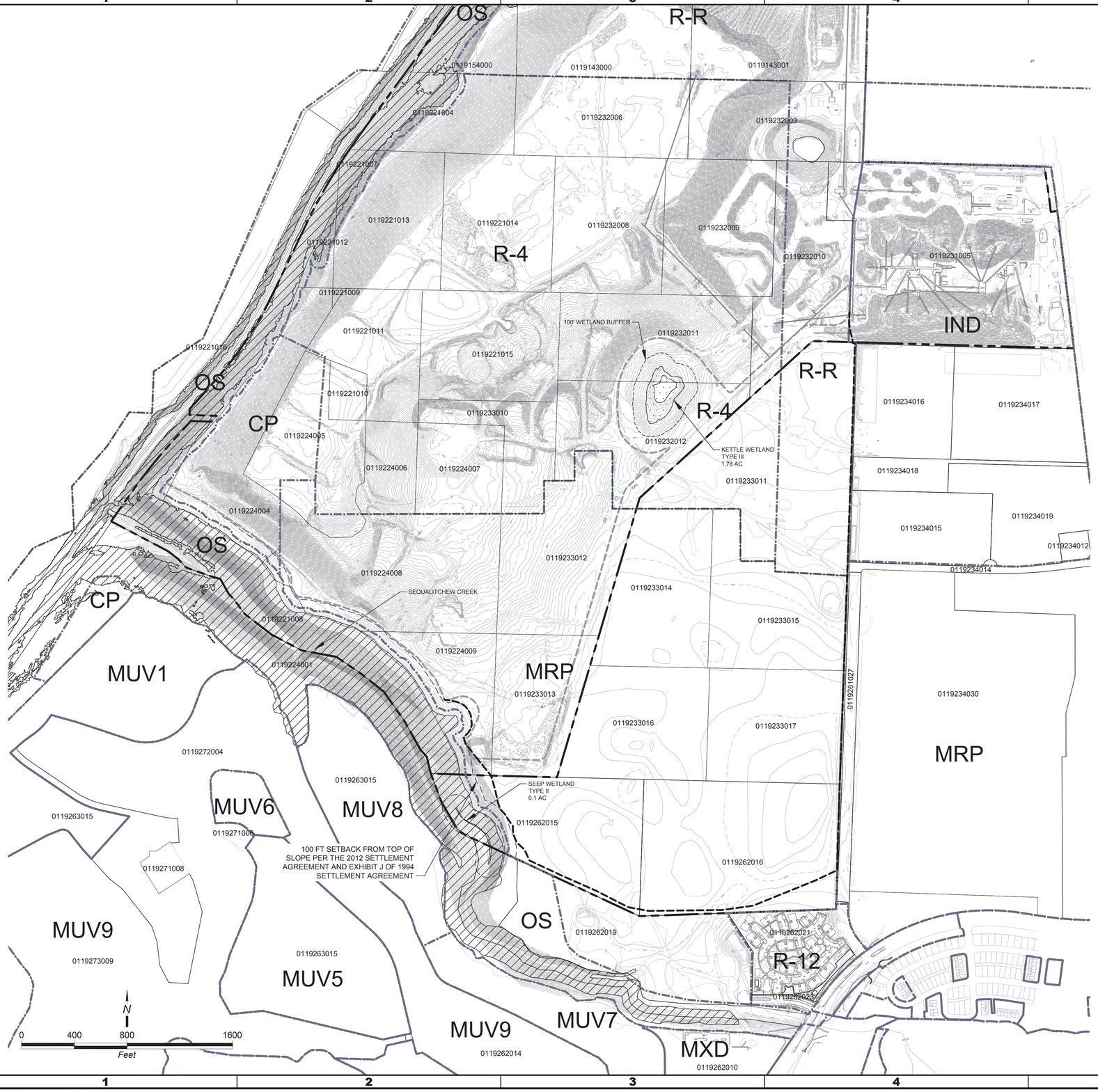
CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:

G-2

SHEET 2 OF 11

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2022-06 PlanSet Update\040001-G02.dwg G2 || Date Saved: Jun 16, 2022 1:47pm || User: cvanslyke



LEGEND

- SITE BOUNDARY
- PARCEL BOUNDARY
- 0119233011 TAX ACCOUNT NUMBER

SENSITIVE AREAS

- WETLAND (TYPE II)
- WETLAND BUFFER
- STREAM
- 100 FT STREAM BUFFER
- 50 FT STEEP SLOPE BUFFER
- GEOLOGICALLY HAZARDOUS AREAS

ZONING

- ZONING BOUNDARY
- MINERAL RESOURCE OVERLAY- 2006 ADDITION
- MRP MANUFACTURING AND RESEARCH
- MUV MIXED USE VILLAGE
- MXD MIXED USE
- R-4 RESIDENTIAL 4
- RR RESIDENTIAL RESERVE
- CP COMMUNITY PARK
- OS OPEN SPACE
- IND INDUSTRIAL
- BTP BUSINESS TECHNICAL PARK
- R-12 RESIDENTIAL 12

NOTES:

1. WETLANDS SHOWN ACCORDING TO WETLAND DELINEATION REPORT (2007) AND ADDENDUM (2018) BY ANCHOR QEA.
2. GEOLOGICALLY HAZARDOUS AREAS SHOWN ACCORDING TO CRITICAL AREA REPORT (ANCHOR QEA AND ASPECT CONSULTING, 2021.)
3. OPEN ZONE WITHIN THE PIONEER AGGREGATE PROPERTY IS BASED ON KNOWN CRITICAL AREAS AND BUFFER DISTANCES. ALL OTHER ZONING BOUNDARIES ARE PER CITY OF DUPONT COMPREHENSIVE PLAN (2019).

06/09/2022
CHRISTOPHER D. WARREESE III
SIGNED
38350
REGISTERED
PROFESSIONAL ENGINEER
STATE OF WASHINGTON

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	8/9/2022	OGR

CALPORTLAND

DESIGNED BY:	OGR/BMG
DRAWN BY:	CMV
REVISED BY:	CMV
PROJECT NUMBER:	040001
REVISION:	1
DATE:	JUN-2022

Aspect CONSULTING

PIONEER AGGREGATES
SOUTH PARCEL PROJECT
SENSITIVE AREAS AND ZONING
DUPONT MINE EXPANSION

CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:

G-3

SHEET 3 *OF* 11

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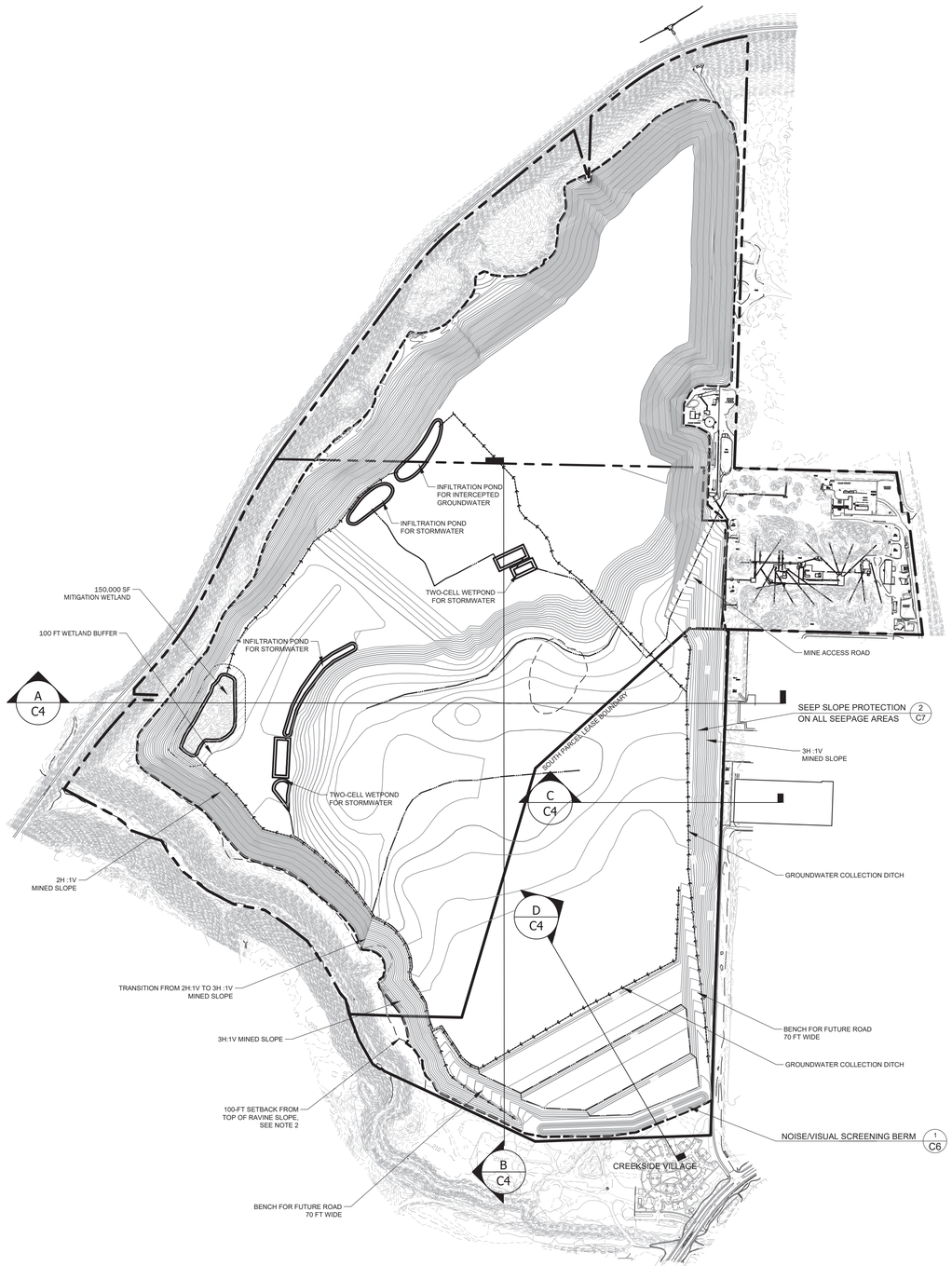

LEGEND

- SITE BOUNDARY
- MINERAL RESOURCE OVERLAY
- PROPOSED MINE LIMITS
- SENSITIVE AREA BUFFER
- STORMWATER DRAINAGE DITCH
- GROUNDWATER COLLECTION DITCH
- STORMWATER MANAGEMENT FACILITY
- 100 PROPOSED MINE CONTOURS

NOTES:

1. NO MINING IS PROPOSED WITHIN 189 FEET OF THE LOCATION OF THE MISSION HISTORICAL SITE, AS DESCRIBED IN EXHIBIT C OF THE 2012 SETTLEMENT AGREEMENT.
2. NO MINING IS PROPOSED WITHIN 100 FEET OF THE TOP OF SLOPE OF THE SEQUALITCHEW CREEK RAVINE IN ACCORDANCE WITH THE 2012 SETTLEMENT AGREEMENT AND EXHIBIT J OF THE 1994 SETTLEMENT AGREEMENT.

N

0 600 1200 2400

Feet

06/09/2022

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/9/2022	OGR

CALPORTLAND

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

Aspect CONSULTING

PROJECT NUMBER: 040001
REVISION: 1
DATE: JUN-2022

FINAL SITE PLAN

CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:
C-1

SHEET 4 OF 11

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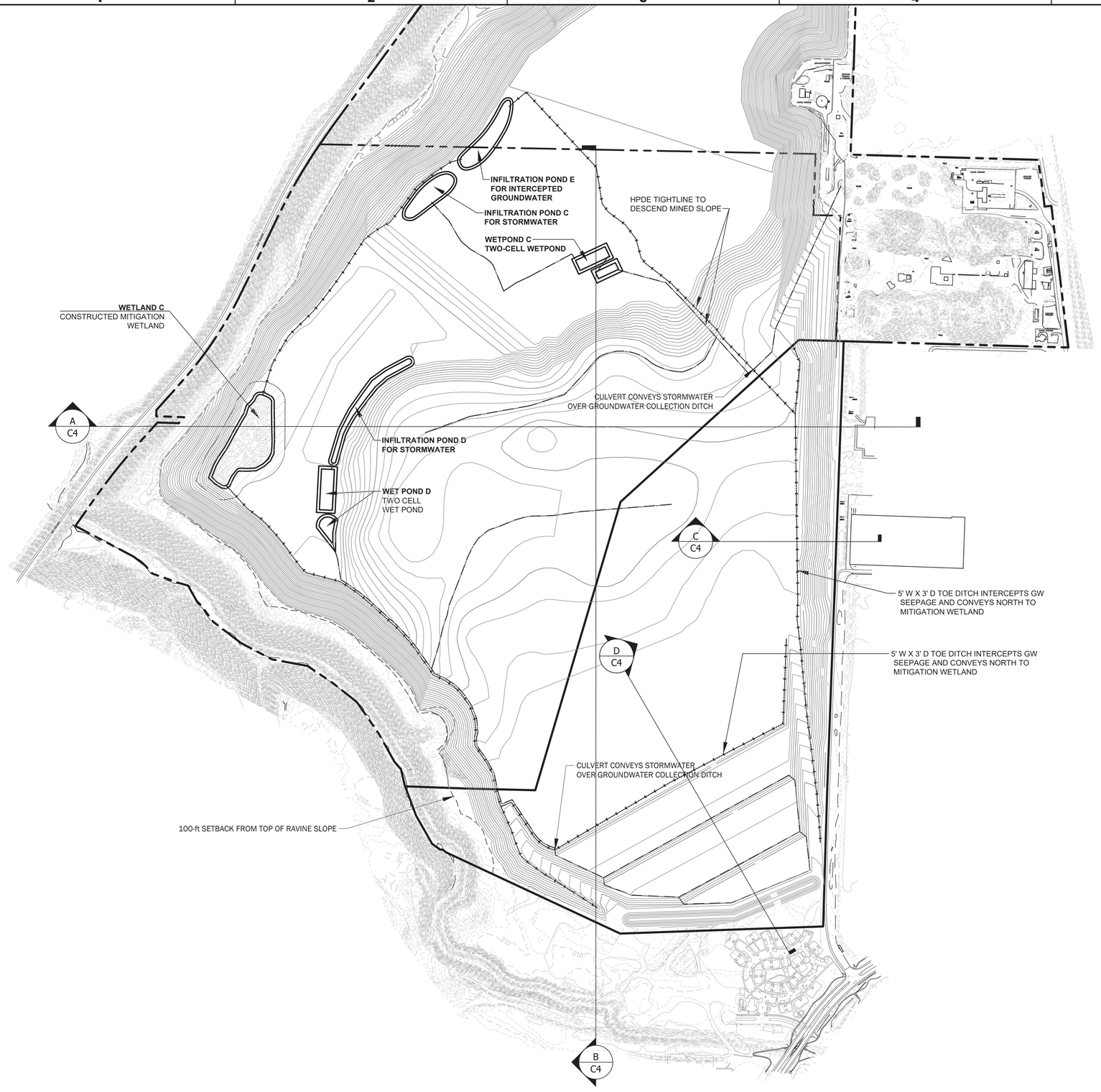


LEGEND

- GROUNDWATER COLLECTION DITCH
- DRAINAGE DITCH
- STORMWATER FACILITY
- 100 PROPOSED MINE CONTOURS

CONVEYANCE NOTES:

1) DITCH LOCATIONS SHOWN ARE BASED ON CURRENT UNDERSTANDING OF SUBSURFACE TOPOGRAPHY. DITCHES WILL BE CONSTRUCTED IN THE FIELD BASED ON CONDITIONS ENCOUNTERED.

2) GRADE MINE FLOOR TO DRAIN TO MAIN DITCHES SHOWN ON PLAN.

3) PERMANENT OR LONG-TERM DITCHES SHALL BE VEGETATED WHERE SLOPE IS LESS THAN 6 PERCENT, COBBLE-LINED WHERE SLOPE IS BETWEEN 6 TO 10 PERCENT, AND RIPRAP-LINED ON STEEPER SLOPES.

WETPOND DIMENSION SCHEDULE

POND	CELL	DEPTH IN FT	VOLUME IN CF
C	1	6	79,704
	2	7	187,614
D	1	6	111,816
	2	7	263,739

INFILTRATION POND DIMENSION SCHEDULE

POND	DESIGN INFILT RATE IN INCH/HR	DEPTH IN FT	BOTTOM AREA IN SF	TOP AREA IN SF
C	8.2	5	50,762	66,748
D	8.1	5	37,655	68,755
E	8.2	6	57,807	82,120

WETPOND AND INFILTRATION POND NOTES:

1) POND LOCATIONS SHOWN ARE BASED ON CURRENT UNDERSTANDING OF SUBSURFACE CONDITIONS. PONDS LOCATIONS MAY CHANGE BASED ON CONDITIONS ENCOUNTERED OR OPERATIONAL NEEDS. RELOCATED PONDS SHALL BE CONSTRUCTED ACCORDING TO THE DIMENSIONS SCHEDULES SHOWN ON THIS SHEET.

2) INFILTRATION PONDS AND WETPONDS SHALL HAVE 3H:1V SIDE SLOPES, EXCEPT FOR WETPOND BERMS WHICH SHALL HAVE 2H:1V SIDE SLOPES AND BE SUBMERGED BY 1 FT.

3) POND DEPTH INCLUDES 1 FOOT OF FREEBOARD, AND 1 FOOT RESERVED FOR SEDIMENT STORAGE IN FIRST CELL OF WETPONDS.

4) VOLUME IS WHEN FULL TO DESIGN WATER SURFACE ELEVATION AND DOES NOT INCLUDE RESERVE FOR SEDIMENT STORAGE.

N

0 400 800 1600

Feet

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/9/2022	OGR

CALPORTLAND

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

Aspect CONSULTING

PROJECT NUMBER: 040001
REVISION: 1
DATE: JUN-2022

STORMWATER SITE PLAN

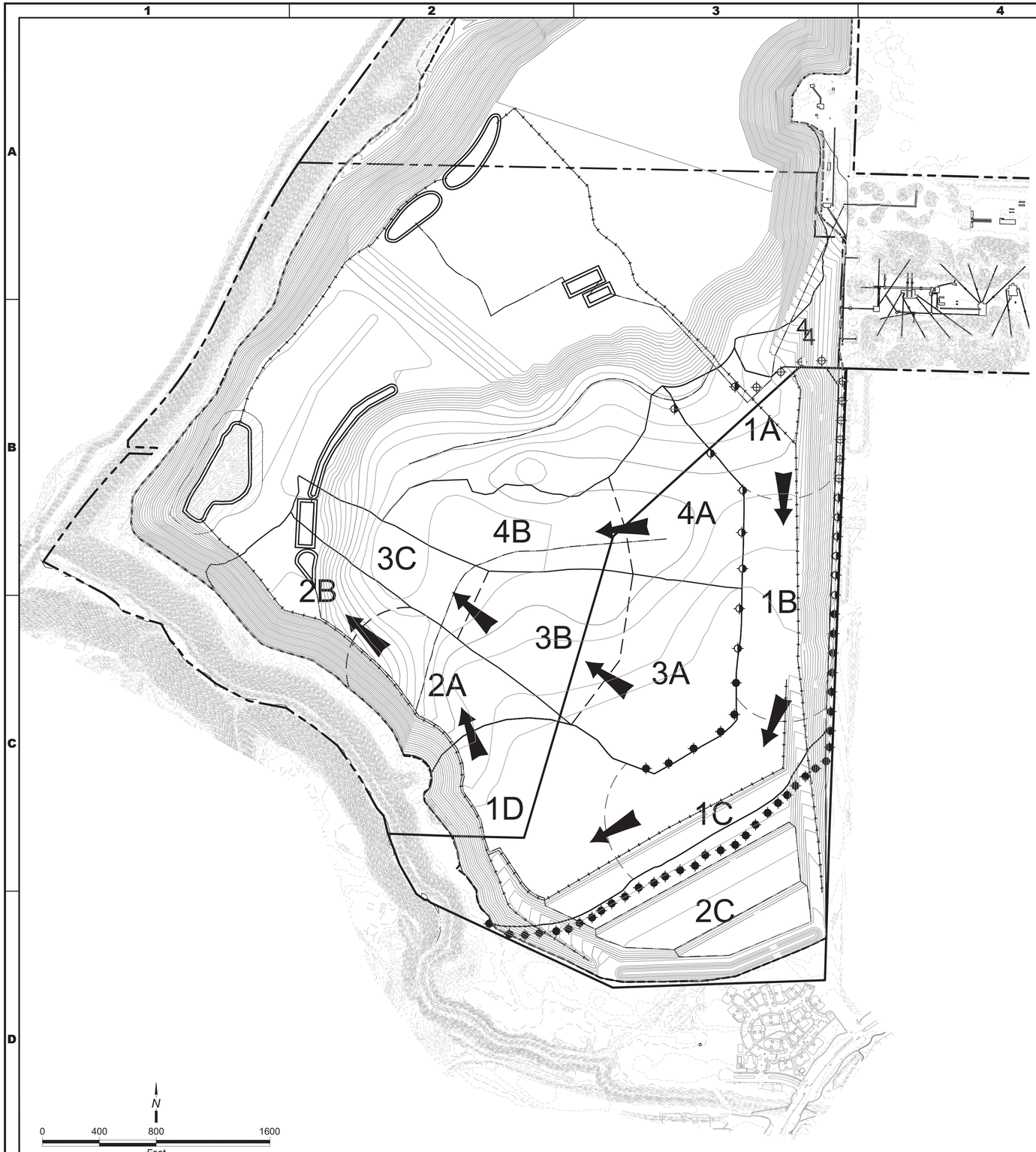
CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:

C-2

SHEET 5 OF 11

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2022-06 PlanSet Update\040001-C01-04-07.dwg C02 || Date Saved: Jun 13, 2022 5:05pm || User: cvanslyke



LEGEND

- 1A — SEQUENCE AREA
- MINE SEGMENT NUMBER
- MINE SEGMENT BOUNDARY
- SEQUENCE AREA BOUNDARY
- MINING SEQUENCE
- PHASE DW-1 DEWATERING WELLS
- PHASE DW-2 DEWATERING WELLS
- PHASE DW-3 DEWATERING WELLS

NOTES:

1. MINING WITHIN EACH SEGMENT WOULD GENERALLY PROCEED ACCORDING TO THE SEQUENCE SHOWN. THIS SEQUENCE DEPICTED ON THIS SHEET REPRESENTS THE BEST ESTIMATE AT THIS TIME. ACTUAL SEQUENCE MAY VARY DEPENDING ON AGGREGATE MARKET CONDITIONS, AND SOIL AND GROUNDWATER CONDITIONS ENCOUNTERED DURING EXCAVATION.

2. SEQUENCE SUBDIVISIONS ARE NOT SHOWN FOR PORTION OF SEGMENTS IN THE EXISTING MINE. MINING WOULD PROGRESS CONCURRENTLY IN THE EXISTING MINE AND EXPANSION AREA SUCH THAT VOLUMES EXTRACTED FROM EACH ARE ROUGHLY EQUAL.

GRADING VOLUMES

TOTAL SAND & GRAVEL EXTRACTED	51.5	MILLION CY CUT
SEGMENT 1	13.7	MILLION CY CUT
EXISTING MINE	6.9	MILLION CY CUT
SOUTH EXPANSION AREA	6.8	MILLION CY CUT
SEGMENT 2	15.0	MILLION CY CUT
EXISTING MINE	9.7	MILLION CY CUT
SOUTH EXPANSION AREA	5.3	MILLION CY CUT
SEGMENT 3	11.4	MILLION CY CUT
EXISTING MINE	8.7	MILLION CY CUT
SOUTH EXPANSION AREA	2.7	MILLION CY CUT
SEGMENT 4	11.4	MILLION CY CUT
EXISTING MINE	9.9	MILLION CY CUT
SOUTH EXPANSION AREA	1.5	MILLION CY CUT
NOISE/VISUAL SCREENING BERM	69,000	CY FILL

CONSTRUCTION SEQUENCE

Mining				Active Dewatering										Stormwater Management		Wetland Mitigation		Monitoring				
					Step 1			Step 2			Step 3			Permanent System								
Mining Segment	Active Mining in Area	Prep. Next Seq. Area	Build Noise/Visual Screening Berm	Construct Pond E	Install	Operate	Shut Off (Stepped)	Install	Operate	Shut Off (Stepped)	Install	Operate	Shut Off (Stepped)	Construct Pond C	Construct Pond D	Construct Wetland	Monitoring & Maintenance	Offsite Wetlands	Sequalitchew Creek	Step 1 Wells	Step 2 Wells	Step 3 Wells
Pre		•		•	•	•								•				•	•	•		
1	A	•				•		•	•							•		•	•	•	•	
	B	•					•		•		•	•					•	•	•	•	•	•
	C	•	•						•	•		•					•	•	•		•	•
	D	•								•		•					•	•	•			•
2	A	•											•				•	•	•			•
	B	•											•		•		•	•	•			•
	C	•															•	•	•			
3	A	•															•	•	•			
	B	•															•	•	•			
	C	•															•	•	•			
4	A	•															•	•	•			
	B																•	•	•			
Post																	•	•	•			

NOTES:
1. CONSTRUCTION SEQUENCE DEPICTED IN THIS TABLE REPRESENTS THE BEST ESTIMATE AT THIS TIME. ACTUAL SEQUENCE MAY VARY DEPENDING ON AGGREGATE MARKET CONDITIONS, AND SOIL AND GROUNDWATER CONDITIONS ENCOUNTERED DURING EXCAVATION.
2. RECLAMATION PHASES ROUGHLY CORRESPOND TO MINING SEGMENT. FOR EXAMPLE, THE MINE FLOOR IN SUB-SEGMENT 2C WOULD BE RECLAIMED WHILE MINING SUB-SEGMENT 3A.
3. POST-MINING MONITORING WILL CONTINUE AS DESCRIBED IN THE MONITORING PLAN.
4. ACTIVITIES MARKED WITH • ARE OCCURRING CONCURRENTLY WITH MINING IN THE INDICATED SEGMENT AND SEQUENCE AREA.

06/09/2022
EDWARD W. REESE III
WASHINGTON
38580
REGISTERED PROFESSIONAL ENGINEER
CALMO PROFESSIONAL ENGINEERS

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/9/2022	OGR

CALPORTLAND

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

Aspect CONSULTING

PROJECT NUMBER: 040001
REVISION: 1
DATE: JUN-2022

CONSTRUCTION SEQUENCE

CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:
C-3
SHEET 6 OF 11

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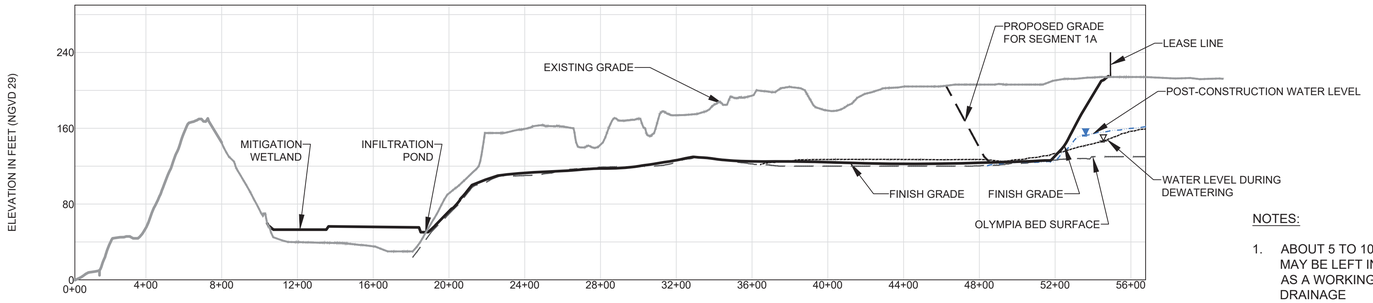


SECTION A

A / C1

0 400 800 1200

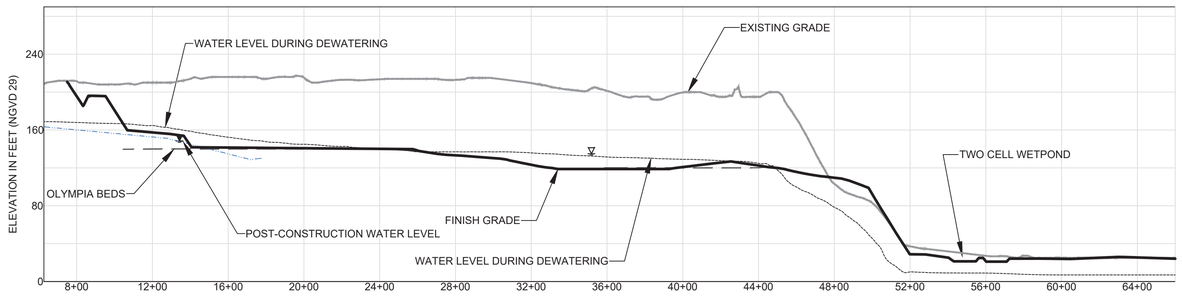
1" = 400'

HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION x 5

NOTES:

1. ABOUT 5 TO 10 FEET OF NATIVE SAND AND GRAVEL MAY BE LEFT IN PLACE ABOVE THE OLYMPIA BEDS AS A WORKING SURFACE AND TO FACILITATE DRAINAGE

SOUTH NORTH



SECTION B

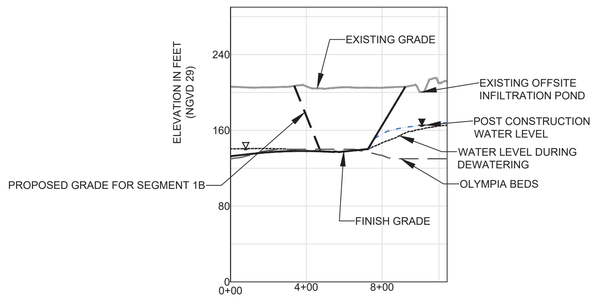
B / C1

0 400 800 1200

1" = 400'

HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION x 5

WEST EAST



SECTION C

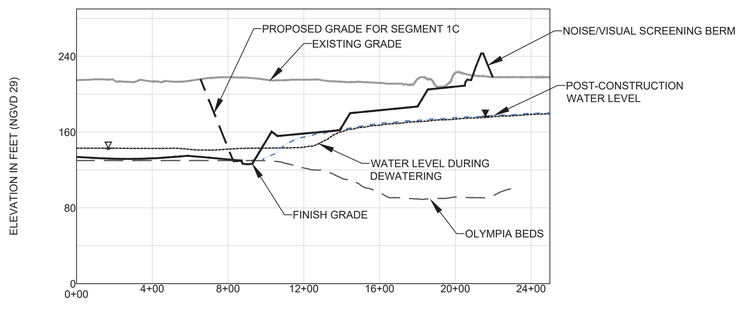
C / C1

0 400 800 1200

1" = 400'

HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION x 5

NORTHWEST SOUTHEAST



SECTION D

D / C1

0 400 800 1200

1" = 400'

HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION x 5

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/6/2022	OGR

CALPORTLAND

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

Aspect CONSULTING

PROJECT NUMBER: 040001
REVISION: 1
DATE: JUN-2022

PIONEER AGGREGATES SOUTH PARCEL PROJECT CROSS SECTIONS

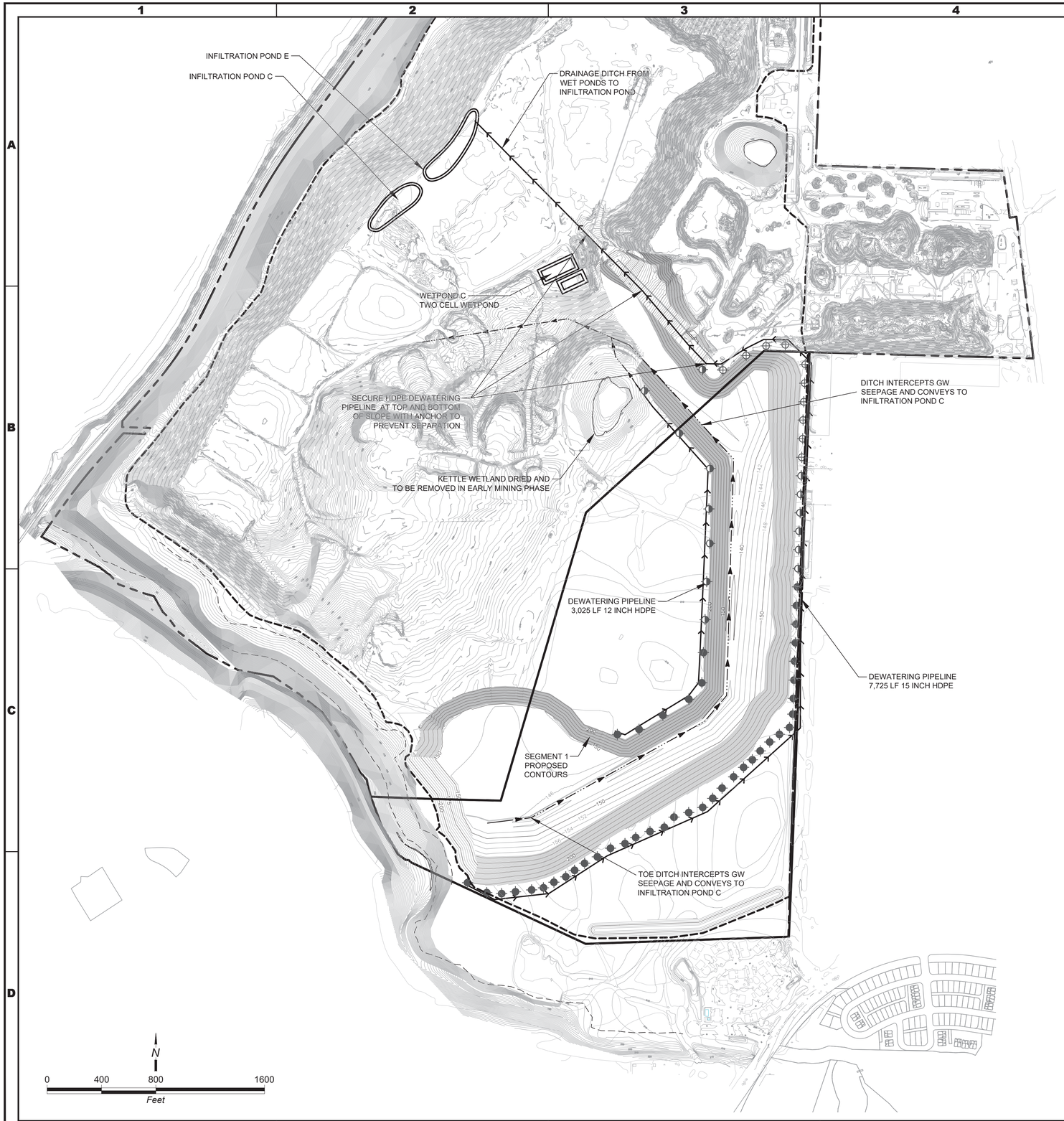
CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:

C-4

SHEET 7 OF 11

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2022-06 PlanSet Update\040001-C01-04-07.dwg C04 || Date Saved: Jun 13, 2022 5:07pm || User: cvanslyke



LEGEND

- DEWATERING WELLS ADDED IN STEP 1 (10)
- DEWATERING WELLS ADDED IN STEP 2 (14)
- DEWATERING WELLS ADDED IN STEP 3 (42)
- DRAINAGE DITCH
- DEWATERING PIPELINE

DEWATERING DISCHARGE TO POND E

PHASE	TOTAL WELLS INSTALLED	AVG. ANNUAL FLOW IN CFS
1 - INITIAL PUMPING TEST	10	3.6
2 - PREPARATION FOR MINING / EXPANDED DEWATERING TEST	24	5.2
3 - ACTIVE DEWATERING DURING MINING	66	6.9

NOTES:

1. FLOW ESTIMATES BASED ON GROUNDWATER MODELING DESCRIBED IN ASPECT CONSULTING'S GROUNDWATER MODELING REPORT (2017).

06/09/2022
CRAIG M. REESE III
38350
REGISTERED PROFESSIONAL ENGINEER
STATE OF WASHINGTON

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/9/2022	OGR

CALPORTLAND

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

Aspect CONSULTING

PROJECT NUMBER: 040001
REVISION: 1
DATE: JUN-2022

PIONEER AGGREGATES SOUTH PARCEL PROJECT DEWATERING SYSTEM

CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:

C-5

SHEET 8 OF 11

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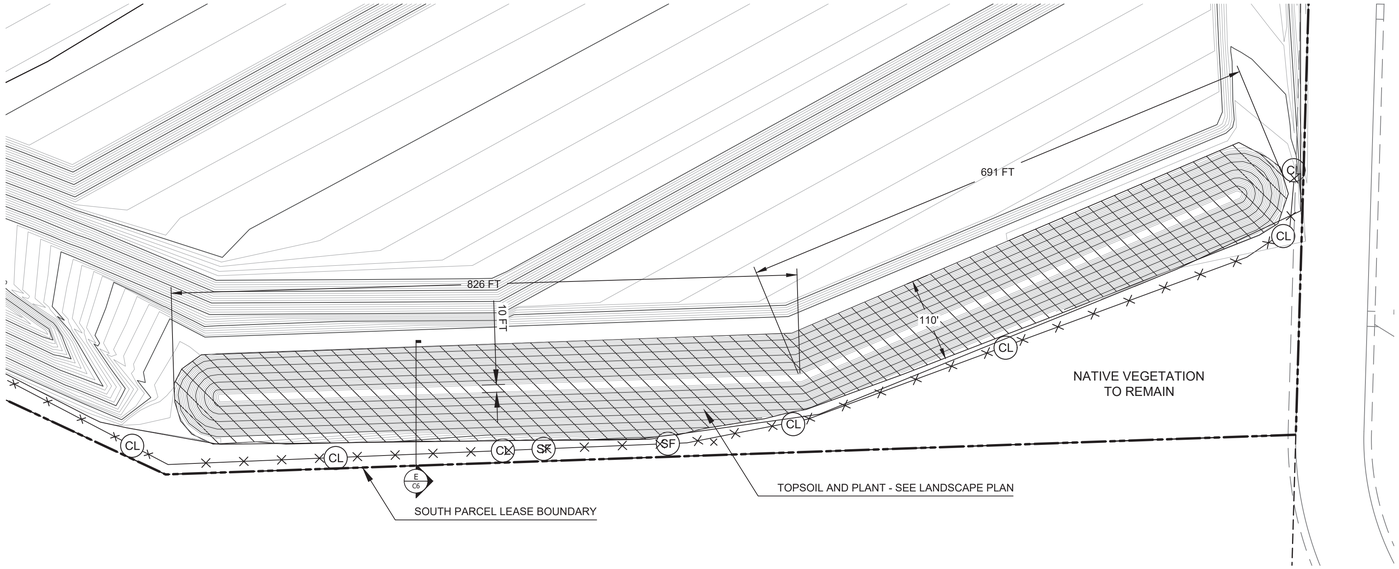


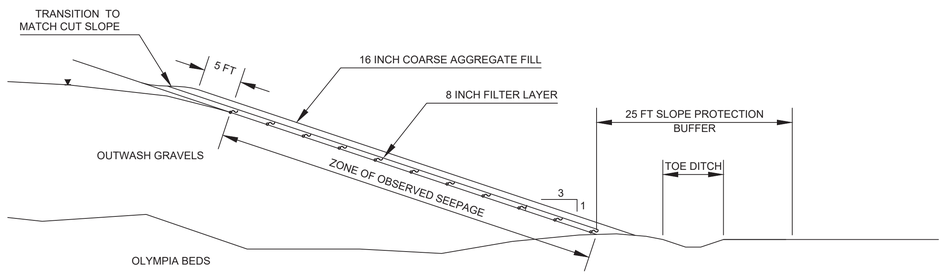
NOISE/VISUAL SCREENING BERM DETAIL

SCALE: 1" = 100'

1 / C6

EROSION AND SEDIMENT CONTROL

- CL — CLEARING LIMITS
- SF — SILT FENCE
- TOPSOIL AND PLANT PER LANDSCAPE PLAN (ANCHOR QEA, 2022)



SLOPE PROTECTION AT SEEPS

SCALE: 1" = 100'

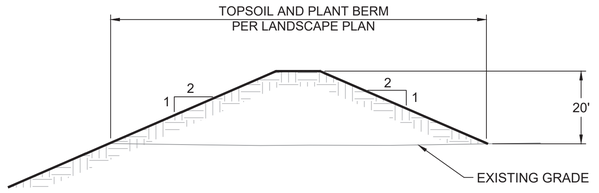
2 / C6

SLOPE PROTECTION SPECIFICATIONS:

1) PLACE SEEP SLOPE PROTECTION IN ALL AREAS OF EASTERN MINE SLOPE WITH OBSERVED SEEPS OR SPRINGS AFTER DEWATERING WELLS HAVE BEEN TURNED OFF. SEEP SLOPE PROTECTION SHALL EXTEND A MINIMUM OF 5 FEET ABOVE AND TO THE SIDES OF OBSERVED SEEPAGE.

2) SEEP SLOPE PROTECTION CONSISTS OF:
   A) 8 INCH FILTER LAYER CONSISTING OF COARSE SAND\FINE GRAVEL. FILTER LAYER SPECIFICATIONS SHALL BE DETERMINED BASED ON GRAIN SIZE OF THE EXPOSED NATIVE MATERIAL ACCORDING TO THE FOLLOWING EQUATIONS:
      D50filter < 25 * D50native
      D15filter < 5 * D85native
   B) 16 INCH LAYER OF CLEAN, WELL-GRADED AGGREGATE FILL.
   C) TOPSOIL AND VEGETATION PER WETLAND MITIGATION PLAN.

3) WHERE SPRINGS OR CONCENTRATED FLOW ARE PRESENT, PLACE COBBLE ARMOR INSTEAD OF TOPSOIL AND VEGETATION.



SECTION - NOISE/VISUAL SCREENING BERM

Scale: 1" = 20'

E / C6

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/6/2022	OGR

CALPORTLAND

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

PROJECT NUMBER: 040001
REVISION: 1
DATE: JUN-2022

Aspect CONSULTING

BERM AND SLOPE DETAILS

CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:

C-6

SHEET 9 OF 11

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2022-06 PlanSet Update\040001-C06.dwg C06 || Date Saved: Jun 30, 2022 3:07pm || User: oreese

LEGEND

- SITE BOUNDARY
- SENSITIVE AREA BUFFER
- DRAINAGE DITCH
- STORMWATER MANAGEMENT FACILITY
- 100 — PROPOSED MINE CONTOURS

ESC ZONES

INTERNALLY DRAINING AREA

ESC PROVIDED BY RECLAMATION ACTIVITIES
SEE RECLAMATION PLAN (ECOLOGICAL LAND SERVICES, 2007)

NOISE/VISUAL SCREENING BERM

SEE SHEET C6

NOTES:

1) BMPS SHALL BE IMPLEMENTED ACCORDING TO THE APPLICABLE ELEMENTS OF THE BMP DESCRIPTIONS IN THE 2012 ECOLOGY STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON AS AMENDED IN DECEMBER 2014, AS APPROPRIATE FOR A MINE SITE AND THE EROSION RISK IN EACH ESC ZONE.

2) SEE CSWPPP BY ASPECT CONSULTING (2020) FOR ADDITIONAL DETAIL REGARDING BMP IMPLEMENTATION.

N

0 400 800 1600

Feet

06/09/2022

REV.	DESCRIPTION	DATE	APPR.
1	REVISED TO ADDRESS CITY OF DUPONT LUPA COMMENTS	6/9/2022	OGR

CALPORTLAND

DESIGNED BY: OGR/BMG
DRAWN BY: CMV
REVISED BY: CMV

Aspect CONSULTING

DATE: JUN-2022
REVISION: 1
PROJECT NUMBER: 040001

EROSION AND SEDIMENT CONTROL PLAN

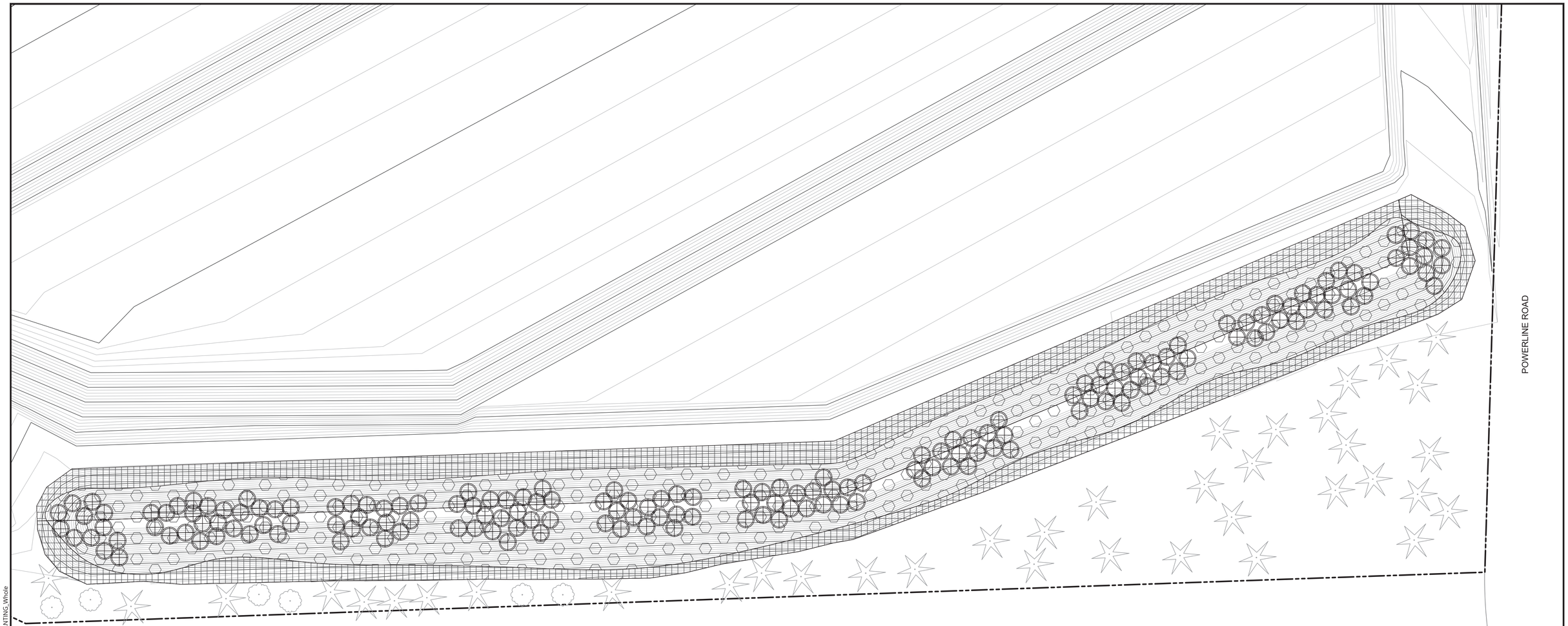
CalPortland
DuPont, Washington

SHEET REFERENCE NUMBER:

C-7

SHEET 10 OF 11

CAD Path: Q:\CalPortland\040001 DuPont Hydrologic Study\2022-06 PlanSet Update\040001-C01-04-07.dwg C07 || Date Saved: Jun 13, 2022 5:10pm || User: cvanslyke



PLANTING SCHEDULE					
COMMON NAME	**SPECIES NAME**	**SIZE**	**SPACING**	**REMARKS**	**QUANTITY**
TREES					
Douglas fir	*Pseudotsuga menziesii*	2 gal.	AS SHOWN	PROVIDE MULCH RING	175
SHRUBS/GROUNDCOVERS					
Snowberry	Albus symphoricarpos	1 gal.	6' O.C.	PROVIDE MULCH RING	1000
Serviceberry	Amelanchier grandifolia	1 gal.	6' O.C.		1000
Oceanspray	Holodiscus discolor	1 gal.	6' O.C.		1000
Kinnickinnick	Arctostaphylos uva-ursi	6" Pot	2' O.C.		2500
Coastal Strawberry	Fragraria chiloensis	6" Pot	2' O.C.		2500
WILDFLOWER SEED MIX					
NORTHWEST MEADOWSCAPES NORTHWEST PRAIRIE MIX OR APPROVED EQUAL, APPLY AS HYDROSEED WITH MULCH, FERTILIZER AND TACKIFIER ACCORDING TO SUPPLIERS RECOMENDATIONS					

LEGEND:

- PROPOSED CONTOURS (1' AND 5' INTERVAL)
- PROPERTY LINE
- EXISTING TREE, DECIDUOUS (APPROXIMATE)
- EXISTING TREE, CONIFEROUS (APPROXIMATE)

NOTES:

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE SOUTH ZONE, NAD83, U.S. SURVEY FEET
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

MONITORING PLAN

1. REMOVE ALL INVASIVE SPECIES, INCLUDING BLACKBERRY, SCOTCH BROOM, ETC. THAT THREATEN THE SUCCESSFUL ESTABLISHMENT OF PLANTINGS AT LEAST ONCE ANNUALLY
2. INSPECT ALL PLANTS ANNUALLY BETWEEN AUGUST 15 AND SEPTEMBER 30.
3. REMOVE DYING OR DEAD PLANTS.
4. REPLACE ALL REMOVED PLANTS BETWEEN OCTOBER 15 AND DECEMBER 15 OF THE SAME YEAR THEY WERE REMOVED.
5. IF SURVIVAL IS LESS THAN 80% IN YEAR TWO OR LATER, DEVELOP PLAN TO ADDRESS MORTALITY BY ADDING TEMPORARY IRRIGATION, DEER FENCING OR TAKING OTHER SIMILAR ACTIONS TO ADDRESS THE CAUSE(S) OF MORTALITY.
6. ONCE 80% COVERAGE OF TREES, SHRUBS AND GROUNDCOVER OR >95% SURVIVAL IS ACHIEVED DISCONTINUE MONITORING.

NORTH

0 50 100

SCALE IN FEET

NOT FOR CONSTRUCTION

PLAN INTENDED TO BE VIEWED IN COLOR, ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

Aspect CONSULTING

CALPORTLAND

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: CH
DRAWN BY: CH
CHECKED BY: JS
APPROVED BY: JS
SCALE: AS NOTED
DATE: JUNE 2022

CALPORTLAND DUPONT BERM CONSTRUCTION

BERM PLANTING PLAN - WHOLE BERM

N/A

SHEET # **11 of 11**

K:\Projects\0217-CalPortland\DuPont Aggregates South Parcel\0217-WK-003 (Berm Planting)\dwg PLANTING_Whole

Jun 29, 2022 4:11pm chewett

Attachment 4.b

August 2021
Pioneer Aggregates South Parcel Project

ANCHOR QEA

Landmark Tree Inventory Report

Prepared for CalPortland

August 2021
Pioneer Aggregates South Parcel Project

Landmark Tree Inventory Report

Prepared for
CalPortland – DuPont Plant
4301 Pioneer Avenue
DuPont, Washington 98327

Prepared by
Anchor QEA, LLC
1201 3rd Avenue, Suite 2600
Seattle, Washington 98101

Project Number: 190217-01.01
ND: 10552.09402 4843-8920-1864v1

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4 Landmark Tree Inventory Results 4

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Table 3 Summary of Impacts to Landmark Trees within Expansion Area Parcels 6

Table 4 Tree Replacement Summary for All Trees 8

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FIGURES

Figure 1 Vicinity Map

Figure 2 Landmark Trees Within South Parcel Project Area

APPENDICES

Appendix A Weyerhaeuser Pathologist Report

Appendix B Tree Survey Data

ABBREVIATIONS

City	City of DuPont
dbh	diameter at breast height
DMC	City of DuPont Municipal Code
MRO	Mineral Resource Overlay
Project	South Parcel Expansion Project

1 Introduction

CalPortland operates the Pioneer Aggregates Mine facility in DuPont, Washington (Figure 1). CalPortland is proposing an expansion of the mine to the south, known as the South Parcel Project (Project), within the City of DuPont's (City's) designated Mineral Resource Overlay (MRO) District.

The South Parcel Project includes mining within areas previously undisturbed by mining (termed the "Expansion Area") and mining deeper within a portion of the existing mine, referred to as the "Re-Mine Area." The Expansion Area is approximately 188 acres and is composed of three subareas (see Figure 2). The Kettle Area is a 10.8-acre previously undisturbed area. The 9.2-acre Buffer Strip is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the South Parcel. The South Parcel is 168 acres located southeast of the original mine and inside the Mineral Resource Overlay area in the City of DuPont's adopted Comprehensive Plan. Approximately 126 acres within the 168-acre South Parcel are forested.

All areas to be cleared and mined are within the City's Comprehensive Plan MRO area. The purpose of an MRO designation is to implement the Growth Management Act, the Surface Mining Act, and the DuPont Comprehensive Plan by designating commercially viable mineral resources where they occur and allowing for extraction of resources from those areas (DMC 25.60.010).

This report is prepared to inform decisions made regarding tree retention requirements under DMC 25.120, to the extent DMC 25.120.030 is applicable to land and trees within the City's designated mineral Resource Overlay area.

Typical development projects are required to retain a certain number of trees within the tax parcel being developed. The proposed South Parcel Project includes activity on multiple tax parcels. For this report, landmark trees were inventoried within a study area that included all the tax parcels where work is proposed. For this reason landmark trees are counted that would be removed from the proposed Re-Mine Area and landmark trees in the buffer area adjacent to the Re-Mine Area are counted as retained. Similarly, landmark trees that would be removed from the proposed Expansion Area and landmark trees that would be retained within the buffer adjacent to the Expansion Area are inventoried.

Landmark trees in the Re-mine area and the expansion area are counted separately in this report because City permits for the existing mine authorize removal of trees from the Re-mine area and not the expansion area.

2 Tree Survey Methods

The City of DuPont Municipal Code (DMC) defines a "landmark tree" as "an existing healthy, well-formed tree which poses no safety hazard due to potential collapse," and that is of the following species, trunk type, and minimum diameter measured at breast height (dbh) (Table 1). See DMC 25.10.120.005.

Table 1
Landmark Tree Criteria

Trunk Type	Species	
	Oregon White Oak, Pacific Yew, or Madrone (dbh, inches)	**Douglas Fir, Western Red Cedar, Western Hemlock, or Bigleaf Maple (dbh, inches)**
Single Trunk	24	30
Multi-Trunk (sum of diameters)	30	45

A landmark tree inventory was conducted by a two-person team over 6 days in October 2019 and 1 day in September 2020. The team was led by Anchor QEA Biologist and Certified Arborist Joseph Pursley (International Society of Arboriculture PN-7486A). Trees meeting the species and stem size criteria for landmark trees (Table 1) were evaluated visually to determine if they met the health and form standard defined for landmark trees in the DMC.

Trees that did not exhibit apparent evidence of insect damage, woodpecker damage, rot, dwarf-mistletoe, or other similar tree ailments were considered healthy. Well-formed trees do not have broken leaders, significant wind damage, or exhibit irregular growth, including conifers with multiple stems.

All healthy and well-formed trees meeting the size criteria were marked with high-visibility spray paint, and a numbered aluminum tag was placed on the north side of the tree stem. For multi-trunk and multi-stemmed landmark trees, only one numbered tag was used. The location of each tagged and numbered tree was recorded using a Trimble differential global positioning system. Information collected at each tagged and numbered tree included the dbh of each stem, tag number, and species.

Available maps of Oak Management Units in the city and aerial photographs were also reviewed. Aerial photographs reveal that much of the Study Area was thinned and that many of the larger trees were removed between 1990 and 2002. Oak Management Unit (OMU) No. 14 lies within the Study Area, and one Oregon white oak that meets the City's Landmark tree criteria was found within OMU-14.

3 Health of Trees Observed

Poorly formed and unhealthy trees, including trees with damaged stems, broken leaders, insect damage, woodpecker damage, evidence of rot, dwarf-mistletoe, and other tree ailments, are prevalent in the study area. Most of the trees within the Study Area that met the landmark size criteria could not be deemed landmark trees because they are unhealthy, damaged, or otherwise poorly formed.

Historical aerial photographs suggest this is a naturally recruited, fairly even-aged stand established on previously logged property. The most common causes of poor health observed were insect damage, including bark beetle, and brown cubical rot. Most of the poorly formed trees appeared to have significant wind damage, resulting in loss of significant branches and lost leaders of conifers. Crowding under the closed canopy has also resulted in many specimens that are oddly formed in response to competition for sunlight.

4 Landmark Tree Inventory Results

The Study Area inventoried for landmark trees included the complete tax parcels that will be affected by mining of the Expansion Area and the Re-Mine Area. As summarized in Tables 2A and 2B and depicted in Figure 2, 141 trees within the Study Area met the landmark tree criteria of size, species, health, and form (Appendix B).

Table 2A
Summary of Landmark Trees Within the Expansion Area Tax Parcels

Common Name	Scientific Name	Total Trees	Trees in Expansion Area	Trees in Adjacent Buffer
Bigleaf maple	*Acer macrophyllum*	2	**-**	2
Douglas fir	*Pseudotsuga menziesii*	81	**73**	8
Pacific madrone	*Arbutus menziesii*	1	**1**	-
Pacific yew	*Taxus brevifolia*	1	**1**	-
Western red cedar	*Thuja plicata*	10	**1**	9
Total non-Oak		**95**	**-**	**-**
Oregon white oak	*Quercus garryana*	13	**13**	-
Total		**108**	**89**	**19**

Table 2B
Summary of Landmark Trees Within the Re-Mine Area Tax Parcels

Common Name	Scientific Name	Total Trees	Trees in Re-Mine Area	Trees in Adjacent Buffer
Bigleaf maple	*Acer macrophyllum*	-	-	-
Douglas fir	*Pseudotsuga menziesii*	15	1	14
Pacific madrone	*Arbutus menziesii*	1	-	1
Pacific yew	*Taxus brevifolia*	2	-	2
Western red cedar	*Thuja plicata*	8	1	7
Total non-Oak		**26**	**-**	**-**
Oregon white oak	*Quercus garryana*	7	2	5
Total		**33**	**4**	**29**

5 Landmark Tree Impacts

This evaluation of landmark tree impacts focuses on the landmark trees removed from the Expansion Area parcels because tree removal within the Re-Mine Area is authorized under existing permits. Table 3 lists the total number of landmark trees within the Expansion Area tax parcels that will be retained and the number that will be removed, by species.

Table 3
Summary of Impacts to Landmark Trees within Expansion Area Parcels

	Oregon white oak (*Quercus garryana*)	**Big Leaf Maple (*Acer macrophyllum)***	**Douglas fir (*Pseudotsuga menziesii*)**	**Pacific madrone (*Arbutus menziesii*)**	**Pacific yew (*Taxus brevifolia*)**	**Western red cedar (*Thuja plicata*)**	**Total Trees**
Trees Removed (under this request)	13	0	73	1	1	1	89
Trees Retained	0	2	8	0	0	9	19
Total Landmark Trees	**13**	**2**	**81**	**1**	**1**	**10**	108

Note: No western hemlock (*Tsuga heterophylla*) that meet landmark tree criteria are present on the Expansion Area parcels.

6 Landmark Tree Replacement Plan

The Surface Mine Reclamation Act (RCW 78.44) gives the Washington Department of Natural Resource (DNR) exclusive regulatory authority over surface mine reclamation in the state and requires miners to leave property in a condition suitable for its subsequent use following the completion of mining. The reclamation requirements are intended to address landscape concerns on the scope and scale appropriate for mining operations and are consistent with the purpose or intent of the City's landmark tree ordinance.

CalPortland successfully plants trees on the slopes of the existing mine as part of their ongoing mine reclamation program and in compliance with the Surface Mine Reclamation Act (RCW 78.44). Tree planting success (survival) is one component of the reclamation plan that is reviewed, approved, and inspected for compliance by the DNR. Implementation of the reclamation plan is assured by a financial guarantee provided to the DNR by the CalPortland in the form of a bond.

This practice will continue in the South Parcel and as mining progresses in other areas of the mine consistent with an updated mine reclamation plan reviewed, approved, and inspected by the DNR and required by the Surface Mine Reclamation Act (RCW 78.44).

Soil for future tree planting begins prior to mining when the site is cleared of stumps and debris, slash is ground to chips for later use as a soil amendment, and topsoil is mixed with wood chips and clean clay and silt washed from processed gravel (belt press fines) and stockpiled for later use in reclamation.

As extraction in each mine segment is completed, slopes are cut to final contours. In the South Parcel, slopes (approximately 3 feet horizontal to 1 foot vertical) will border the eastern and southwestern portions of the mine floor and join the existing mine area to the north.

The amended topsoil is then spread across the contoured slopes and cross tracked with a dozer to prevent erosion.

After topsoil placement, holes are dug in the slopes where trees are planted. Tree planting is proposed where new reclaimed slopes planted with trees and suitable to be designated as open space will remain after mining. Once final reclamation is complete, Sequalitchew Village will have approximately 180 acres of these slopes planted with a variety of trees including Douglas fir, red alder (*Alnus rubra*), and Oregon white oak, ranging in age from seedlings to nearly 40 years old.

Tree seedlings are generally planted during the fall and spring. Douglas fir, white oak, and other species are typically planted at an approximate spacing of 10- by 10-foot, establishing a stocking level of approximately 430 trees per acre on the reclaimed slopes. These plantings are

complemented by naturally recruited red alder, bigleaf maple, and Pacific madrone occurring in the buffers adjacent to the mined slopes.

CalPortland proposes removing 89 landmark trees in the Expansion Area. A typical tree mitigation plan might require a developer to replace removed Landmark trees at a ratio of 50:1 (Table 4). At a stocking ratio of 430 trees per acre, such a plan would require CalPortland to plant trees on only 10.9 acres to achieve a 50:1 replacement ratio for 89 trees. CalPortland expects to plant approximately 180 acres total on the slopes of the mine.

A typical mitigation plan might require a developer to plant trees for mitigation in a single season and monitor their success for 3 to 5 years. CalPortland will have planted a variety of trees on the reclaimed slopes of Sequalitchew Village over a period of at least three decades and will monitor and ensure their success with a reclamation bond held by DNR during that time.

In 2020 CalPortland began testing plantings of Oregon white oak and will continue to include Oregon white oak in the mix of trees planted in the future to ensure that at least 650 (50X13) white oaks are planted.

As the reclaimed areas mature, a native understory of herbaceous and woody species will also propagate from seed and rhizomes naturally occurring in the redistributed topsoil. Reclaimed slopes along the western boundary of the site are designed in a sinuous fashion to mimic and blend with the native topography that parallels Puget Sound.

Deleterious vegetation such as blackberry and Scotch broom will be removed mechanically, to allow tree establishment and release from shading and competition for nutrients and moisture.

Table 4
Tree Replacement Summary for All Trees

Type	Quantity to Be Removed	Mitigation Ratio	Approximate Number of Trees to Be Planted[1]
Landmark Trees	89	50:1	4,450

Note:

1. The total number of trees to be planted is limited by the areas suitable for planting prior to development of Sequalitchew Village, in accordance with the City of DuPont Comprehensive Plan.

Table 5 summarizes the proposed replacement tree planting. Tree seedlings will be planted during the dormant season. Douglas fir, white oak, and other species will be planted at 10- by 10-foot spacings, establishing a stocking level of approximately 430 trees per acre on the reclaimed slopes. These plantings are expected to be complemented by naturally recruited red alder, bigleaf maple, and Pacific madrone. Based on the success of the reforested slopes in the existing mine, Douglas fir

(1+1 seedling stock) and red alder (plug 1 or yearling pull-ups) are recommended. In 2020 CalPortland began testing plantings of Oregon white oak. If initial plantings are successful, then theses species will be added to the mix of trees planted. Based on existing reclamation at the site, volunteer seedlings are expected to propagate on the topsoiled slopes, in addition to the planting described above. The mature forests that buffer the western mine boundary provide an excellent seed source of other native deciduous and conifer species including Pacific madrone, bigleaf maple, western hemlock, and western red cedar.

Table 5
Revegetation Planting Plan

Common Name	Scientific Name	On Center Spacing (feet)	Planting Season
Douglas fir	*Pseudotsuga menziesii*	10	October 15 – March 15
Oregon white oak	*Quercus garryana*	10	October 15 – March 15
Red Alder	*Alnus rubra*	10	October 15 – March 15

Figures

LEGEND:

- Pioneer Aggregates Property (791 ac)
- South Parcel MRO Addition (172 ac)
- Mining Limits (620 ac)
- Sequalitchew Creek
- Kettle Wetland

South Parcel Project

- Expansion Area (188 ac)
- Re-mine Area (125 ac)

NOTES:
Imagery: 2017 USDA NAIP

0 3,000
Feet

Publish Date: 2021/01/29, 11:05 AM | User: jfox
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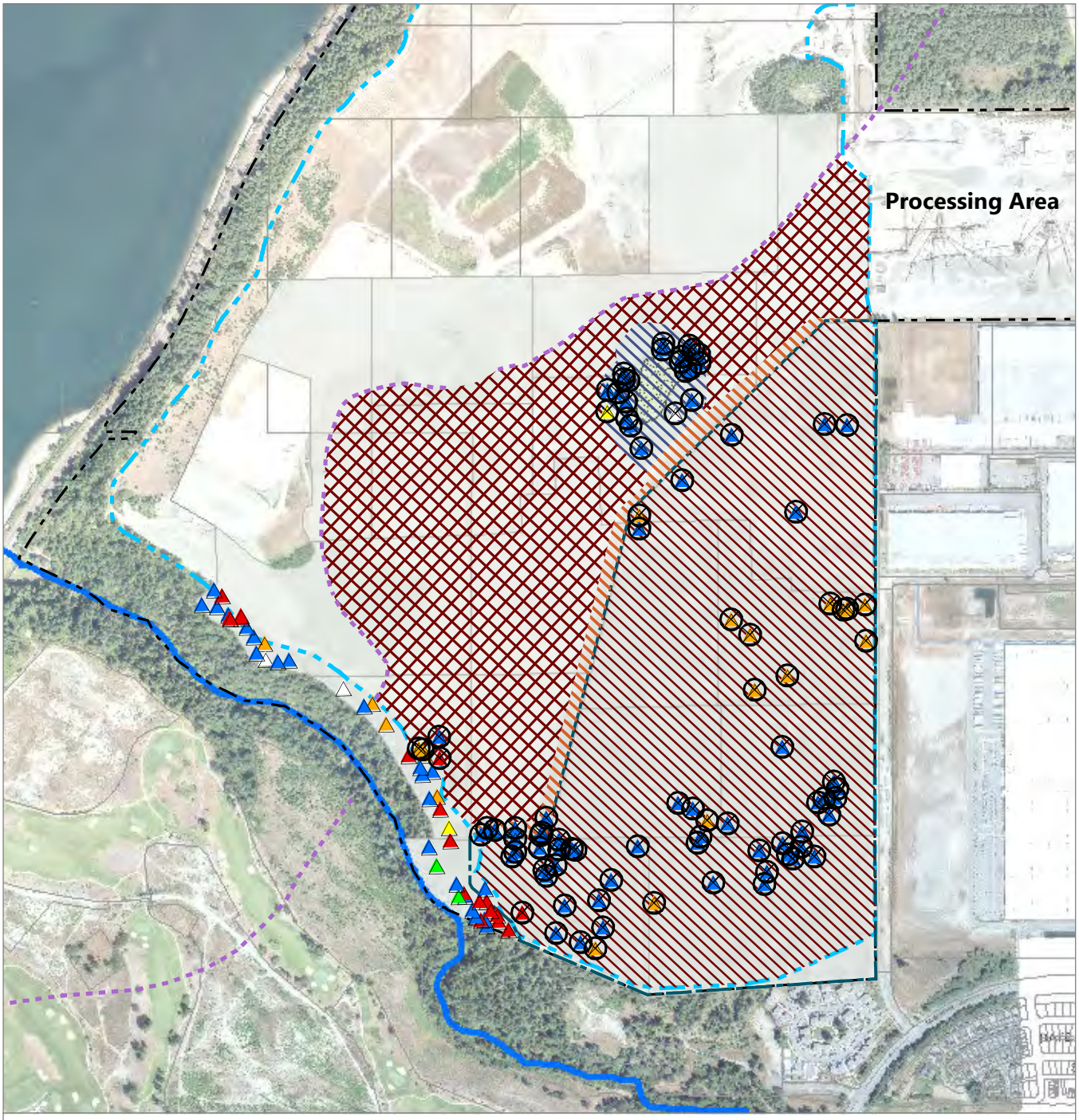
ANCHOR QEA

Figure 1
Vicinity Map
Landmark Tree Inventory Report
Pioneer Aggregates South Parcel Project



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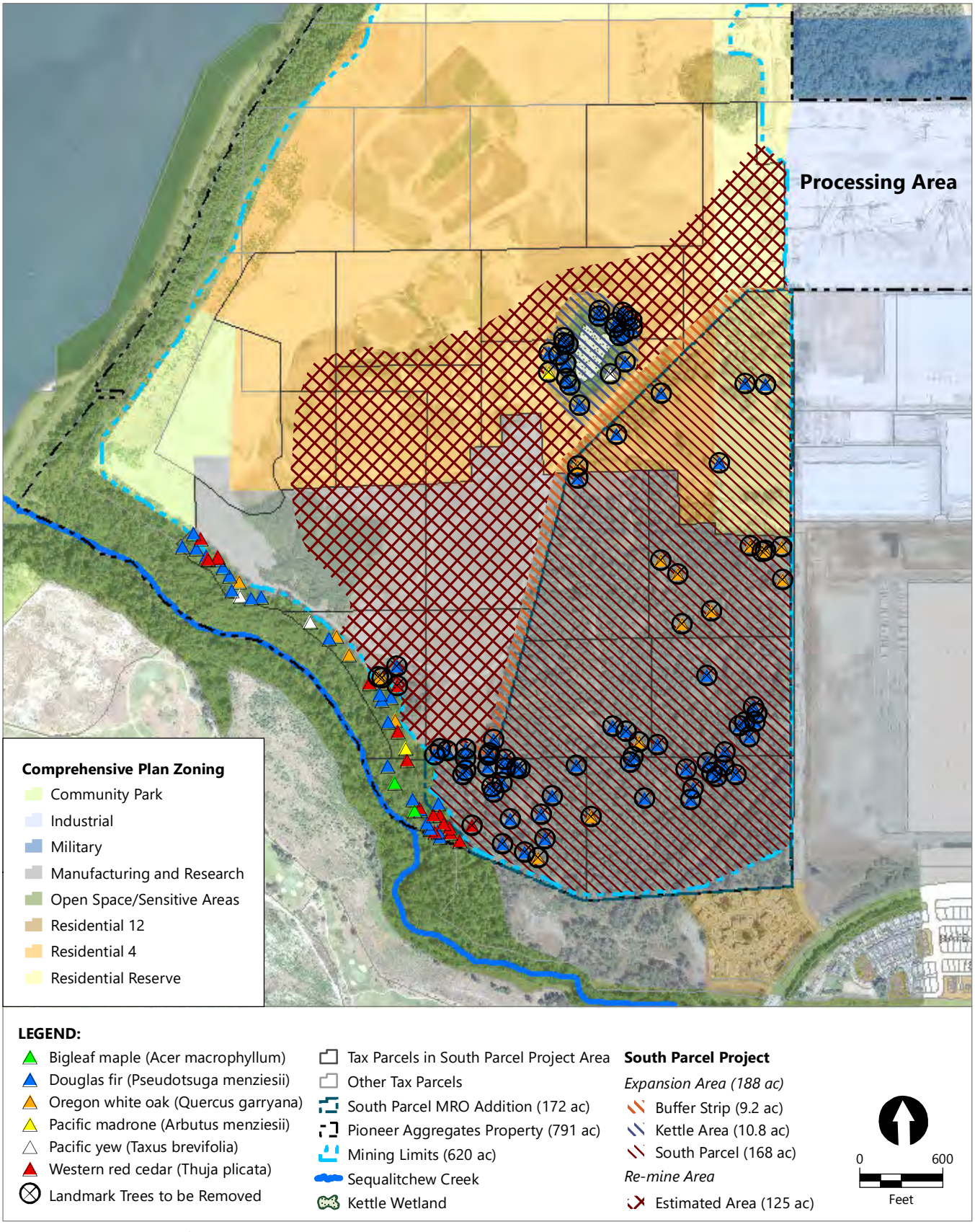
ANCHOR QEA

Figure 2
Landmark Trees Within South Parcel Project Area
Landmark Tree Inventory Report
Pioneer Aggregates South Parcel Project



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ANCHOR QEA

Figure 3
Landmark Trees and Comprehensive Plan Zoning
Landmark Tree Inventory Report
Pioneer Aggregates South Parcel Project

Appendix A
Weyerhaeuser Pathologist Report

Location • Weyerhaeuser Research
505 N Pearl St
Centralia, WA 98531

8/16/2019

Subject: Weyerhaeuser Dupont Mine Site “Landmark Trees” Recognizance

Author: John Browning (Weyerhaeuser Forest Pathologist)

Weyerhaeuser has a forested area adjacent to the Dupont CalPortland gravel mine. We are interested in removing these trees so the area can be mined for gravel. Most of the trees on this land are Douglas-fir. The city of Dupont has a “Landmark tree” statute as shown in Table 1. On 8/26/2019, Mary Castle (Weyerhaeuser Manager of Western Minerals) and myself walked this land to examine these trees and see if we thought they would qualify as “Landmark trees.”

Table 1. Dupont Landmark tree statute.

25.10.120.005 Landmark tree.

“Landmark tree” means an existing healthy, well formed tree which poses no safety hazard due to potential collapse and that is of the following species, trunk type, and minimum diameter measured at breast height:

	Species	
Trunk type	Oregon white oak, Pacific yew, or madrona	Douglas fir, western red cedar, western hemlock, or big leaf maple
Single trunk	24 inches	30 inches
Multi-trunk (sum of diameters)	30 inches	45 inches

(Ord. 18-1045 § 2 (Exh. A))

Stand Composition:

This stand is primarily Douglas-fir mixed with some Oregon white oak. We also found a small amount of big leaf maple. The majority of the Douglas-fir is probably smaller than the 30" DBH requirement for Landmark Trees but there are still many big trees larger than 30". These are mostly open grown Douglas-fir with very large branches down to the ground. Photos 1-3 show examples of these "Woofy" Douglas-fir.

Damage and Hazards:

Mary and I thought most of the large Douglas-fir would be rejected from the Landmark Tree status due to form and possibly safety concerns. Most of these trees have major damage approximately 30 to 40 feet up the truck were the top had died or been broken out and side branches had taken over. Jim Tweedy (mine manager for Glacier NW) stated that this damage was likely due to a major ice storm back in the 50s. Many of these trees also have forked tops. In addition, quite of few of these trees also have considerable sweep at the base. Photos 4 through 12 show examples of the form issues with these Douglas-fir.

From a hazard tree standpoint there is always concern in large Douglas-fir when the top dies and laterals take over because this will develop a weak area and likely entry point for decay.

We looked for root disease and decay and found some evidence of brown cubical rot (possibly *Schweinitzii* although we did not find any fruiting bodies) decaying smaller Douglas-fir to the point that they were falling over (Photos 13 to 16). While I suspect that there is major decay is some of the larger Douglas-fir I did not find any that had fallen over. There are some with evidence of wounds near the base which could be entry points for decay (Photos 17 to 19). Weyerhaeuser Research does have a Resistograph drill which could be used to test these trees for decay without majorly damaging the trees.

There were Douglas-fir with evidence of woodpecker activity which usually indicates insect infestation (Photo 20). Photos 21 to 23 show large hole evidence of boring activity near the base of the trees. Some trees had lots of sap flow which probably indicates a bark beetle infestation (Photo 24).

Hardwoods.

Most of the hardwoods on this site were Oregon white oaks. We did not find any of these trees large enough to meet the Landmark tree definition of 24" (30" for multiple trunks). We did examine one large bigleaf maple which had lots of decay within 6' of the base (Photo 25).

Trees with good form.

We did find a few Douglas-fir large enough to be classified as "Landmark trees" with good form. Overall, we saw maybe six trees that would meet the "Landmark tree" definition as we interpreted it.

General Form Photos:

Photo 1. Open grown Douglas-fir with large branches down to the ground.

Photos 2 & 3. Open grown Douglas-fir with large branches.

Damage and hazards photos:

Photo 4. Trunk deformed 30’ up.

Photo 5. Douglas-fir with poor form

Photo 6. Douglas-fir with poor form

Photo 7. Douglas-fir with poor form

Photo 8. Douglas-fir with poor form

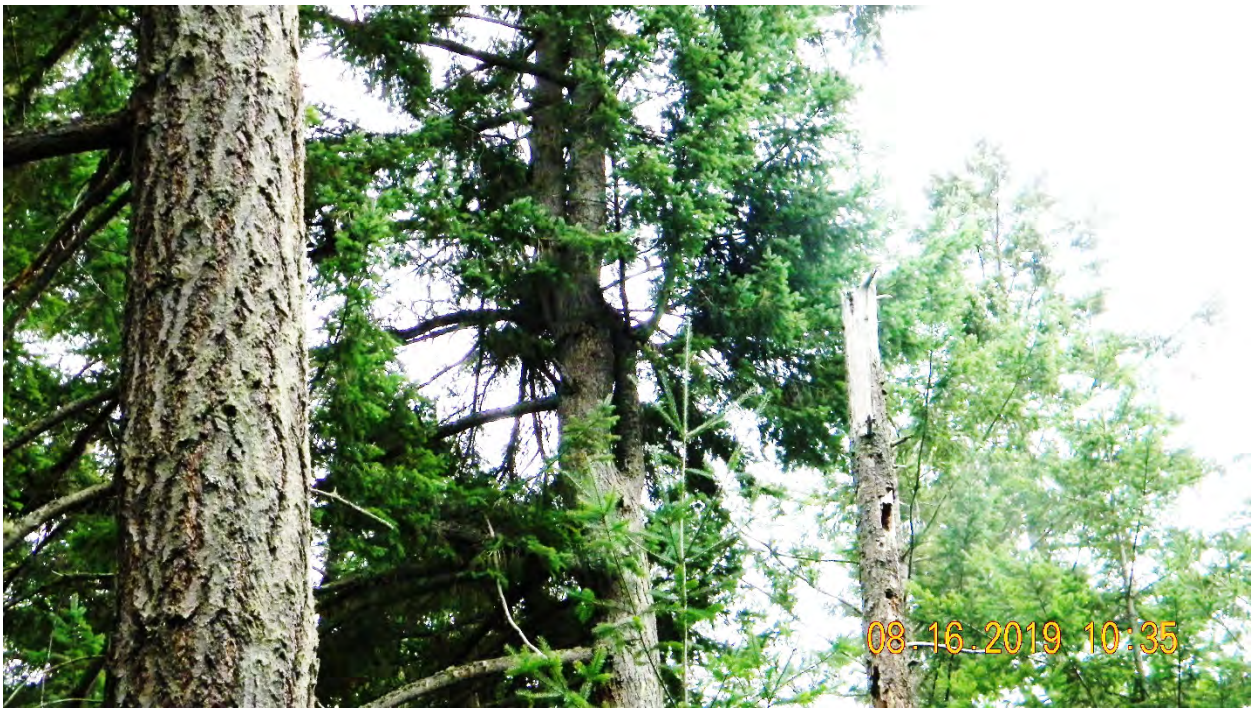

Photo 9. Douglas-fir with poor form

Photo 10. Douglas-fir with poor form

Photo 11. Douglas-fir with poor form

Photo 12. Douglas-fir with poor form

Fallen trees with decay photos:

Photos 13 and 14. Fallen tree with brown cubical rot, possibly *Schweinitzii*.

Photo 15. Fallen tree with brown cubical rot

Photo 16. Falling tree with brown cubical rot

Wound Photos:

Photo 17. Wound on Douglas-fir. Probably allowing decay to enter truck.

Photo 18. Wound on Douglas-fir. Probably allowing decay to enter truck.

Photo 19. Wound on Douglas-fir. Probably allowing decay to enter truck.

Woodpecker activity photos:

Photo 20. Woodpecker activity. Usually indicating tree infested with insects.

Photo 21. Holes near the base of the tree.

Photo 22. Holes near the base of the tree.

Photo 23. Holes near the base of the tree.

Sap flow photo:

Photo 24. Sap flow from truck. Indicating either insect attacks or fungal infections.

Hardwood with decay photo:

Photo 25. Large big leaf maple with evidence of considerable decay

Photos of large Douglas-fir with good form:

Photo 26. Large straight tree, possible “Landmark tree”

Photo 27. Large straight tree, possible “Landmark tree”

Photo 28. Possible “Landmark tree”

Appendix B
Tree Survey Data

Appendix B
Tree Survey Data

Common Name	Scientific Name	Tag Number	Number of Stems	Total dbh (inches)	Within Clearing Limits	City of Dupont Land Use
Douglas fir	*Pseudotsuga menziesii*	1104	1	43	Yes	Residential Reserve
Douglas fir	*Pseudotsuga menziesii*	1135	1	29	Yes	Residential Reserve
Douglas fir	*Pseudotsuga menziesii*	1155	1	29	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1165	1	37	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1176	1	29	Yes	Residential Reserve
Oregon white oak	*Quercus garryana*	1190	3	39	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1192	1	34	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1006	1	28	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1007	1	22	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1008	2	48	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1014	2	30	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1015	1	24	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1041	3	31	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1043	3	34	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1052	4	48	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1098	3	34	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1217	1	37	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1226	1	32	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1227	1	33	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1228	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1237	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1238	1	32	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1240	1	34	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1246	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1250	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1263	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1266	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1275	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1276	1	30	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1278	3	39	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1279	1	33	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1280	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1285	1	32	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1292	4	47	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1413	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1415	1	33	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1419	1	36	Yes	Manufacturing and Research

Appendix B
Tree Survey Data

Common Name	Scientific Name	Tag Number	Number of Stems	Total dbh (inches)	Within Clearing Limits	City of Dupont Land Use
Douglas fir	*Pseudotsuga menziesii*	1420	1	40	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1421	1	46	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1422	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1436	1	40	Yes	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1493	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1496	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1301	1	33	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1304	1	30	Yes	Manufacturing and Research
Western red cedar	*Thuja plicata*	1309	1	41	Yes	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1317	1	33	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1323	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1329	1	32	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1341	1	38	Yes	Manufacturing and Research
Western red cedar	*Thuja plicata*	1356	1	38	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1357	1	32	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1359	1	30	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1360	1	30	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1393	1	35	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1394	1	33	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1395	1	32	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1501	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1502	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1503	1	36	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1505	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1506	1	34	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1511	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1512	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1513	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1515	1	31	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1516	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1521	1	30	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1529	1	40	No	Open Space/Sensitive Areas
Pacific madrone	*Arbutus menziesii*	1532	1	24	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1535	1	31	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1536	1	38	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1537	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1538	1	37	Yes	Manufacturing and Research

Appendix B
Tree Survey Data

Common Name	Scientific Name	Tag Number	Number of Stems	Total dbh (inches)	Within Clearing Limits	City of Dupont Land Use
Douglas fir	*Pseudotsuga menziesii*	1540	1	32	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1543	1	38	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1544	1	38	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1546	1	30	Yes	Manufacturing and Research
Douglas fir	*Pseudotsuga menziesii*	1573	1	32	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1577	1	35	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1578	1	33	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1580	1	31	Yes	Open Space/Sensitive Areas
Pacific madrone	*Arbutus menziesii*	1583	1	24	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1584	1	30	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1585	1	33	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1587	1	31	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1558	1	32	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1589	1	32	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1603	1	32	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1604	1	34	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1609	1	31	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1610	1	30	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1612	1	35	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1613	1	30	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1615	1	33	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1617	1	34	Yes	Residential 4
Douglas fir	*Pseudotsuga menziesii*	1621	1	30	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1622	1	30	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1625	1	40	Yes	Residential 4
Pacific yew	*Taxus brevifolia*	1627	1	24	Yes	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1636	1	32	Yes	Manufacturing and Research
Western red cedar	*Thuja plicata*	1639	1	42	No	Manufacturing and Research
Oregon white oak	*Quercus garryana*	1643	2	31	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1644	1	39	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1649	1	34	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1652	1	32	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1653	1	33	No	Open Space/Sensitive Areas
Oregon white oak	*Quercus garryana*	1654	3	57	No	Open Space/Sensitive Areas
Oregon white oak	*Quercus garryana*	1656	1	25	No	Open Space/Sensitive Areas
Oregon white oak	*Quercus garryana*	1657	1	27	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1659	1	32	No	Open Space/Sensitive Areas

Appendix B
Tree Survey Data

Common Name	Scientific Name	Tag Number	Number of Stems	Total dbh (inches)	Within Clearing Limits	City of Dupont Land Use
Western red cedar	*Thuja plicata*	1662	1	34	No	Open Space/Sensitive Areas
Oregon white oak	*Quercus garryana*	1667	3	34	No	Open Space/Sensitive Areas
Oregon white oak	*Quercus garryana*	1671	1	26	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1672	1	30	No	Open Space/Sensitive Areas
Pacific yew	*Taxus brevifolia*	1676	3	32	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1362	1	31	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1363	1	31	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1366	1	30	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1370	1	46	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1371	1	38	No	Open Space/Sensitive Areas
Bigleaf maple	*Acer macrophyllum*	1372	1	35	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1381	1	30	No	Open Space/Sensitive Areas
Bigleaf maple	*Acer macrophyllum*	1384	1	31	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1390	1	30	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1680	1	34	No	Open Space/Sensitive Areas
Oregon white oak	*Quercus garryana*	1681	1	28	No	Open Space/Sensitive Areas
Pacific yew	*Taxus brevifolia*	1683	1	24	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1684	1	33	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1685	1	33	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1686	1	30	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1694	1	34	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1695	1	45	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1696	1	42	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1699	1	38	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1700	1	39	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1701	1	42	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1705	1	32	No	Open Space/Sensitive Areas
Western red cedar	*Thuja plicata*	1707	1	43	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1708	1	30	No	Open Space/Sensitive Areas
Douglas fir	*Pseudotsuga menziesii*	1713	1	31	No	Open Space/Sensitive Areas

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January 18, 2023

Sent via email only to:

Barb Kincaid
Public Services Director
City of DuPont
1700 Civic Drive
DuPont, WA 98327

RE: Pioneer Aggregates South Parcel Project – Applications for PLNG2021-006 (Site Plan Review), PLNG201-009 (Tree Modification), PLNG2021-010 (Critical Areas Permit), SEPA 2021-002 (SEPA) Response to Land Use Permit Application Comments

Dear Ms. Kincaid:

We received your letter with comments dated December 23, 2021. Many comments are addressed in revised discipline reports recently submitted for review by the EIS team. Responses to the comments in your letter are provided in **Bold Underline** below.

General

1. The future land use decision on the proposal will modify Ordinance 95-521, which was approved by Council in 1995. The City's attorney is reviewing the process for such a modification. **Ordinance 95-521 was amended by Ordinance 08-859. The City has confirmed that the South Parcel project will not require the City Council to modify or amend Ordinance 95-521.**

2. Several of the legal agreements bind the underlying landowner to prior and future mitigation measures or conditions. Several of the agreements do not include a signature by Weyerhaeuser as the landowner. **WPP, LLC was the landowner at the time that the 2012 Settlement Agreement was signed. Kevin Wall signed the Agreement on behalf of WPP, LLC at that time. Weyerhaeuser owned the property before WPP, LLC and acquired the property from WPP, LLC and is successor to WPP, LLC in the 2012 Settlement Agreement.**

    a. This includes the 2012 Settlement Agreement which preserves a 45-acre public open space area along the western bluffs in perpetuity. **The 45-acre public open space area is owned by Northwest Aggregates, a wholly owned subsidiary of Glacier**

Attachment 4.c

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Northwest, Inc. dba CalPortland who is signatory to the 2012 Settlement Agreement.

b. The Feb. 7, 2014 Grant Deed of Conservation Easement, and the Feb. 10, 2014 Public Access Trail Easement, both of which were outcomes of the 2012 Settlement Agreement, is signed by NW Aggregates Co as the Grantor and Section A describes the grantor as owner of the property in fee simple. **The conservation easement and the trail easement were both granted on the bluff adjacent to the North Parcel, all on property owned in fee by Northwest Aggregates.**

According to Pierce County Assessor, Weyerhaeuser is the owner of the property and you have explained you have a lease to mine the property. Provide validity of these documents and the transference of authority for applicant to implement the obligations contained therein. Please see item 27 in the title report (enclosed)

3. The Plan set requires the following revisions or additional information:

   a. Provide a detailed site plan of the parking lot (See Parking, below). **A parking plan has been prepared and is included with the revised parking memo which will be submitted separately.**

   b. Provide a landscape plan for the temporary berm and southeastern perimeter (see Landscaping, below). **A landscape plan is included in the revised plan set that is being provided separately.**

   c. Sheet G1 - The Kettle Wetland should be included in the South Parcel Mine Expansion Area. As depicted, it is not included in either the Existing Mine limits or the proposed mine limits and is misleading. The area of the Kettle Wetland should be accounted for in the Site Areas and Disturbed Areas. **Sheet G-1 has been revised and included with the revised plan set that is being submitted separately.**

   d. Sheet G-2 update the aerial to be no more than two years old. **Sheet G-2 has been updated with an air photo taken October 30, 2021 and combined with the current topography that was previously depicted on Sheet G-3. The revised plan set is being submitted separately.**

   e. Sheet G-4 – the zoning boundary line surrounding the Kettle wetland should be removed or depicted more clearly that is in the R-4 zoning designation. **The R-4 zoning designation is now called out as requested on Sheet G-3. The current topography that was originally shown on Sheet G-3 was combined with the current air photo shown on Sheet G-2, eliminating the need for one sheet. Sensitive areas and zoning designations are now depicted on Sheet G-3. The revised plan set is being submitted separately**

f. Sheet G-5 – show the boundaries of the Expansion Area as inclusive of the Kettle wetland. **Sheet G-5 has been revised and included in the revised plan set that is being submitted separately**

Cultural, Historical and Archaeological Resources Chapter 25.80

4. The property is not located within a designated cultural resource site. Therefore, all requirements for the protection of cultural, historical and archaeological resources will be assessed in conjunction with SEPA environmental review. **A cultural resources report has been prepared and submitted to the EIS team and to the Department of Archaeology and Historic Preservation for review.**

Landscaping, Chapter 25.90

5. You provided copies of the approved Reclamation Plan for the North Parcel, which details Ecology's requirements for planting the reclaimed slopes. You quoted RCW 78.44.045, to argue that standard City code landscaping requirements should not apply to mining proposals as mining is an interim action and revegetation is exclusive regulated by WA DNR and the mining RCW's. While the City concurs that mining is an interim action, the timeframe involved with mining and reclamation is very long. The City believes that perimeter screening is both a SEPA Aesthetic and Noise environmental issue for full evaluation and mitigation (to be addressed by the SEPA Environmental Review process) as well a valid land use code compliance issue. The following land-use related landscaping measures are required specific to the mining proposal:

   a. The Site Plan Review process is required for mining proposals. The Site Plan approval process requires compliance with DMC 25.90, Landscaping. **Comment Noted**

   b. DMC 25.90.020 does not prescribe a "minimum portion which must be landscape area" for a mining type use; therefore there is not a prescriptive percentage of the site as landscape area for the proposal. **Comment Noted**

   c. DMC25.90.030(3) Substantive Requirements – Landscaping, requires that buffers be provided to minimize impacts to adjacent, incompatible land uses. Section (b) provides that the "city can require full, moderate, or light buffers as necessary to mitigate incompatibility, for example between residential and nonresidential development." The South Mine proposal is adjacent to incompatible uses to the south (residential) and southeast (DuPont Community Garden along Powerline Road). **Visual renderings were prepared depicting project conditions from various viewpoints including the DuPont Community Garden. Using the visual analysis and mitigation measure identified in the SEPA analysis, we will install landscaping to meet the visual buffer requirements. Also, when considering**

buffers, we ask the City to recognize that, under the Growth Management Act, the City's land use regulations should ensure that adjacent uses do not interfere with the use of designated mineral resources of long-term significance. RCW 36.70A.060(1)(a). The designated mineral lands should be protected from incompatible uses. We suggest the City should also consider the impact expanded buffers have on available land to meet the City's growth target.

d. DMC 25.90.030(2) requires landscaping of interior parking lots. **Comment Noted.**

6. The city will require a full landscape buffer to mitigate incompatibility along the south perimeter. The plans depict a "temporary berm" along the south perimeter adjacent to the residential uses. The berm is depicted as being 20-feet in height and having a width of 110 feet. There is a flat strip of approximately 10 feet at the top of the berm. The plans indicate that the berm will be hydroseeded. We have the following comments on the temporary berm:

   a. Please explain the terminology used for "temporary" berm. The City sees the berm as long-term aesthetic mitigation to provide both aesthetic and noise mitigation that will remain until a future development proposal is evaluated. **Comment Noted. The plan set has been revised to remove the term "temporary" and indicate that a berm will be constructed in that location and vegetated in accordance with the included landscape plan.**

   b. **The temporary berm shall remain in place until a future development proposal (i.e. non-mining) is submitted. This will be a condition of approval. Comment noted**

   c. The top and south face of the berm should include a mix of tree types and sizes at the time of planting. It should include transplanted OWO trees, evergreen trees that are at least 6-feet tall at the time of planting, and seedlings. The understory should be planting with native shrubs and groundcover. Hydroseeding is acceptable along the north face of the berm. **A landscape plan that includes a monitoring plan for the viability of the plantings will be required to depict this type of planting scheme. Comment noted. The landscape plan and monitoring plan for the noise berm are included with the revised plan set.**

7. The plans indicate that the southeast perimeter will be mined and then the slope planted, we presume with seedlings as part of the reclamation plan. There are dewatering wells and a dewatering pipeline indicated to be installed at the top of this slope. The City is concerned about the visual, aesthetic and noise impacts of the mining proposal to the City's community garden and other properties to the east. It is unclear at this time how the proposal can mitigate for the impacts. Further, we understand additional visual assessments of this area are in process as part of the SEPA EIS process. Therefore, we are withholding land use-related comments for compliance with DMC 25.90.030(3) at this time until further

information is provided. **Comment Noted. The visual analysis reference in response to comment No. 5 above addresses this location.**

8. Plans were not submitted depicting the parking lot area, so we are not able to determine if the existing landscaping meets the interior parking lot landscaping requirements. While we acknowledge that the parking lot should be designed more in accordance with a construction staging area than a commercial parking lot and that the mining proposal is temporary in nature, staff cannot reach any conclusions about the applicable requirements without a site plan. **Provide a detailed plan of the existing parking lot for City review. A parking lot plan is included with the revised parking memo to be submitted separately.**

Parking Requirements, Chapter 25.95

You provided a Parking Memo that describes no modification or erection of buildings will occur and there will be no change to the operation or number of employees. There are 60 parking spaces currently for personal vehicles and additional area for trucks. Total employment is anticipated to be between 60 – 100 jobs depending on market conditions. You indicate that HOV spaces are provided and that bicycle parking is not allowed. City code requires the following:

9. DMC 25.95.030 requires .3 to 1 space per worker at maximum shift for "Industries, research facilities, print shops, bakeries, wholesales, and warehouses". Otherwise the administrator shall determine parking requirements for uses not listed. **The Parking plan will be included with the revised parking memo that will be submitted separately. The total number of employees and total number of available parking spots will not change. Three parking spots are striped and designated to comply with current ADA requirements and two parking spots are now designated to comply with HOV requirements.**

10. The employee count and parking quantity appear to meet City code requirements. A site plan was not provided, however and we are unable to determine if the parking lot is designed to current requirements for accessibility and HOVs. **Provide a detailed plan of the existing parking lot for City review. A parking plan is being provided with the revised parking memo separately, and the existing parking areas now designated as indicated in the plan to meet current ADA and HOV requirements.**

11. You did not provide a site plan depicting the existing parking configuration. **Provide a detailed plan of the existing parking lot for City review. A parking plan is being provided separately.**

Critical Areas, Chapter 25.105

We have reviewed the submitted Critical Areas Report and Wetland Mitigation Plan and the City's consultant for peer review comments on these plans. In addition to the peer review comments we have the following comments:

CALPORTLAND

12. The plans describe the replacement wetland as having a 100-foot buffer. Provide a total area calculation for the replaced wetland plus 100-foot buffer.

Mitigation Wetland = 3.44 acres

100-ft Wetland Buffer = 4.84 acres

CP Zone = 24.60 acres

Parcels containing Mitigation Wetland & Buffer:

0119224005 (Mostly mine floor): 17.51 acres

0119224004 (mostly mine side slopes): 19.83 acres

The wetland itself is almost all on parcel 0119224005 (mine floor). About 2.18 acres (45%) of the buffer is in Parcel 0119224004 (mine side slope) the rest is in parcel 0119224005 (mine floor). The wetland and buffer occupy about 33% of the overall CP zone. They use about 72% of the flat portion of the CP zone on the mine floor; however, that still leaves about 2.33 acres of CP-zoned area on the mine floor (flat ground) outside of the buffer and available for park use.

13. The chosen mitigation site for the replaced wetland is owned by Weyerhaeuser Co. **Provide evidence that Weyerhaeuser Co. is in agreement with the location of the wetland, which is to be protected in perpetuity. We submitted a notarized Authorization to Act as Agent affidavit signed by Weyerhaeuser on August 29, 2018 and a letter from Weyerhaeuser dated July 28, 2021 authorizing CalPortland's permitting of the Pioneer Aggregates Mine operation and listing applicable parcel numbers with our application. We are in the process of preparing a Joint Aquatic Resource Permit Application (JARPA) that will cover the wetland projects and be signed by Weyerhaeuser as the landowner.**

14. The City will require the mitigation site perimeter be fenced with a split rail fence and signage installed every 100 feet. The long-term maintenance of the wetland will be the property owner's responsibility. This will be a condition of approval. **Comment noted.**

15. The chosen mitigation site is zoned Community Park/MRO. There are no City regulations prohibiting the use of the selected property for a mitigation site. The City's Comprehensive Plan describes the mitigation site as "Proposed New Park P20" including the following:

PROPOSED NEW PARK (P20)

DuPont's current comprehensive plan indicates a park site north of the mouth of Sequalitchew Creek. Working with the property owner of the aggregate mining parcels north of the creek to secure park land on the north side of the canyon will provide a variety of near and long-term recreation opportunities. The site would secure land to serve eventual residential development in the Sequalitchew Village area of the city as well as protect the natural and recreational values of the creek corridor.

- Acquire land along the north edge of the Sequalitchew Creek corridor, focusing on the land near the mouth of the creek.
- Develop facilities and amenities that support the trail and natural open space uses of the creek corridor.
- In the long-term a portion of this land may serve open space and developed park needs of the Sequalitchew Village residential development.
- Vehicular access and trail connection to beach.

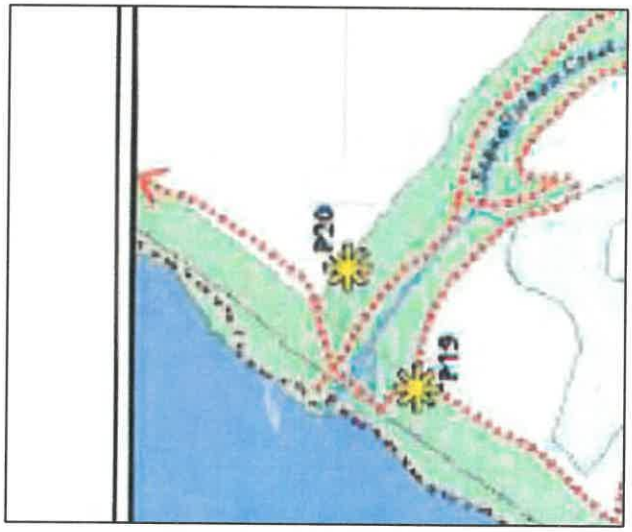

Figure 1 - Proposed Parks and Facilities

- **Developed Parks to Serve Reclaimed Aggregate Site:** Consider future use of the aggregate site. Although the aggregate site is currently being mined, in the long-term future this area is planned for residential and other uses. Future plans for this site should include the preservation of open space and the development of park and recreation amenities to serve future reclamation and redevelopment. The parks should be laid out to provide playgrounds and trail access within ¼ mile of each resident; and active recreation features and natural area access within at least ½ mile of each resident.

The city has the following questions regarding the mitigation/park property:

a. **It is unclear how or when the CP-zoned area was designated and/or if there are any restrictions related to how that property can be used. Your application form indicates that a title report was provided with the application, however, we do not have a copy in our files. Please provide a full title report for the Expansion Area, Re-mine Area and CP-zoned area of the property. A new title report is enclosed.**

b. **It is unclear how much of the property will remain for future park use after the wetland is created. How large is the CP/MRO property? The boundaries of the zoning do not align with the tax parcel numbers. As stated in the response to Item 12, the CP-Zoned property within the MRO is 24.60 acres. The wetland and buffer will comprise a total of 8.28 acres, leaving 14 acres to accommodate a trail traversing the slope to the top of the bluff as envisioned in Figure 1 and 2.33 acres of flat ground outside of the wetland and buffer to accommodate other recreational activities.**

Tree Retention Chapter 25.120

Applicable tree protection regulations for the proposed mining activity are governed by the following code sections:

- DMC Chapter 25.60.050 Mining Resource Overlay Performance Standards, which state that "the potential impacts related to …loss of tree cover… shall be examined."

- DMC 25.60.060 Mineral Resource Overlay Site Plan Approval requires all new development to undergo the City's Type III Site Plan approval process. DMC 25. 150.030 Site Plan Review Criteria sets forth that in order to obtain site plan approval all of the development regulations and criteria specified in the district applicable must be satisfied in addition to any general development requirements in Chapters 25.75 through 25.95 and 25.105 through 25.125. DMC 25.110.040.030 defines "development" as "the construction or reconstruction of a structure or other modifications of the natural landscape above and below ground or

water on a particular site." Tree Retention is governed by DMC 25.120, which states under DMC 25.120.020 Applicability: This chapter shall apply...to all new development projects that require a site plan approval…".

- Per DMC 25.120.030(1), tree retention is a design goal, particularly trees that are well-formed, historic, grouped, close to a sensitive area, etc.

- Per DMC 25.120.030(2), all landmark Oregon white oak trees shall be retained. At least half of all other (non-oak) landmark trees shall be retained.

- There is not a stated minimum number of trees to be retained on a per acre basis for property located within the MRO.

16. The number of landmark trees and type of trees that was approved for removal in the LU12-02 Site Plan Review Decision dated 2013 is now proposed to be modified to remove additional trees in the Existing Mine Area. City staff will review the staff report analysis and accounting for tree removal/retention that was completed for the 2013 land use decision and will provide additional comments at that time. **Comment Noted.**

17. The mining activity is located in an area mapped as Oak Management Mapping Unit MO-14. There are no specific recommendations in the DMC for the protection of this mapping unit. The Landmark Tree Inventory Report states that there are no oak management mapping units on the property. **The Tree Inventory Report should be corrected to acknowledge the removal of trees within MO-14. The Tree Inventory Report has been revised to acknowledge the presence of Oak Management Mapping Unit MO-14.**

18. The proposal describes that there are a total of 141 landmark trees in the Study Area. Of those, 13 are Oregon white oak (OWO). The proposal will retain none of the OWO and 19 of the other landmark trees, which requires approval of a Type III Tree Modification. You submitted an application for a Type III Tree Modification together with a Tree Inventory Report, Tree Replacement Plan and a Narrative request for the Modification. The mitigation proposal is to replant the new reclaimed slopes with seedlings at a density of 430 trees per acre over 180 acres. 650 of the planted trees are to be OWO, planted at a 10-foot spacing interval. However, the OWO seedling plantings may not occur if initial plantings are not successful. The City is interested in the potential to transplant the existing OWO, potentially to the south or southeastern perimeters. **Revise the Tree Replacement Plan to address transplanting of the OWO and measures to monitor the success of the plantings. Based on the soil conditions of the property and our experience transplanting trees at other sites, we do not expect transplanting OWO from the South Parcel to be successful. We have experienced success planting OWO seedlings at the site as describe in the tree replacement plan. We will incorporate the tree replacement plan into the mine reclamation plan and will continue to plant OWOs and other tree species consistent with the plan. We will also monitor the survival of OWOs and other trees in accordance with mine reclamation standards and as required by the mine reclamation permit.**

19. The removal of trees also removes habitat. The SEPA EIS currently under review will be reviewing and addressing the displacement of habitat and potential mitigation measures. **Comment Noted**

I appreciate the opportunity to respond to these comments. Please contact me with other questions or if further clarification is needed.

Sincerely,

Pete Stoltz
Senior Manager Permitting & Government Affairs

Cc: Lisa Klein, AHBL, Inc. (representing the City of Dupont)

Encl: 1

CalPortland Company 3450 S. 344th Way, Suite 201, Federal Way, WA 98001
206.764.3000
www.calportland.com

COMMITMENT FOR TITLE INSURANCE

Issued by

FIRST AMERICAN TITLE INSURANCE COMPANY

First American Title Insurance Company, herein called the Company, for valuable consideration, hereby commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the proposed Insured named in Schedule A, as owner or mortgagor of the estate or interest covered hereby in the land described or referred to in Schedule A, upon payment of the premiums and charges therefor; all subject to the provisions of Schedules A and B and to the Conditions and Stipulations hereof.

This Commitment shall be effective only when the identity of the proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A hereof by the Company, either at the time of the issuance of the Commitment or by subsequent endorsement.

This Commitment if preliminary to the issuance of such policy or policies of title insurance and all liability and obligations hereunder shall cease and terminate six (6) months after the effective date hereof or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue such policy or policies is not the fault of the Company. This Commitment shall not be valid or binding until countersigned by an authorized officer or agent.

IN WITNESS WHEREOF, the Company has caused this commitment to be signed, to become valid when countersigned by an authorized officer or agent of the Company, all in accordance with its By-Laws. This Commitment is effective as of the date shown in Schedule A as "Effective Date."

First American Title Insurance Company

Dennis J. Gilmore
President

Jeffrey S. Robinson
Secretary

First American Title Insurance Company
National Commercial Services
920 Fifth Avenue, Suite 1200, Seattle, WA 98104
(206)615-3150 - (800)526-7544 FAX

Laura Johnson
(206)615-3276
lhjohnson@firstam.com

Pamela Callahan
(206)615-3267
pacallahan@firstam.com

To: **Hillis Clark Martin & Peterson P.S.**
999 3rd Avenue, Suite 4600
Seattle, WA 98104

File No.: **NCS-891112-WA1**
Your Ref No.: **DuPont**

Attn: **Jennifer Grant**

REPORT NO. 4
SCHEDULE A

1. Commitment Date: June 15, 2022 at 7:30 A.M.

2. Policy or Policies to be issued:

		AMOUNT		PREMIUM		TAX
Subdivision Guarantee	$	To follow	$		$	

Proposed Insured:
To follow

3. The estate or interest in the land described on Page 2 herein is **Fee Simple as to Parcel A and Easement as to Parcel B**, and title thereto is at the effective date hereof vested in:

Weyerhaeuser NR Company, a Washington corporation

4. The land referred to in this Commitment is described as follows:

The land referred to in this report is described in Exhibit "A" attached hereto.

EXHIBIT 'A'

LEGAL DESCRIPTION:

PARCEL A:

LOTS 1 THROUGH 23, INCLUSIVE, OF PIERCE COUNTY SURVEY RECORDED UNDER RECORDING NO. 200609185006, IN PIERCE COUNTY, WASHINGTON.

PARCEL B:

A NON-EXCLUSIVE EASEMENT FOR INGRESS AND EGRESS AND CREATED BY THAT ACCESS EASEMENT RECORDED UNDER RECORDING NO. 200612290240.

SCHEDULE B - SECTION 1
REQUIREMENTS

The following are the Requirements to be complied with:

Item (A) Payment to or for the account of the Grantors or Mortgagors of the full consideration for the estate or interest to be insured.

Item (B) Proper instrument(s) creating the estate or interest to be insured must be executed and duly filed for record.

Item (C) Pay us the premiums, fees and charges for the policy.

Item (D) You must tell us in writing the name of anyone not referred to in this Commitment who will get an interest in the land or who will make a loan on the land. We may then make additional requirements or exceptions

SCHEDULE B - SECTION 2
GENERAL EXCEPTIONS

The Policy or Policies to be issued will contain Exceptions to the following unless the same are disposed of to the satisfaction of the Company.

A. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

B. Any facts, rights, interest, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of person in possession thereof.

C. Easements, claims of easement or encumbrances which are not shown by the public records.

D. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.

E. (1) Unpatented mining claims; (2) reservations or exceptions in patents or in acts authorizing the issuance thereof; (3) Water rights, claims or title to water; whether or not the matters excepted under (1), (2) or (3) are shown by the public records; (4) Indian Tribal Codes or Regulations, Indian Treaty or Aboriginal Rights, including easements or equitable servitudes.

F. Any lien, or right to a lien, for services, labor, materials or medical assistance heretofore or hereafter furnished, imposed by law and not shown by the public records.

G. Any service, installation, connection, maintenance, construction, tap or reimbursement charges/costs for sewer, water, garbage or electricity.

H. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires of record for value the estate or interest or mortgages thereon covered by this Commitment.

SCHEDULE B - SECTION 2
(continued)
SPECIAL EXCEPTIONS

1. Lien of the Real Estate Excise Sales Tax and Surcharge upon any sale of said premises, if unpaid. As of the date herein, the excise tax rate for the **City of DuPont** is at **1.78**%. Levy/Area Code: 055

   For all transactions recorded on or after July 1, 2005:
   - **A fee of $10.00 will be charged on all exempt transactions;**
   - **A fee of $5.00 will be charged on all taxable transactions in addition to the excise tax due.**

2. This item has been intentionally deleted.

3. This item has been intentionally deleted.

4. This item has been intentionally deleted.

5. This item has been intentionally deleted.

6. This item has been intentionally deleted.

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11. This item has been intentionally deleted.

12. This item has been intentionally deleted.

13. This item has been intentionally deleted.

14. This item has been intentionally deleted.

15. This item has been intentionally deleted.

16. Covenants, conditions, restrictions and/or easements:
    Recorded: June 1, 1908
    Recording No.: 271946

17. Reservations and exceptions, including the terms and conditions thereof:
    Reserving: Minerals
    Reserved By: Weyerhaeuser Company, a Washington corporation

Recorded: October 17, 1991
Recording Information: 9110170444

Said instrument is a re-record of recording no(s). 9002020328 and 9108130325

The terms and provisions contained in the document entitled "Agreement Regarding Mineral Rights Reservation" recorded December 29, 2006 as 200612290241 of Official Records.

18. Easement, including terms and provisions contained therein:
Recording Information: 9004190543
In Favor of: Puget Sound Power & Light Company
For: Electric transmission and/or distribution system

19. The terms and provisions contained in the document entitled "Declaration of Restrictive Covenant" recorded December 23, 1997 as 9712230865 of Official Records.

20. The terms and provisions contained in the document entitled "Declaration of Restrictive Covenant" recorded October 29, 1999 as 9910290750 of Official Records.

21. The terms and provisions contained in the document entitled "Notice Regarding Historic District Designation and Declaraton of Covenant" recorded January 12, 2001 as 200101120143 of Official Records.

Document(s) declaring modifications thereof recorded June 12, 2006 as 200606120310 of Official Records.

22. Restrictions, conditions, dedications, notes, easements and provisions, if any, as contained and/or delineated on the face of the Survey recorded September 18, 2006 as 200609185006, in Pierce County, Washington.

23. Covenants, conditions, restrictions and/or easements:
Recorded: December 29, 2006
Recording No.: 200612290239

Document(s) declaring modifications thereof recorded as 201702270411, 201704050467 and 201704190126 of Official Records.

24. The terms and provisions contained in the document entitled "Access Easement" recorded December 29, 2006 as 200612290240 of Official Records.

25. Easement, including terms and provisions contained therein:
Recording Information: 201108160369
In Favor of: City of DuPont
For: Public access

26. The terms and provisions contained in the document entitled "Quit Claim Deed" recorded May 2, 2014 as 201405020562 of Official Records.

27. Memorandum of Assignment of Lease and Retained Royalty Agreement Agreement upon the terms, conditions and provisions contained therein:

Between:	WPP LLC
And:	Weyerhaeuser NR Company
Recorded:	May 31, 2017
Instrument No.:	201705310292

Said instrument refers to those lease documents recorded under Recording Nos. 200612290237, 200612290238 and 200701080464. However, said lease documents do not include the legal description depicted as "Description of Lease Expansion area" as noted on the above Memorandum.

28. Matters of extended owner/purchaser coverage which are dependent upon an inspection and an ALTA survey of the property for determination of insurability.

Please submit a copy of the ALTA Survey at your earliest convenience for review. Our inspection will be held pending our review of the ALTA Survey and the result of said inspection will be furnished by supplemental report.

29. Evidence of the authority of the officers of Weyerhaeuser NR Company, to execute the forthcoming instrument, copies of the current Articles of Incorporation, By-Laws and certified copies of appropriate resolutions should be submitted prior to closing.

30. Title to vest in an incoming owner whose name is not disclosed. Such name must be furnished to us so that a name search may be made.

31. Unrecorded leaseholds, if any, rights of vendors and security agreement on personal property and rights of tenants, and secured parties to remove trade fixtures at the expiration of the term.

32. Prior to issuance of an extended coverage policy, the Company will require an Owner's Affidavit be completed and submitted to the Company for approval prior to closing. The Company reserves the right to make any additional requirement as warranted.

33. Northwest Land Sewer liens in favor of Pierce County.
Amounts will be furnished upon request. APNs:
0119221007; 0119221008; 0119221009; 0119221010; 0119221011; 0119221012; 0119221013; 0119221014; 0119221015; 0119224004; 0119224005; 0119224006; 0119224007; 0119224008; 0119224009; 0119232008; 0119232009; 0119232010; 0119232011; 0119232012; 0119233010; 0119233011; 0119233012; 0119233013; 0119233014; 0119233015; 0119233016; 0119233017; 0119262015; 0119262016

34. Easement, including terms and provisions contained therein:

Recording Date:	May 3, 2005
Recording Information:	200505130713
In Favor of:	Puget Sound Energy, Inc., a Washington corporation
For:	Utility systems for purposes of transmission, distribution and sale of gas and electricity
Affects:	Lot 22

35. The terms and provisions contained in the document entitled "Declaration of Restrictive Covenant - Industrial" recorded July 25, 2006 as Recording No. 200607251020 of Official Records.

(Affects Lots 22 and 23)

36. Reservations and exceptions, including the terms and conditions thereof:

Reserving:	Mineral Rights
Reserved By:	Weyerhaeuser Company
Recorded:	August 3, 2006
Recording Information:	200608030725

(Affects Lot 22)

37. Reservations and exceptions, including the terms and conditions thereof:

Reserving:	Mineral Rights
Reserved By:	Weyerhaeuser Company
Recorded:	September 14, 2006
Recording Information:	200609140564

(Affects Lots 22 and 23)

38. The terms and provisions contained in the document entitled "Environment Covenant - Creek Property" recorded June 13, 2012 as Recording No. 201206130016 of Official Records.

(Affects Lot 1)

39. The terms and provisions contained in the document entitled "Environment Covenant - Creek Property" recorded August 7, 2012 as Recording No. 201208070276 of Official Records.

(Affects Lot 3)

INFORMATIONAL NOTES

A. Effective January 1, 1997, and pursuant to amendment of Washington State Statutes relating to standardization of recorded documents, the following format and content requirements must be met. Failure to comply may result in rejection of the document by the recorder.

B. Any sketch attached hereto is done so as a courtesy only and is not part of any title commitment or policy. It is furnished solely for the purpose of assisting in locating the premises and First American expressly disclaims any liability which may result from reliance made upon it.

C. The description can be abbreviated as suggested below if necessary to meet standardization requirements. The full text of the description must appear in the document(s) to be insured.

Lots 1-23, Pierce County Survey 200609185006

4. Taxes for the year 2022 are paid in full. Amounts will be furnished upon request. APNs: 0119221007; 0119221008; 0119221009; 0119221010; 0119221011; 0119221012; 0119221013; 0119221014; 0119221015; 0119224004; 0119224005; 0119224006; 0119224007; 0119224008; 0119224009; 0119232008; 0119232009; 0119232010; 0119232011; 0119232012; 0119233010; 0119233011; 0119233012; 0119233013; 0119233014; 0119233015; 0119233016; 0119233017; 0119262015; 0119262016

E. A fee will be charged upon the cancellation of this Commitment pursuant to the Washington State Insurance Code and the filed Rate Schedule of the Company.

END OF SCHEDULE B

First American Title Insurance Company
National Commercial Services

COMMITMENT
Conditions and Stipulations

1. The term "mortgage" when used herein shall include deed of trust, trust deed, or other security instrument.

2. If the proposed Insured has or acquires actual knowledge of a defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment, other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act or reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclosure such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option, may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions and Stipulations.

3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of Policy or Policies committed for, and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the Policy or Policies committed for and such liability is subject to the Insuring provisions, exclusion from coverage, and the Conditions and Stipulations of the form of Policy or Policies committed for in favor of the proposed Insured which are hereby incorporated by references, and are made a part of this Commitment except as expressly modified herein.

4. Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest or the lien of the Insured mortgage covered hereby or any action asserting such claim, shall be restricted to the provisions and Conditions and Stipulations of this Commitment.

The First American Corporation

First American Title Insurance Company
National Commercial Services
PRIVACY POLICY

We Are Committed to Safeguarding Customer Information

In order to better serve your needs now and in the future, we may ask you to provide us with certain information. We understand that you may be concerned about what we will do with such information particularly any personal or financial information. We agree that you have a right to know how we will utilize the personal information you provide to us. Therefore, together with our parent company, The First American Corporation, we have adopted this Privacy Policy to govern the use and handling of your personal information.

Applicability

This Privacy Policy governs our use of the information which you provide to us. It does not govern the manner in which we may use information we have obtained from any other source, such as information obtained from a public record or from another person or entity. First American has also adopted broader guidelines that govern our use of personal information regardless of its source. First American calls these guidelines its Fair Information Values, a copy of which can be found on our website at www.firstam.com.

Types of Information

Depending upon which of our services you are utilizing, the types of nonpublic personal information that we may collect include:

- Information we receive from you on applications, forms and in other communications to us, whether in writing, in person, by telephone or any other means;
- Information about your transactions with us, our affiliated companies, or others; and·
- Information we receive from a consumer reporting agency.

Use of Information

We request information from you for our own legitimate business purposes and not for the benefit of any nonaffiliated party. Therefore, we will not release your information to nonaffiliated parties except: (1) as necessary for us to provide the product or service you have requested of us; or (2) as permitted by law. We may, however, store such information indefinitely, including the period after which any customer relationship has ceased. Such information may be used for any internal purpose, such as quality control efforts or customer analysis. We may also provide all of the types of nonpublic personal information listed above to one or more of our affiliated companies. Such affiliated companies include financial service providers, such as title insurers, property and casualty insurers, and trust and investment advisory companies, or companies involved in real estate services, such as appraisal companies, home warranty companies, and escrow companies. Furthermore, we may also provide all the information we collect, as described above, to companies that perform marketing services on our behalf, on behalf of our affiliated companies, or to other financial institutions with whom we or our affiliated companies have joint marketing agreements.

Former Customers

Even if you are no longer our customer, our Privacy Policy will continue to apply to you.

Confidentiality and Security

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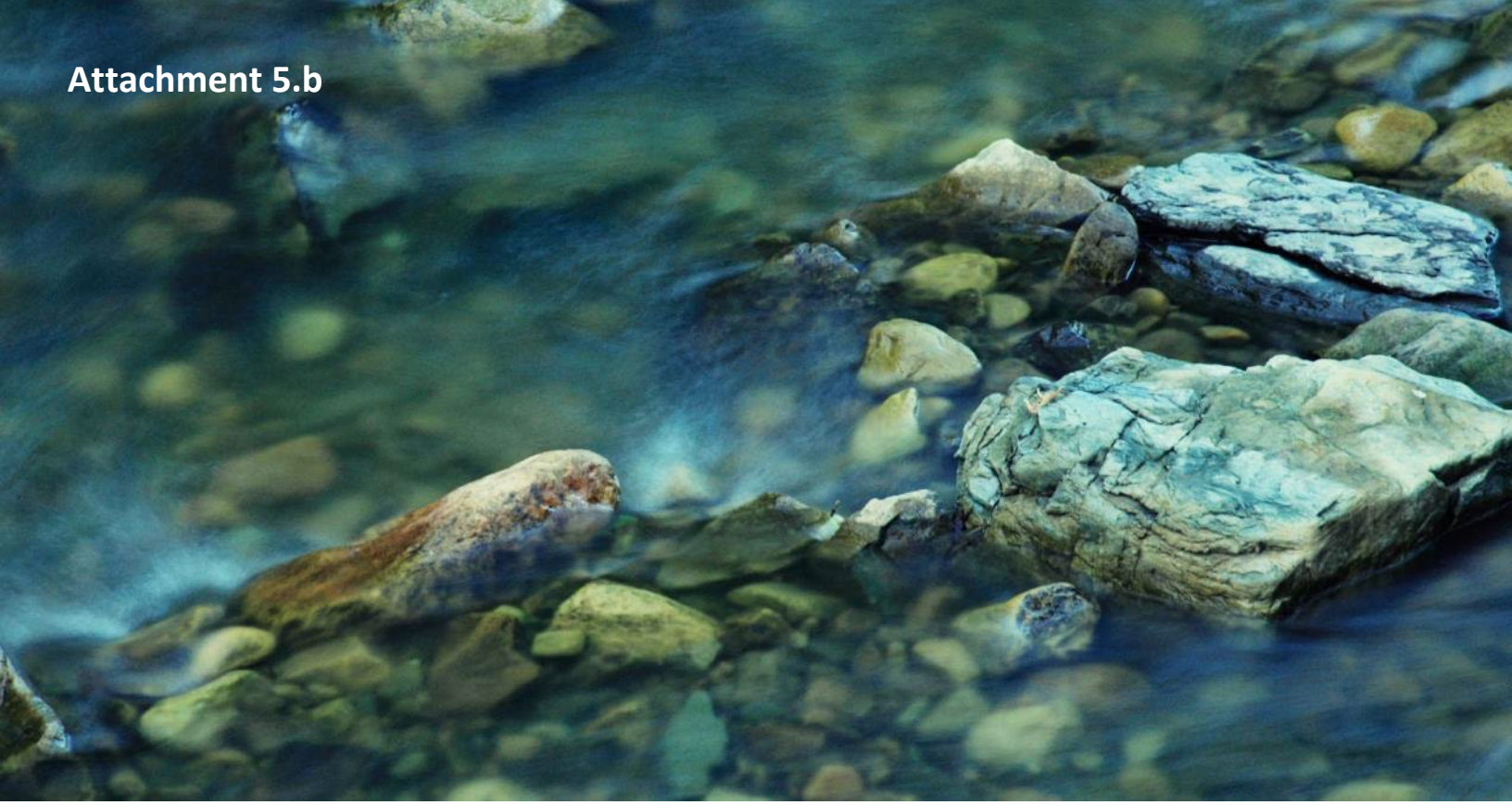
Attachment 5.b



March 2021 updated May 2025
Pioneer Aggregates Mine Expansion (South Parcel)

ANCHOR QEA

Kettle Wetland Delineation Report

Prepared for CalPortland

March 2021 updated May 2025
Pioneer Aggregates Mine Expansion (South Parcel)

Kettle Wetland Delineation Report

Project Number: 190217-01.01

Updated to reflect changes to the Washington State Wetland Rating System for Western Washington made in 2023.

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APPENDICES

Appendix A Field Data Forms
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ABBREVIATIONS

DMC	City of DuPont Municipal Code
Ecology	Washington State Department of Ecology
FAC	facultative
FACW	facultative wetland
HGM	Hydrogeomorphic
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland
PEM	palustrine emergent
PHS	Priority Habitats and Species
PSS	palustrine scrub-shrub
Report	*Kettle Wetland Delineation Report*
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife

1 Introduction

This *Kettle Wetland Delineation Report* (Report) provides the wetland delineation results for the Kettle Wetland located in DuPont, Washington (Township 19 North, Range 1 East, Section 23). This Report has been prepared to compile the information from previous Kettle Wetland delineation reports into one cohesive document. Information in this Report is based on the Kettle Wetland delineation results presented in the *North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor Environmental 2007) and the *Addendum to the 2007 North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor QEA 2018).

The initial Kettle Wetland delineation was performed by Anchor Environmental wetland scientists on July 31 and August 9, 2007 (Anchor Environmental 2007). On December 6, 2017, Anchor QEA wetland scientists performed a wetland boundary verification site visit (Anchor QEA 2018). On October 22 and December 5, 2019, Anchor QEA wetland scientists performed site visits verifying that the Kettle Wetland boundary and wetland features were consistent with the 2007 and 2017 reports (Anchor QEA 2019). A vicinity map showing the Kettle Wetland in relationship to the existing DuPont Aggregates mine and South Parcel Expansion Area is presented as Figure 1. An aerial photograph of the Kettle Wetland showing the mapped soils, wetland data plot locations, and wetland boundary flag locations is shown as Figure 2.

Section 2 of this Report describes the wetland delineation and verification methods, and Section 3 describes the findings of the wetland delineation and verification. Wetland field data forms are included in Appendix A. The Washington State Department of Ecology (Ecology) wetland rating forms are included in Appendix B.

1.1 Review of Existing Information

As part of the Kettle Wetland delineation analysis, Anchor Environmental and Anchor QEA wetland scientists reviewed the following sources of information to support the 2007 and 2017 field observations and preparation of this Report:

- Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2007, 2017, 2020)
- U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper for National Wetlands Inventory (NWI) map information (USFWS 2017, 2020)
- DuPont City Code (City of DuPont 2007, 2017, 2020)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps (WDFW 2017, 2020)
- Aerial photographs, Google Earth, December 2020

2 Methods

This section describes the methodology used to perform the 2007 wetland delineation and the 2017 and 2019 wetland verification site visits and field investigation procedures. These methods are consistent with current federal and state agency requirements, as well as local (City of DuPont) jurisdiction requirements, for performing wetland delineations and identifying protective wetland buffer widths.

2.1 Data Collection

As specified by the City of DuPont Municipal Code (DMC; City of DuPont 2007, 2017, 2020), in 2007, 2017, and 2019 the Kettle Wetland boundary was identified, delineated, and verified according to the methods defined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and Ecology's *Washington State Wetland Identification and Delineation Manual* (Ecology 1997). Soil colors were classified by their numerical description, as identified on a Munsell Soil Color Chart (Munsell 1994). In 2017 and 2019 the wetland boundary was also identified and verified according to the methods defined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (USACE 2010).

The U.S. Army Corps of Engineers (USACE; Environmental Laboratory 1987) defines wetlands as "those areas that are inundated or saturated by surface or groundwater 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 method for delineating wetlands is based on the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is "the macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present." Hydric soils are "formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Wetland hydrology "encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season" (Ecology 1997). Data collection methods for each of these parameters are described in the following subsections.

In 2007, a total of six data plots were sampled and recorded (Anchor Environmental 2007). Vegetation, soils, and hydrology information was collected at each of the plots and recorded on field datasheets (Appendix A). The Kettle Wetland boundary was determined based on plot data and visual observations of the wetland. The Kettle Wetland boundary and data plot locations were flagged and surveyed.

In 2017, vegetation, soil, and hydrology information was collected at sample plots in locations similar to the previous 2007 delineation plots (Anchor QEA 2018). In addition, the boundary of the Kettle Wetland was walked with a handheld Trimble GPS that contained the mapped 2007 wetland delineation boundary for comparison with the 2017 site conditions. The wetland boundary observed during the 2017 investigation was nearly identical to the 2007 delineation boundary; therefore, no additional flagging or survey of the wetland boundary was performed in 2017.

In 2019, the boundary of the Kettle Wetland was walked for comparison with the 2007 and 2017 site conditions (Anchor QEA 2019). Again, no discernable change in the wetland boundary was observed; therefore, no additional flagging or survey of the wetland boundary was performed in 2019.

2.1.1 Vegetation

Plant species occurring in each plot were recorded on field data forms, with one data form per plot (Appendix A). Percent cover for each plant species was estimated in the plot, and dominant plant species were identified. At each plot, trees within a 30-foot radius, shrubs within a 15-foot radius, and emergents within a 3-foot radius from the center of the plot were identified and recorded. A plant indicator status, designated by USFWS (Reed 1988, 1993), was assigned to each species, and a determination was made as to whether the vegetation in the plot was hydrophytic. To meet the hydrophytic parameter, more than 50% of the dominant species, with 20% or greater cover, must have an indicator of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Table 1 provides the wetland indicator status categories.

Table 1
Wetland Plant Indicator Definitions

Indicator Status	Description
Obligate Wetland (OBL)	Plant species occur almost always in wetlands (estimated probability greater than 99%) under natural conditions.
Facultative Wetland (FACW)	Plant species usually occur in wetlands (estimated probability 67% to 99%) but are occasionally found in non-wetlands.
Facultative (FAC)	Plant species are equally likely to occur in wetlands or non-wetlands (estimated probability 34% to 66%).
Facultative Upland (FACU)	Plant species usually occur in non-wetlands (estimated probability 67% to 99%) but are occasionally found in wetlands.
Obligate Upland (UPL)	Plant species occur almost always in non-wetlands (estimated probability greater than 99%) under natural conditions.

2.1.2 Soils

Soils were sampled in each plot and evaluated for hydric soil indicators. Soil pits were dug to a depth of 18 inches, unless prevented by impenetrable substrate. Hydric soil indicators include low soil

matrix chroma, gleying, and redoximorphic (or "redox") features. Redox features are spots of contrasting color that occur within the soil matrix (the predominant soil color). Gleyed soils are predominantly bluish, greenish, or grayish in color. Soils having a chroma of 2 or less are positive indicators of hydric soils (Environmental Laboratory 1987; USACE 2010).

2.1.3 Hydrology

Wetland hydrology was evaluated at each plot to determine whether it "encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season" (Ecology 1997). Field observations of saturation, inundation, and other indicators of wetland hydrology, such as water-stained leaves and drainage patterns in wetlands, were recorded.

2.2 Wetland Classifications

Wetland community types are discussed according to the USFWS classification developed by Cowardin et al. (1979) for use in the NWI. This system, published in 1979 by a team of USFWS scientists led by L.M. Cowardin, bases the classification of wetlands on their physical characteristics, such as the general type of vegetation in the wetland (e.g., trees, shrubs, grass) and how much, and where, water is present in the wetland. The Cowardin system provides a classification for every known wetland type that occurs throughout the United States and, under this system, a wetland can be classified as having one or more wetland classification types. The Kettle Wetland contained the following Cowardin community types:

- **Palustrine scrub-shrub (PSS):** These wetlands have at least 30% cover of woody vegetation that is less than 20 feet high.
- **Palustrine emergent (PEM):** These wetlands have erect, rooted, herbaceous vegetation present for most of the growing season in most years.

2.3 State Hydrogeomorphic Classification System

Scientists have come to understand that wetlands can perform functions in different ways. The way a wetland functions depends to a large degree on hydrologic and geomorphic conditions. To recognize these differences among wetlands, a way to group or classify them has been developed. This classification system, called the Hydrogeomorphic (HGM) Classification, groups wetlands into categories based on the geomorphic and hydrologic characteristics that control many functions.

The *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)* (Hruby and Yahnke 2023) incorporates the HGM Classification system as part of the questionnaire for characterizing a wetland's functions. The rating system uses only the highest grouping in the classification, i.e., wetland class. Wetland classes are based on geomorphic settings, such as Riverine, Slope, Lake-fringe, or Depressional. A classification key is provided within the rating form to help

identify which of the following HGM Classifications apply to the wetland: Riverine; Depressional; Slope; Lake-fringe; Tidal Fringe; or Flats.

2.4 Other Data Sources

Existing information was referenced to identify potential wetlands or site characteristics indicative of wetlands. The sources of reference information that supported field observations are identified in Section 1.1, Review of Existing Information.

2.5 Wetland Ratings

In 2007, wetland ratings were determined using the most current version of Ecology guidance in *Washington State Wetland Rating System for Western Washington: Revised* (Ecology 2004) and *Wetland Rating Form – Western Washington, Version 2* (Ecology 2006) and according to the City of DuPont wetland rating criteria, as defined in the DMC (City of DuPont 2007).

For the 2017 verification, wetland ratings were determined using the most current version of Ecology guidance in the *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) and according to the DMC (City of DuPont 2017). The DMC has been updated since the 2017 wetland verification was performed. The Kettle Wetland rating under the current DMC (City of DuPont 2020) has been identified in this Report. This was subsequently updated using the *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)* (Hruby and Yahnke 2023). This did not affect the functional assessment or wetland rating.

The rating system developed by Ecology is used to differentiate wetlands based on their sensitivity to disturbance, their significance in the watershed, their rarity, ability to be replaced, and the beneficial functions they provide to society. The Ecology rating system requires the user to collect specific information about the wetland in a step-by-step process. Three major functions are analyzed (water quality improvement, hydrologic functions, and habitat). Ratings are based on a point system, where points are given if a wetland meets specific criteria related to the wetland's potential and the opportunity to provide certain benefits.

Per Ecology's rating system, wetlands are categorized according to the following criteria and to points given:

- **Category I wetlands (23 or more points)** represent a unique or rare wetland type, are more sensitive to disturbance, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.
- **Category II wetlands (20 to 22 points)** are difficult, though not impossible, to replace, and provide high levels of some functions.

- **Category III wetlands (16 to 19 points)** have moderate levels of functions. They have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- **Category IV wetlands (less than 16 points)** have the lowest levels of functions and are often heavily disturbed.

The current DMC classifies wetlands into four categories (Categories I, II, III, and IV) based on the updated 2014/2023 Ecology Wetland Rating System for Western Washington (City of DuPont 2020).

2.6 Wetland Functional Assessment

During the 2017 wetland verification, the functional values of wetlands were rated according to *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014). Using Ecology's system, wetlands were rated based on a point system where points were awarded to three functional value categories (water quality improvement, hydrologic functions, and habitat). Detailed scoring, based on Ecology wetland rating forms, is provided in Appendix B.

3 Wetland Delineation Results

This section describes the wetland delineation results of the 2007 wetland delineation (Anchor Environmental 2007) and 2017 (Anchor QEA 2018) and 2019 (Anchor QEA 2019) wetland verification site visits. Overall, no discernable changes in the Kettle Wetland vegetation, soils, or hydrologic characteristics or the wetland boundary or were observed across the various investigations.

3.1 Kettle Wetland

The Kettle Wetland is a 1.78-acre enclosed, depressional HGM class wetland dominated by a PEM vegetation class with a PSS vegetation class along the wetland boundary. Forty-eight flags were used to identify the Kettle Wetland boundary in 2007. The Kettle Wetland boundary was confirmed to be unchanged during the 2017 and 2019 investigations. The Kettle Wetland is identified on the USFWS Wetlands Mapper for NWI Map Information (USFWS 2007, 2017, 2020) and WDFW PHS maps (WDFW 2017, 2020). The boundary of the Kettle Wetland is shown in Figure 1 in relationship to other wetlands in the vicinity and in detail on Figure 2. The following subsections provide a description of the Kettle Wetland vegetation, soils, and hydrology.

3.1.1 Vegetation

Similar vegetation species were observed in the Kettle Wetland during the 2007, 2017, and 2019 investigations. The PEM communities consist of common mare's tail (*Hippuris vulgaris*), creeping spike rush (*Eleocharis palustris*), giant bur-reed (*Sparganium eurycarpum*), water parsnip (*Sium suave*), reed canarygrass (*Phalaris arundinacea*), water ladysthumb (*Polygonum amphibium*), mild waterpepper (*Polygonum hydropiperoides*), skunk cabbage (*Lysichiton americanus*), inflated sedge (*Carex vesicaria*), and northern bugleweed (*Lycopus uniflorus*). Aquatic species observed include pondweed (*Potamogeton* sp.) and lesser duckweed (*Lemna minor*).

Along the wetland boundary, the PSS community consists of Pacific willow (*Salix lasiandra*), Scouler's willow (*Salix scouleriana*), sitka willow (*Salix sitchensis*), red-osier dogwood (*Cornus sericea*), and hardhack (*Spiraea douglasii*). Other vegetation along the wetland boundary consists of stinging nettle (*Urtica dioica*), blue elderberry (*Sambucus caerulea*), beaked hazelnut (*Corylus cornuta*), and Henderson sedge (*Carex hendersonii*).

Kettle Wetland upland buffer vegetation includes tree, shrub, grass, and herbaceous species. Dominant tree species include big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), western red cedar (*Thuja plicata*), bitter cherry (*Prunus emarginata*), Douglas hawthorne (*Crataegus douglasii*), blue elderberry, and Pacific madrone (*Arbutus menziesii*). Dominant shrub species include trailing blackberry (*Rubus ursinus*), salal (*Gaultheria shallon*), snowberry (*Symphoricarpos albus*), Scot's broom (*Cytisus scoparius*), Oregon grape (*Mahonia*

nervosa), bald-hip rose (*Rosa gymnocarpa*), oceanspray (*Holodiscus discolor*), sword fern (*Polystichum munitum*), saskatoon (*Amelanchier alnifolia*), red huckleberry (*Vaccinium parvifolium*), and bracken fern (*Pteridium aquilinum*). Herbaceous species include velvet grass (*Holcus lanatus*), western wild-rye (*Elymus glaucus*), colonial bent-grass (*Agrostis capillaries*). Vine species include manroot (*Marah oreganus*). Data plot vegetation is presented in the field data forms in Appendix A.

3.1.2 Soils

Kettle wetlands were formed during glacial retreat, when the stagnant melting ice sheet left large blocks of stranded glacial ice called "dead ice." Glacial meltwater would often flow around these stagnant ice blocks, depositing sediment. When the ice blocks later melted, kettles were formed where sediment had been deposited adjacent to the ice blocks. The ice-contact sediment is typically an unstratified silt, sand, and gravel, much lower in permeability than the adjacent outwash. An ablation till can also be formed in kettles when stagnant ice evaporates, leaving the glacial fines once contained in the ice as a low-permeability deposit. Kettles generally are present in the area as closed topographic depressions, some of which are lakes, bogs, and marshes. Over time, peat, silt, and clay collect in these quiet waters, producing the peat and wetland deposits encountered near the ground surface in these low areas.

The NRCS has mapped one soil series in the location of the Kettle Wetland (USDA 2007, 2017, 2020), Spanaway gravelly sandy loam (0% to 6% slopes). These soils are glacial outwash. These soils are very steep and moderately well drained to somewhat excessively drained. Spanaway soils are not classified as hydric soils by the NRCS. Mapped soils are shown in Figure 2.

Kettle Wetland soil characteristics were the same during the 2007 and 2017 investigations. Soils consist of 16 to 20 inches of black peat above a layer of lower permeability silty clay. The peat contained low chroma (less than 1) with slightly decomposed wood fragments indicative of extended periods of inundation. Some areas beneath the peat also contained thin organic lenses within the silty clay layer. The silty clay layer appears to correspond to the "dead ice" phenomenon associated with the formation of kettle wetlands. Upland soils adjacent to the wetland boundary are composed of high chroma (greater than or equal to 2), dry, brown Spanaway gravelly sandy loam. The wetland boundary corresponded with a clear change in soils from gravelly sandy loam to peat. Data plot soils are presented in the field data forms in Appendix A.

3.1.3 Hydrology

The Kettle Wetland is located within the Chambers/Clover Basin Water Resource Inventory Area 12 (Ecology 2020) and the Sequalitchew Creek drainage basin, and it is hydrologically connected with the Vashon aquifer (CH2M Hill 2003a). There are no streams that drain into or out of the Kettle Wetland. The Kettle Wetland is more than 1/2 mile from a Water of the United States and has no surface water connection to any other waterbody. As an enclosed depression, precipitation falling

within the existing vegetated wetland buffer drains toward the Kettle Wetland. The PEM area is inundated for all or most of the year. Water levels in the Kettle Wetland fluctuate seasonally, from 1 to 2 feet during the summer, to 4 to 6 feet during the winter. The width of the open water component also varies seasonally from 50 feet during the summer to several hundred feet during the winter. Water levels in the wetland were monitored intermittently at a staff gauge installed in the wetland in 1999 (CH2M Hill 2003b). Water levels over the monitoring period ranged from a high of 6.22 feet in December 1999, to the soil surface (0.63 foot) in October 1999.

Similar Kettle Wetland hydrology characteristics were observed during the 2007, 2017, and 2019 investigations. Inundation of up to 3 feet was present throughout the central portion of the Kettle Wetland. Within the wetland near the edges, soil saturation ranged from near the surface to greater than 20 inches. However, several secondary indicators of wetland hydrology were observed in areas with peat soils where saturation was well below the surface, including sediment deposits, water marks, and the FAC neutral test. No saturation, standing water, or indications of wetland hydrology were observed in adjacent upland areas. Data plot hydrology is presented in the field data forms in Appendix A.

Data was collected at six data plots, K-1 through K-6 (Appendix A). Plots K-1, K-4, and K-5 contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. Plots K-2, K-3, and K-6 contained no hydric soil or wetland hydrology, although K-3 contained hydrophytic vegetation.

3.2 Regulatory Framework

Guidance from USFWS, Ecology, and the City of DuPont was used to determine the wetland classifications. Information and excerpts from the specific guidance language are provided in the following subsections.

3.2.1 USFWS Classification

The Kettle Wetland has been classified using the system developed by Cowardin et al. (1979) for use in the NWI. Table 2 lists the USFWS classifications for the Kettle Wetland and the connection to surface water.

Table 2
U.S. Fish and Wildlife Service Wetland Classifications

Wetland	USFWS Classification	Surface Water Connection
Kettle	PSS and PEM	None

3.2.2 Ecology Rating, Classification, and Functions and Values Scores

Per the current DMC (City of DuPont 2020), wetland ratings are determined using Ecology's *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)* (Hruby and Yahnke 2023). Under the 2014/2023 Ecology wetland rating system, the Kettle Wetland is rated as Category III wetland. Table 3 lists the 2014/2023 Ecology and local (City of DuPont) wetland rating and classification.

Table 3
Summary of Wetland Classes and Ratings Using Ecology 2014/2023 Wetland Rating Systems

Wetland	Area (acres)	Hydrogeomorphic Classification	2014[1] State Rating (Ecology)	Local Rating (City of DuPont)[2]
Kettle	1.78	Depressional	III	III

Notes:

1. Hruby, T. & Yahnke, A. (2023). *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)*. Publication #23-06-009. Washington Department of Ecology.
2. City of DuPont, 2020. City of DuPont Municipal Code. Accessed December 8, 2020. Available at http://www.codepublishing.com/WA/DuPont/.

For the 2014/2023 Ecology wetland rating system (Hruby and Yahnke 2023), a low, moderate, or high rating is based on three functions: 1) Water Quality Improvement; 2) Hydrologic; and 3) Habitat. Within each of these three functions are three sub-function categories: 1) Site Potential; 2) Landscape Potential; and 3) Value. Each of these sub-function categories is rated as low, moderate, or high. Wetland functional values and scores for the Kettle Wetland under the 2014/2023 Ecology rating system are shown in Table 4. The 2014 Ecology wetland rating forms are provided in Appendix B and reflect the 2023 update (Hruby and Yahnke 2023).

Table 4
Summary of Functions and Values: 2014/2023 Wetland Rating Scores

Wetland and Function	Water Quality Improvement	Hydrologic	Habitat	Total Functions Score[1]
Kettle Wetland				
Site Potential	High	High	High	
Landscape Potential	Moderate	Moderate	Low	
Value	Low	Low	Moderate	
Score Based on Rating[1]	6	6	6	18

Notes:

1. Potential total score per function is 9, for a potential total score of 27.

3.3 Wetland Functional Assessment

The following subsections provide a description of the functions of the Kettle Wetland based on the 2014/2023 Ecology wetland rating system.

3.3.1 Water Quality Improvement Functions

The Kettle Wetland has a high function score for the potential to improve water quality for removal of sediments, nutrients, and toxics, because it is a closed depression with no surface water outlet. The Kettle Wetland also has dense vegetation to trap sediments and pollutants, and the soil characteristics include organic material.

The Kettle Wetland has a moderate function score for the landscape potential to support water quality functions because of the potential of the surrounding land uses to generate pollutants and discharge stormwater to the wetland.

The Kettle Wetland has a low function score to provide water quality improvement valuable to society because it is not located in the vicinity of aquatic resources that are on the Ecology 303(d) list, and there is no surface flow from the wetland to other waterbodies.

3.3.2 Hydrologic Functions

The Kettle Wetland provides a high function score for potential to reduce flooding and erosion based on the absence of surface water outflows from the wetland, the depth of storage provided by the wetland during wet periods, and the contribution of the wetland to storage in the watershed.

The Kettle Wetland provides a moderate functions score for potential to support hydrologic functions based on the potential for surrounding land uses to generate pollutants and discharge stormwater to the wetland.

The Kettle Wetland has a low function score to provide hydrologic functions valuable to society because it is located in a landscape where it does not potentially flow downgradient into areas where flooding has damaged human or natural resources.

3.3.3 Habitat Functions

The Kettle Wetland has a high function score for the potential to provide habitat due to the vegetative structure (number of Cowardin [1979] vegetation classes), the number of water regimes or hydroperiods, the plant richness, the habitat diversity, and special habitat features present.

The Kettle Wetland has a low score for the landscape potential to support habitat functions because of the characteristics of disturbed and undisturbed habitats surrounding the wetland and the land use intensity of the surrounding area.

The Kettle Wetland has a moderate function score to provide habitat functions valuable to society because of the presence of snags within the wetland The 2014/2023 Ecology wetland rating forms are included in Attachment A.

3.4 City of DuPont Wetland Buffer Guidance

Required wetland buffers have been identified according to the current DMC Chapter 25.105.050 (City of DuPont 2020). The DMC identifies minimum protective buffer widths based on the wetland category, per the 2014/2023 Ecology rating system. The Kettle Wetland is a Category III wetland.

Wetland boundaries are shown in Figure 2. Table 5 summarizes DMC ratings and buffer widths based on the 2014/2023 Ecology rating system.

Table 5
Wetland Rating and Standard Buffer Widths

Wetland	2014 State Rating (Ecology)[1]	Local Rating (City of DuPont)	Buffer Width (feet)[2]
Kettle	III	III	75

Note:
1. Hruby, T. & Yahnke, A. (2023). *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)*. Publication #23-06-009. Washington Department of Ecology.
2. City of DuPont, 2020. City of DuPont Municipal Code. Accessed December 8, 2020. Available at http://www.codepublishing.com/WA/DuPont/.

3.5 Wetland Delineation and Typing Limitations

Wetland identification is an inexact science, and differences of professional opinion occasionally occur between trained individuals. Final determinations for wetland boundaries and typing concurrence or adjustments to these are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in hydrology or land use. In addition, the definition of jurisdictional wetlands may change. If a physical change occurs in the basin, or if 3 years pass before the proposed project is undertaken, another wetland survey should be conducted. The results and conclusions expressed herein represent Anchor QEA's professional judgment based on the information available.

4 References

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Figures

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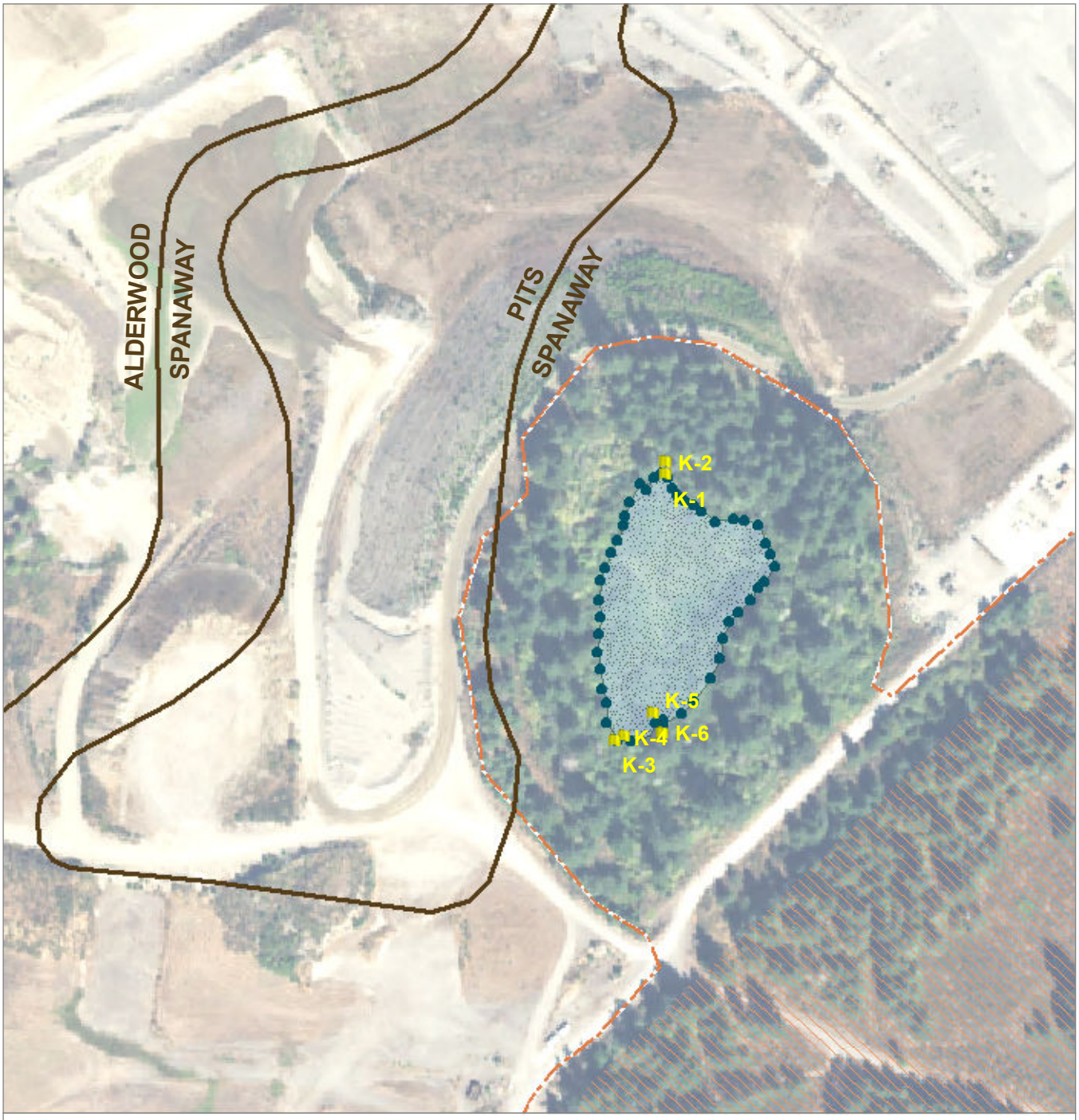
ANCHOR QEA

Figure 1
Vicinity Map
Kettle Wetland Delineation Report
Pioneer Aggregates South Parcel Project



LEGEND:

- South Parcel Expansion Area (188 ac)
- South Parcel Mineral Resource Area Expansion
- Mining Limits (existing and proposed, 620 ac)
- Pioneer Aggregates Property (791 ac)
- Data Plot
- Wetland Boundary Flag
- Kettle Wetland
- Sequalitchew Creek

NOTES:
Imagery: 2017 USDA NAIP

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ANCHOR QEA

Figure 2
Kettle Wetland Map
Kettle Wetland Delineation Report
Pioneer Aggregates South Parcel Project

Appendix A
Field Data Forms

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K1
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Salix lasiandra	T 60%	FACW+	Urtica dioica	H 15%	FAC+
Pseudotsuga menziesii	T 20%	FACU	Sium suave	H 5%	OBL
Sambucus racemosa	T 5%	FACU			
Spiraea douglasii	S 15%	FACW			
Salix lasiandra	S 10%	FAC+			
Symphoricarpus albus	S 15%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/2 = 50%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No	Sediment Deposits: ☒ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: >20 inches			

Check all that apply & explain below:	Other (explain):
☐ Stream, lake or gage data	
☐ Aerial photographs	
☐ Other	

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Dupont muck

Drainage Class Very poorly drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	O1	10YR 2,1	None	None	Peat (black, decomposed wood/twigs and peat)	
14-20	O2	10YR 2,1	None	None	Gravelly peat	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☒ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K2
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Polystichum munitum	H 20%	FACU	Pseudotsuga menziesii	T 20%	FACU
Rubus ursinus	H 40%	FACU	Holodiscus discolor	T 10%	NI
Mahonia nervosa	S 20%	FACU	Sambucus racemosa	T 15%	FACU
Symphoricarpos albus	S 20%	FACU	Corylus cornuta	T 10%	FACU
Marah oreganus	V 20%	NI	Carex hendersonii	H 15%	FAC
Salix lasiandra	T 40%	FAC+	Urtica dioica	H 5%	FAC+

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/7 = 14%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: None inches			

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Spanaway gravelly sandy loam

Drainage Class Somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	A	10YR 2,2	None	None	Gravelly sandy loam (brown). Gravel prevented further shovel penetration.	

Hydric Soil Indicators: (check all that apply)

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

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	8/9/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K3
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Sambucus racemosa	S 40%	FACU			
Cornus nutallii	S 50%	NI			
Urtica dioica	H 15%	FAC+			
Galium aparine	H 5%	FACU			
Rubus ursinus	H 5%	FACU			
Tolmiea menziesii	H 5%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 0/2 = 0%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☒ No	Sediment Deposits: ☐ Yes ☒ No
Based on: Observation	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☐ Yes ☒ No
Depth to saturated soil: None inches		

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Spanaway gravelly sandy loam

Drainage Class Somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	A	7.5YR 2.5,1	None	None	Loamy gravel; Gravel prevented further penetration.	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks: Soil chroma is low because color is black, but no other indications of hydric soil are present. No indications of wetland hydrology are present.

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	8/9/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K4
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Salix lasandra	S 40%	FAC+			
Cornus nutallii	S 50%	NI			
Moss	H 10%	None			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/2 = 50%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No	Sediment Deposits: ☒ Yes ☐ No
Based on: Observation	Drift Lines: ☒ Yes ☐ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: 20 inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☒ Yes ☐ No
Depth to saturated soil: 1 inches		

Check all that apply & explain below:	Other (explain):
☐ Stream, lake or gage data	
☒ Aerial photographs	
☐ Other	

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Dupont muck

Drainage Class Very poorly drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A1	7.5YR 2.5,1	None	None	Siilty peat (decomposed organic debris)	
8-15	A2	7.5YR 2.5,1	7.5YR 3,2	40% 2 inches	Silty peat with gleyed colors	
15-17	B1	7.5YR 3,2	2.5Y 5,6	10% 1/2 inch	clayey silt with organic lenses	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☒ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES: Matrix chroma <=2 with mottles

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	8/9/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K5
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Salix lasiandra	T 30%	FAC+			
Salix scouleriana	T 30%	FAC			
Cornus nutallii	S 30%	NI			
Spirea douglasii	S 40%	FACW			
Oenanthe sarmentosa	H 20%	OBL			
Solanum dulcamara	H 5%	FAC+			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 4/5 = 80%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No	Sediment Deposits: ☒ Yes ☐ No	
Based on: Observation	Drift Lines: ☒ Yes ☐ No	Drainage Patterns: ☐ Yes ☒ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No	
Depth to free water in pit: 20 inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☒ Yes ☐ No	
Depth to saturated soil: 1 inches			

Check all that apply & explain below:	Other (explain):
☐ Stream, lake or gage data	
☒ Aerial photographs	
☐ Other	

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Dupont muck

Drainage Class Very poorly drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	A1	7.5YR 2.5,1	None	None	Siilty peat (decomposed organic debris)	
14-16	A2	7.5YR 2.5,1	10YR 6,2	20% 1 inch	clayey silt (chalky) and silty peat	
16-20	B	10YR 6,2	None	None	clayey silt (chalky)	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K6
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Polystichium munitum	S 20%	FACU	Galium aparine	H 10%	FACU
Corylus cornuta	T 80%	FACU	Tolmiea menziesii	H 10%	FACU
Salix scouleriana	T 20%	FAC			
Urtica dioica	S 10%	FAC+			
Symphoricarpus albus	S 10%	FACU			
Rubus ursinus	H 10%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/3 = 33%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: None inches			
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):		

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Spanaway gravelly sandy loam

Drainage Class Somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A	10YR 2,2	None	None	Sandy gravel. Gravel prevented further shovel penetration.	

Hydric Soil Indicators: (check all that apply)

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

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

Appendix B
Ecology Wetland Rating Forms

Wetland name or number Kettle

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Kettle Wetland Date of site visit: November 2017

Rated by C. Douglas Trained by Ecology? ☒ Yes ☐ No Date of training 2007

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 _____

OVERALL WETLAND CATEGORY III (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

X **Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
	Circle the appropriate ratings									
Site Potential	(H)	M	L	(H)	M	L	(H)	M	L	
Landscape Potential	H	(M)	L	H	(M)	L	H	M	(L)	
Value	H	M	(L)	H	M	(L)	H	(M)	L	**TOTAL**
Score Based on Ratings	6			6			6			**18**

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	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	X

Wetland name or number Kettle_____

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 another 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 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 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 (*can be added to figure above)*	S 4.1	
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 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)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number Kettle

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 – 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 Kettle_____

◉ 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 Kettle

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water 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 (QUESTION 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 flowing outlet. points = 2 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	3
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	4
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 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded 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	4
Total for D 1 Add the points in the boxes above	**16**

Rating of Site Potential If score is: ☒ **12-16 = H** ☐ **6-11 = M** ☐ **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 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	1
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 questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	**1**

Rating of Landscape Potential If score is: ☐ **3 or 4 = H** ☒ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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	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 = 2 No = 0	0
Total for D 3 Add the points in the boxes above	**0**

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

Wetland name or number Kettle _____

DEPRESSIONAL AND FLATS WETLANDS

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 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 outlet points = 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 outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland 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) points = 0	7
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of 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 = 0 Entire wetland is in the Flats class points = 5	5
Total for D 4 Add the points in the boxes above	**16**

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. 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	1
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	1
Total for D 5 Add the points in the boxes above	**2**

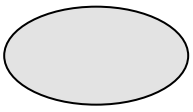
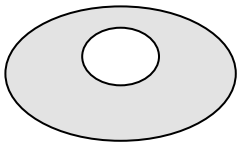
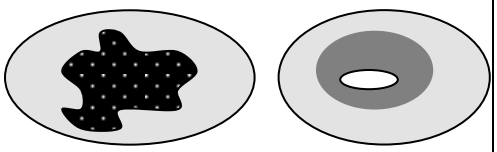
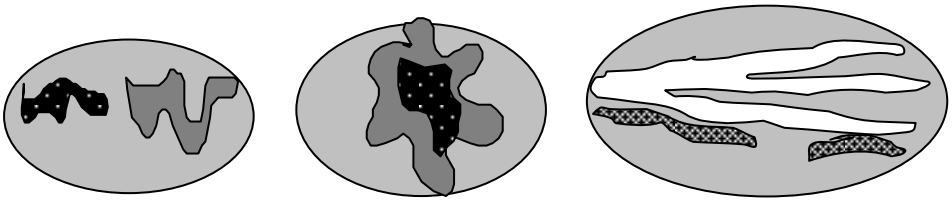
Rating of Landscape Potential If score is: ☐ **3 = H** ☒ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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 cannot reach areas that flood. *Explain why* _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	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	0
Total for D 6 Add the points in the boxes above	**0**

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

Wetland name or number Kettle _____

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.* __X__Aquatic bed — 4 structures or more: points = 4 __X__Emergent — 3 structures: points = 2 __X__Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __X__Forested (areas where trees have > 30% cover) — 1 structure: points = 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	4
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*). __X__Permanently flooded or inundated — 4 or more types present: points = 3 __X__Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 __X__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	2
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.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	2
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 or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	3

Wetland name or number Kettle

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.* __X__Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __X__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)* __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)* __X__Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	4
Total for H 1 Add the points in the boxes above	**11**

Rating of Site Potential If score is: ☐ **15-18 = H** ☒ **7-14 = M** ☐ **0-6 = L** *Record the rating on 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*). *Calculate:* % undisturbed habitat 5 **+** [(% moderate and low intensity land uses)/2] 2.5 **=** 7.5 % If total accessible habitat is: > 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 = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 20 **+** [(% moderate and low intensity land uses)/2] 5 **=** 25 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**-1**

Rating of Landscape Potential If score is: ☐ **4-6 = H** ☐ **1-3 = M** ☒ **< 1 = L** *Record the rating on the 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 applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — 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 has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	**1**

Rating of Value If score is: ☐ **2 = H** ☒ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number Kettle

WDFW Priority Habitats

Priority habitats listed by WDFW (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. 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:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – 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.

X **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 name or number Kettle

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands 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** ◯No= **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? ◯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) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ◯Yes = **Category I** ◯No = **Category II**	◯**Cat. I** ◯**Cat. 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 Wetlands of High Conservation Value? ◯Yes – Go to **SC 2.2** ◯No – Go to **SC 2.3** 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** ◯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 their website? ◯Yes = **Category I** ◯No = **Not a WHCV**	◯**Cat. I**
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 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 plant species in Table 4 are present, the wetland is a bog. 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**	◯**Cat. I**

Wetland name or number Kettle

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre 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 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) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* ◯Yes – Go to **SC 5.1** ◯No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland 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). — 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**	◯**Cat. I** ◯**Cat. 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 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: 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 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** 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 I** ◯**Cat. II** ◯**Cat. III** ◯**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	NA

Attachment 5.c

March 2024, Revised March 2025
Pioneer Aggregates Mine Expansion (South Parcel) Project

ANCHOR QEA

Wetland Mitigation Plan

Prepared for CalPortland

March 2024, Revised March 2025
Pioneer Aggregates Mine Expansion (South Parcel) Project

Wetland Mitigation Plan

Prepared for
CalPortland
P.O. Box 1730
Seattle, Washington 98111

Prepared by
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Project Number: 190217-01.01
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ABBREVIATIONS

cfs	cubic feet per second
City	City of DuPont
DMC	DuPont Municipal Code
Ecology	Washington State Department of Ecology
EIS	environmental impact statement
H:V	horizontal to vertical (ratio)
m^2	square meter
PAB	palustrine aquatic bed
PEM	palustrine emergent
PSS	palustrine scrub-shrub
RCW	Revised Code of Washington
USACE	U.S. Army Corps of Engineers
WDFW	Washington Department of Fish and Wildlife

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This mitigation plan, the attachments, and the appendices were prepared by Anchor QEA. John Small was the project manager for all work related to this plan and the supporting documents, including the wetland delineation report and functional analyses.

Parties Responsible for Monitoring, Long-Term Maintenance, and Contingency Plans

- CalPortland
- Anchor QEA
- Sound Native Plants

Add any state permit application numbers (e.g., VCP, Reclamation)

1 Executive Summary

CalPortland is in the process of expanding the existing sand and gravel mine operations at the Pioneer Aggregates Mine in DuPont, Washington. Mining will result in the unavoidable removal of a 1.78-acre kettle wetland. Mitigation for the wetland impacts will include wetland and buffer creation consistent with the requirements of the City of DuPont's (City's) Sensitive Area Ordinance (DuPont Municipal Code [DMC] Section 25.105) and the State Water Pollution Control Act (Revised Code of Washington [RCW] 90.48). The mitigation wetland will be 3.56 acres and will be a depressional wetland system, fed by groundwater. Mining will create a series of springs where perched groundwater enters the side of the new mine. This clean, cool water will be conveyed to the wetland in open channels. The wetland complex will consist of a series of ponded depressional outflow wetlands vegetated with several different communities of native wetland species. After reclamation and development of the site, the spring water will be mixed with stormwater from developed areas. Water from both sources (springs and stormwater) will be infiltrated into the gravels underlying the mine, eventually reaching Puget Sound as groundwater or tidal spring water.

CalPortland has made a long-term commitment to the project and the community, and operations at the Pioneer Aggregates Mine are expected to continue for 14 years. CalPortland will continue to monitor the impacts of the project and the success of the mitigation site for a minimum of 10 years from substantial completion of the wetland mitigation site construction.

The Kettle Wetland does not communicate hydraulically with Waters of the United States and does not fall under the jurisdiction of the U.S. government, as recently confirmed by the U.S. Army Corps of Engineers (USACE) in a Jurisdictional Determination letter (Appendix A). Washington's surface waters, including the Kettle wetland, are protected by the Washington State Department of Ecology's (Ecology's) antidegradation policy, as guided by RCW 90.48, Water Pollution Control Act, and RCW 90.54, Water Resources Act of 1971. The Kettle wetland is also protected by DMC 25.105, Critical Areas. This plan demonstrates compliance with those policies, including that all known, available, and reasonable methods are used to protect the waters of State of Washington.

This plan was developed to be consistent with the format and content recommended in *Wetland Mitigation in Washington State, Part 2: Developing Mitigation Plans*, Ecology Publication No. 06-06-011b, Version 1 (Ecology et al. 2006). This meets the requirements of the RCW, and DMC 25.105.050.1(d) and (e).

This plan includes a description of the wetland impacts and mitigation. The wetland mitigation goals, objectives, and performance standards have been developed to ensure no net loss of wetland function as a result of the project. A detailed monitoring plan and an adaptive management plan (Section 7 and 8, respectively) are also included, to further demonstrate and guarantee the success of

the project. Appendix B contains a mitigation checklist that references where in this report specific information may be found.

Expansion of the Pioneer Aggregates Mine will also result in indirect impacts to the 0.13-acre Seep Wetland Complex located along the Sequalitchew Creek Trail. Mining activities will not result in cut or fill in the wetland and will not impact groundwater quality, but they will result in hydrologic changes in the wetland. The mitigation plan included in Section 9 addresses these impacts through the creation of a larger complex of seep wetlands and springs within the mine.

2 Proposed Development Project

The proposed project includes a 177-acre expansion of the DuPont Aggregates Mine, which will extend the period of active mining by approximately 14 years (depending on market conditions), increasing the available sand and gravel resources by 30 to 40 million tons. The Expansion Area is located within a Mineral Resource Overlay applied by the City's Comprehensive Plan. The purpose of the overlay is to conserve mineral resources of long-term commercial significance, as required by the Grown Management Act.

Mining of the South Parcel would involve six primary activities: logging, clearing and topsoil removal, groundwater management, extraction, processing and transport, and reclamation. Mining would proceed segmentally and these activities could overlap as mining advances. Location and Description of the Development Site

The proposed mining Expansion Area is located just southeast of the existing Pioneer Aggregates Mine, in the City of DuPont, southwestern Pierce County; Sections 22, 23, 26, and 27; Township 19 North; Range 1 East of the Willamette Meridian (Figure 2-1). The proposed Expansion Area is bordered to the northwest by the existing Pioneer Aggregates Mine, to the east by an Amazon fulfillment center and other warehouse operations, and to the south by the Creekside Village DuPont residential development and Sequalitchew Creek ravine (Figure 2-2). The proposed Expansion Area is owned by Weyerhaeuser and is leased to CalPortland. The site is located in the Chambers-Clover subbasin of Water Resource Inventory Area 12.

2.1 Schedule

Initial work on the project could start as early as 2020, but work in close proximity to the existing wetland would not occur before 2021.

2.2 Site Zoning and Land Use

The City amended its Comprehensive Plan in 2006, to include the Expansion Area within its Mineral Resource Overlay. As identified by the DuPont Comprehensive Plan Land Use and Zoning Maps, the Expansion Area contains the following underlying zoning designations: the southern portion (approximately 164 acres) is designated for Manufacturing and Research use; the northern portion (approximately 36 acres), located within the future Sequalitchew Village, is designated both Residential-4 Residential (approximately 14 acres) and Residential Reserve (approximately 22 acres). The northern portion of the city is zoned primarily for Industrial and Manufacturing/Research Park, with some Residential and Residential Reserve in and adjacent to Sequalitchew Village, and Military in the northeast corner of the city. The proposed mitigation site is zoned Community Park, and the buffer is zoned Open Space/Sensitive Areas, Community Park, Manufacturing and Research, and Residential-4.

2.3 Existing Wetlands

There is one wetland within the project area, referred to here as the Kettle Wetland (Figure 2-3). The Kettle Wetland was delineated by Anchor Environmental in 2007 and that delineation was confirmed by Anchor QEA in 2018 (Appendix C). The Kettle Wetland is an enclosed depressional wetland containing palustrine emergent (PEM) and palustrine scrub-shrub (PSS) wetland vegetation. The interior of the wetland is dominated with palustrine emergent (PEM) vegetation and has PSS vegetation along the wetland boundary. Dominant PEM vegetation includes creeping spike-rush (*Eleocharis palustris*), giant bur-reed (*Sparganium eurycarpum*), water parsnip (*Sium suave*), water lady's thumb (*Polygonum amphibium*), mild water pepper (*Polygonum hydropiperoides*), skunk cabbage (*Lysichiton americanus*), and inflated sedge (*Carex vesicaria*). Along the wetland boundary, PSS vegetation consists of Pacific willow (*Salix lasiandra*), Scouler's willow (*Salix scouleriana*), Sitka willow (*Salix sitchensis*), red-osier dogwood (*Cornus sericea*), and hardhack (*Spiraea douglasii*). Some palustrine aquatic bed (PAB) plants, such as common duckweed (*Lemna minor*), were observed but did not provide enough cover to meet the criteria of a PAB wetland system.

Inundation levels within the Kettle Wetland were at or near the wetland boundary. Water levels observed during the December 2017 site visit were anticipated to be near annual peak levels, based on the time of year of the site visit.

Soils within the Kettle Wetland were 16 to 20 inches of black peat (1 chroma) above a layer of lower-permeability silty clay.

Under Ecology's 2014 wetland rating system (Hruby 2014, Hruby and Yahnky 2023), the Kettle Wetland meets the criteria of Category III wetland. Water quality and hydrologic function potential for the Kettle Wetland are rated high for removal of sediments, nutrients, and toxics, and reduction in peak flows and downstream erosion. Potential for the wetland to provide these functions is minimal due to the small drainage area (entire catchment area is less than 10 acres) and minimal upgradient disturbance. Water quality and hydrologic improvement functions are rated low because the wetland does not have surface water connections to downstream aquatic resources.

The wetland has moderate potential habitat functions, based on the plant communities and species variation, the variety of hydroperiods provided, and the habitat features present. The wetland has a low landscape potential due to the land use activities in the vicinity of the wetland. The Kettle Wetland has a moderate score to provide habitat functions valuable to society because of the presence of snags within the wetland The 2014/2023 Ecology wetland rating forms are included in Appendix C.

The Kettle Wetland is more than 1/2 mile from a water of the United States and has no surface water connection to any other waterbody. On April 17, 2019, USACE issued a determination that the Kettle Wetland is not a water of the United States (USACE 2019).

Located along the Sequalitchew Creek Trail is the 0.13-acre Seep Wetland Complex consisting of two narrow seep wetland areas: a 0.1-acre seep wetland delineated by Anchor Environmental in 2009 and 2017 and a 0.03-acre seep wetland delineated by Anchor Environmental in 2009 and 2017 (Figure 2-4). The 0.1-acre seep wetland extends approximately 600 feet along the trail and is classified as a PEM wetland. At the time of the 2007 delineation, vegetation consisted of purple-leaved willowherb (*Epilobium ciliatum*), lady fern (*Athyrium filix-femina*), soft rush (*Juncus effusus*), young salmonberry (*Rubus spectabilis*), large-leaf avens (*Geum macrophyllum*), scouring rush (*Equisetum hyemale*), and giant horsetail (*Equisetum telmateia*). A 0.03-acre seep wetland is located about 75 yards down the trail from the larger seep. It is also classified as a PEM wetland and consists of similar vegetation. Anchor QEA delineations confirmed that there were no changes in the wetland size or wetland rating between the initial delineations in 2007 and 2009 and the later delineations in 2017. Anchor QEA biologists perform annual monitoring of several wetlands in the area, and no significant changes in the wetland size or functions of the Seep Wetland Complex have been observed since 2009.

In these wetland areas, groundwater discharges to the surface where the trail corridor has cut into the Olympia Bed contact, resulting in soils sufficiently saturated to develop wetland characteristics. Wetland soils consist of greater than 12 inches of brown, dense, silty sand with low permeability. The silty sand contains low chroma (less than 2) and redoximorphic concentrations indicative of extended periods of saturation. Wetland hydrology included the presence of saturation within 12 inches of the soil surface.

Under Ecology's 2014 wetland rating system (Hruby 2014, Hruby and Yahnky 2023), the Seep Wetland Complex meets the criteria of Category IV wetland. The Seep Wetland Complex scored low for water quality improvement and hydrologic (water storage) functions, partially based on the lack of dense vegetation and steep slope. However, the Seep Wetland Complex provides base flow support to Sequalitchew Creek. The wetland complex scored higher for habitat quality functions based on its location within a habitat corridor, wide vegetated buffers, and proximity to other wetlands.

The 2014 Ecology wetland rating forms are included in Appendix C.

2.4 Other Aquatic Resources

There are no other aquatic resources within the existing mine or proposed development. The Nisqually Reach of Puget Sound is located approximately 400 feet from the existing mine, 650 feet from the proposed mitigation site, and 1/2 mile from the Kettle Wetland. Sequalitchew Creek is approximately 500 to 700 feet from the existing mine, approximately 650 feet from the mitigation site, and more than 1/2 mile from the Kettle Wetland.

3 Impacts to Existing Wetlands

Wetland impacts include direct impacts associated with mining, and indirect impacts associated with the changes in groundwater resulting from passive dewatering.

3.1 Direct Impacts to Existing Wetlands

The entire 1.78-acre Kettle Wetland will be excavated to allow mining. The Kettle Wetland is a Category III wetland under the rating system used by both the state and the City (Hruby 2014, Hruby and Yahnky 2023). The wetland is encircled by a forested buffer that is 150 feet or greater. Wetland soils and some vegetation will be retained for use at the mitigation site. Additional information about the Kettle Wetland hydrology, soils and vegetation can be found in the attached wetland delineation report (Appendix C). Table 3-1 summarizes the wetland functional analysis performed as part of the wetland rating process. A detailed description of the Kettle Wetland, including data sheets and rating scores, may be found in Appendix C.

Table 3-1
Kettle Wetland Functions and Values[1]

	Water Quality	Hydrology	Habitat
Site Potential	High	High	High
Landscape Potential	Medium	Medium	Low
Value	Low	Low	High

Note:
1. Based on Hruby 2014.

3.2 Indirect Impacts to Existing Wetlands

The 0.13-acre Seep Wetland Complex along the Sequalitchew Creek Trail is fed by groundwater from the Vashon Aquifer. Grade changes resulting from mining are expected to lower this aquifer and eliminate the source of hydrology for the Seep Wetland Complex. The Seep Wetland Complex is about 300 feet away from the mine, and any mining-related activities and the area around the Seep Wetland Complex will not be disturbed beyond the loss of hydrology. The wetland is within a forested, riverine corridor of mature trees. Additional information about the Seep Wetland Complex hydrology, soils, and vegetation can be found in the attached wetland delineation report (Appendix C). Table 3-2 summarizes the wetland functional analysis performed as part of the wetland rating process. A detailed description of the Seep Wetland Complex, including data sheets and rating scores, may be found in Appendix C. The approach, goals, objectives, performance standards, monitoring, and adaptive management of the mitigation for indirect impacts is included in Section 9 of this document. Sections 4 through 8 address only direct impacts.

Table 3-2
Seep Wetland Complex Functions and Values[1]

	Water Quality	Hydrology	Habitat
Site Potential	Low	Low	Low
Landscape Potential	Low	Low	Low
Value	High	Low	High

Note:
1. Based on Hruby 2014.

The seep wetland is located within an undeveloped ravine that provides a high landscape potential to provide habitat, as reflected in the wetland rating. The proposed project will not directly impact this area, and it will remain a landscape of high-quality habitat for a broad variety of species.

4 Mitigation Approach

4.1 Mitigation Sequencing

The Pioneer Aggregates facility includes millions of dollars of infrastructure to efficiently wash, sort, and crush aggregate and load it onto barges. The South Parcel expansion would allow the mine to continue operating for approximately 14 additional years and would yield 30 to 40 million tons of material. There are no other available facilities, planned or built, on Puget Sound that would produce similar material and allow for efficient barge loading. Currently, approximately 80% of the aggregate exported from the site is delivered by barge; conversion to an upland site would have significant environmental impacts, including impacts to aquatic resources, from trucking in the region of the mine. These impacts would include truck emissions, increased traffic, and increased wear on roads. Conversion to truck transport would adversely affect water resources by increasing polluted runoff and emissions. Creation of a new barge-loading facility would adversely affect water resources directly, through creation of a new dock and loading facility. Extending the life of the existing plant and infrastructure would supply the state with a substantial source of aggregates with fewer environmental impacts, including to aquatic resources, than developing another site could.

4.1.1 Avoidance

Avoiding impacts to the Kettle Wetland would preclude mining of the South Parcel. Left intact, the Kettle Wetland would lose wetland hydrology because of unavoidable changes in the groundwater hydrology. Maintaining adequate aggregate supply would necessitate development of a new mine elsewhere. No available existing sites with similar resource and an existing barge-loading capacity exist on Puget Sound or adjacent waterways that could provide a navigable connection to the locations currently served by the mine. Development of a new mine site and barge-loading facility would result in greater aquatic resources damage than extending the life of the existing mine and providing compensatory mitigation for the impacts to the Kettle Wetland.

4.1.2 Minimization

The Kettle Wetland hydrology is almost entirely supplied by groundwater. Any significant additional mining near the Kettle Wetland will intercept this groundwater and result in a loss of wetland hydrology; therefore, there is no practicable alternative that minimizes impacts to the Kettle Wetland.

4.1.3 Restoration

The Kettle Wetland hydrology is almost entirely supplied by groundwater. Any significant additional mining near the Kettle Wetland will intercept this groundwater and result in a loss of available wetland hydrology for restoration after mining; therefore, there is no practicable alternative to restore the Kettle Wetland after mining.

4.1.4 Creation as Compensatory Mitigation

The value of the mineral resources and the associated infrastructure costs of developing a new mine site make avoiding or minimizing impacts to the Kettle Wetland impracticable. The functions and values of the Kettle Wetland have been well studied and can be replicated by creation of a new wetland fed by the same groundwater source in a new location on the mine floor. Soils and vegetation from the existing Kettle Wetland would be salvaged and used to help increase the likelihood of successfully replacing all lost wetland functions and values.

4.2 Project-Specific Goals

The design of the mitigation wetland complex is intended to create aquatic, wetland, riparian, and upland forest habitat by using groundwater intercepted within the Pioneer Aggregates Mine. Specific goals include the following:

- Create a constructed palustrine depressional wetland complex consisting of forested, scrub-shrub, emergent, and aquatic bed wetland areas at least 3.56 acres in size
- Provide adequate wetland acreage, functions, and values to mitigate all project-related wetland impacts to the Kettle Wetland
- Construct a vegetated buffer at least 100 feet around the boundary of the wetland

4.3 Mitigation Strategy

Reclamation of the existing mine includes placement of compacted silty material on the floor and side slopes of the mine. This process creates a very low-permeability layer. The mitigation wetland will be constructed in the southeast corner of the mine. This location is significantly closer to Puget Sound and Sequalitchew Creek than the existing Kettle Wetland. Fine silty material has been placed and compacted in this location. Additional grading and compaction of that material would occur in preparation for construction of the mitigation wetland.

4.3.1 Source of Wetland Hydrology

An existing aquifer is present in the sands and gravels to be mined in the South Parcel. Wells would be installed and pumped in advance of mining to intercept groundwater and dry out the gravels for mining. Initial mining of the South Parcel would create a deep trough along the east and south edges of the mine. This trough would minimize the time required to actively dewater the mine using extraction wells. Once mining of each section of trough is completed, the adjacent wells can be turned off, allowing groundwater to passively seep from the stable mine slope and flow by gravity to the mitigation wetland and/or infiltration galleries that would be constructed on the floor of the existing mine. After mining the trough along the perimeter, gravel would be extracted from the

interior area. Dewatering the South Parcel involves four steps, occurring over very different time scales, as follows:

1. **Short-Term Pumping Test:** The initial step is a 60-day pumping test, which is completely reversible (i.e., no gravel would be extracted during the test) and which would be used to collect data on the effects of pumping. The results of the test would be analyzed and evaluated, and plans adjusted, as necessary, prior to commencing the next phase.
2. **Longer-Term Pumping:** The second step involves installing and pumping dewatering wells to lower water levels in the first mine segment, in preparation for mining. This step would last approximately 6 months and functions as a greatly expanded pumping test. As with the first step, it is also completely reversible.
3. **Active Dewatering During Mining:** The third step involves mining the trough. Additional dewatering wells would be installed and pumped as mining progresses. Mining would begin near the northwest corner of the South Parcel and proceed slowly south. Completing the trough would require 5 to 8 years, depending on market conditions and the success in meeting predicted groundwater levels. Water extracted from the wells would be piped to the wetland mitigation site, and surplus water would be conveyed to an infiltration pond. This would allow ample opportunity to monitor and adapt to the conditions observed before mining proceeds into each dewatered segment.
4. **Passive Dewatering:** The final step begins when mining of the trough is complete and the last dewatering well is turned off. Passive dewatering represents the groundwater condition that would continue in perpetuity. Groundwater, no longer intercepted by wells, would form seeps at the toe of the eastern mine slope. This spring water would flow by gravity through an open channel to the mitigation wetland complex at the bottom of the existing mine and eventually to the infiltration pond. Once this step has begun, further mining activities in the interior of the South Parcel would not affect groundwater elevations.

4.3.2 Source of Wetland Soils

Soils from the existing Kettle Wetland consist of 16 to 20 inches of black peat near the wetland boundary (this material may be deeper near the center). This soil would be excavated and placed above the compacted silty subgrade in the wetland mitigation complex to establish finished grades.

4.3.3 Source of Wetland Vegetation

Vegetation for the mitigation site would be grown on site from sources in the Kettle Wetland and elsewhere in Puget Lowlands. Most vegetation would be started in containers and then planted, but some transplanting from the Kettle wetland directly to the mitigation site may occur if is determined to be feasible and advantageous for success at the time.

5 Proposed Mitigation Site

5.1 Location, Ownership, and Zoning

The proposed mitigation site is located on the floor of the existing Pioneer Aggregates Mine. It is located in the City of DuPont, southwestern Pierce County, Section 22, Township 19 North, Range 1 East of the Willamette Meridian (Figure 2-1). The proposed mitigation site is bordered to the south and west by the slopes of the existing Pioneer Aggregates Mine. The proposed mitigation site is owned by Weyerhaeuser Company and is leased to CalPortland. The underlying zoning of the site is Community Park. The site is generally flat and has undergone some reclamation by placement of level, compacted silty material, but it is otherwise undeveloped and devoid of vegetation and aquatic resources. The mitigation site is approximately 3,000 feet west-southwest of the Kettle Wetland, and approximately 125 lower in elevation. The southern and western buffer areas are steeply sloped toward the mitigation site and have undergone planting as part of the mine reclamation. These plantings would remain and be augmented as necessary to meet the goals and objectives of this plan.

5.2 Mitigation Site Design Criteria

The design would result in a wetland complex that fully compensates for lost functions and values of the Kettle Wetland. The mitigation design strategy is to create a mosaic of depressional flow through wetlands connected in series (Figures 5-1 and 5-2). Each depression would be surrounded by low berms and connected to the next wetland downstream by a small weir. These weirs would be adjustable and used during establishment of the wetland. Once the ideal water surface elevations are determined the weirs would be buried at the elevation of the highest stop log. Then, as the stop logs decompose, their function would be maintained by the soils and gravels placed between each depression. The drop in water surface elevation between each depression in the series would be minimal, to prevent headcutting and resultant changes in hydrology. The intent of using a series of smaller depressions rather than a single larger depression is to mitigate risk: unanticipated changes in water surface elevation are less likely to affect large areas if each depression is controlled independently.

5.2.1 Mitigation Site Hydrology

The source of water for the mitigation wetland is the Vashon Aquifer. Initially, water would be withdrawn from wells and piped to the mitigation site. Once the initial mining has fully intercepted the Vashon aquifer, open channels would be constructed to convey the water from the Vashon aquifer from springs along the mine slopes to the wetland mitigation site and to infiltration galleries near the perimeter of the mine (Figures 5-3 and 5-4). This would provide a permanent source of hydrology to the mitigation site, utilizing the same source as the impacted wetland. The flows from

the springs in the mine are anticipated to generate around 7 cubic feet per second (cfs) of flow, with minor seasonal fluctuation.

Flow into the wetland complex would be adjusted to provide only what is required to maintain wetland hydrology through the majority of the year. This would allow minor annual fluctuation in the water surface elevations in the wetland during periods of high evapotranspiration in the summer. Once the hydrologic connections are adjusted to meet the needs of the maturing wetland vegetation, the system of channels and weirs should not require further adjustment. Maintaining a relatively static water surface elevation throughout the year would minimize stress on establishing wetland vegetation. This technique would also be used to limit habitat suitable for invasive species, such as reed canary grass, and improve the reproductive success of amphibians using the site.

5.2.2 Mitigation Site Soils

Soils for the mitigation site would be salvaged from the Kettle Wetland. These soils have ideal characteristics and contain a seed source of suitable vegetation. It is not currently anticipated that these soils would require any amendment, but they would be evaluated further during construction and may be amended as needed to maximize the successful establishment of wetland and buffer vegetation. Soil would be placed in two lifts. The first lift, of 4 to 6 inches, would be tilled together with the underlying silt to blend the materials. The second lift, of 4 to 6 inches, would be placed over the first (Figures 5-5 and 5-6). Additional lifts would be added until the suitable material from the Kettle Wetland is exhausted.

5.2.3 Mitigation Site Vegetation

Seeds and cuttings from the Kettle Wetland would be collected and propagated for use in the mitigation wetland. This approach would help ensure that the specimens used in the mitigation site are adapted to local conditions. At this time, it is anticipated that propagation would occur on site, and to the extent possible in situ within the mitigation site. Some specimens would be propagated in containers and then planted once they are well established. Additional vegetation would be imported from local nurseries. All plant material would be sourced from Puget Lowlands genetic stocks.

5.3 Performance Standards

To achieve the goals, performance standards have been developed that correspond to design criteria and define measurable criteria that are evaluated to predict when a mitigation element has been successfully implemented or accomplished. Table 5-1 contains site-specific information on how the mitigation goals (design objectives) are met by the design criteria and the final performance standards that will be used to determine if the goals have been met. Impacts to the Kettle Wetland would be mitigated at the ratio of 2.0 acres of creation for each acre of impact.

Table 5-1
Mitigation Goals with Associated Design Objectives, Design Criteria, and Final Performance Standards

Design Objectives	Design Criteria	Final Performance Standards
Mitigation Goal 1: Intercept groundwater from springs on the excavated face of the east side of the mine, which will occur at or near the contact between the Vashon recessional outwash (upper aquifer zone) and the Vashon Advance outwash (lower aquifer zone) and provide an adequate portion of that flow the Mitigation Wetland		
Initial objective: Provide a consistent discharge of water extracted from the Vashon Aquifer to the mitigation site	Water will be piped from the wells, through a dynamic system that will adapt to wells being commissioned and decommissioned as mining proceeds.	A consistent discharge to the mitigation site that fully offsets the losses due to evapotranspiration and infiltration
Final objective: Collect water from seeps and convey it to wetlands at the toe of slope without causing erosion or excessive mixing with stormwater	Install drainage systems, weirs, and channels to convey water. The use of culverts will be minimized to allow interception of runoff from the slope above.	Seep wetland hydrology is maintained, and slopes are stable A consistent discharge to the mitigation site that fully offsets the losses due to evapotranspiration and infiltration is maintained
Mitigation Goal 2: Create a Category III depressional flow through wetland complex consisting of forested, scrub-shrub, emergent, and aquatic bed wetland areas		
Create at least 3.56 acres of wetland consisting of forested, scrub-shrub, and emergent wetland classes	Place wetland soils from the Kettle Wetland over compacted fines to establish a finish grade that supports appropriate hydrology for each of the wetland vegetation types planned. Amend soils and build required grade controls. Plant trees on centers not greater than 15 feet, shrubs on centers not greater than 8 feet, and herbaceous perennials at 3 feet.	After 10 years, at least 3.56 acres of new Category II or III wetland will be created and determined through delineation and meeting the vegetation, soils, and hydrology criteria for wetlands; and review of the wetland rating (Hruby 2014).
Mitigation Goal 3: Provide adequate wetland acreage, functions, and values to mitigate all project-related wetland impacts to the Kettle Wetland, including temporal losses		
Monitor for and record the functions and values of the mitigation site for 10 years using the *Washington State Wetland Rating System for Western Washington* (Hruby 2014)	Establish a mitigation wetland with an equal or greater **total** score as the Kettle Wetland (51 acre-points) based on the Mitigation Credits and Debits calculator (Hruby 2012).	No net loss of wetland function; no net loss of wetland area

Design Objectives	Design Criteria	Final Performance Standards
Mitigation Goal 4: Construct stable, vegetated slopes above the wetland mitigation site and a minimum of a 100-foot vegetated buffer around the wetland		
Establish a 100-foot-wide forest sapling buffer around the mitigation wetland complex	Stabilize slopes with hydroseed or other bioengineering techniques. Amend soils and plant trees on centers not greater than 15 feet, shrubs on centers not greater than 8 feet.	After 10 years, greater than 60% cover by native species
Prevent sediment deposition from reaching the mitigation site	Establish hydroseed for initial slope stabilization on slopes above mitigation site. Establish forest communities for permanent slope stabilization on slopes above creek.	After 10 years, no evidence of mass wasting

6 Goals, Objectives, and Performance Standards

6.1 Goals and Objectives

The initial goal is to create a 3.56-acre depression of wetland soils that are above a strata of low-permeability, compacted fines. This depression would then be wetted, creating a mosaic of pools, saturated soils, and hummocks. Initially, water from the Vashon Aquifer would be pumped from wells and conveyed through a system of pipes to the wetland. This system would, by necessity, adapt to commissioning of new wells and decommissioning of wells that are no longer needed for mining. Once mining has proceeded to expose a continuous cut along the eastern and southern boundary of the mine, all wells would be decommissioned (as described in Section 4.3.1). Prior to decommissioning the final wells, a surface conveyance from a spring-fed source of hydrology would be established. The mine would receive approximately 7 cfs of groundwater from springs near the bottom of the Vashon Aquifer. A portion of this flow would be directed to the mitigation site through open channels. At least two culverts would be required to provide access to development planned within the mine after the entire mine site is reclaimed. Open channels would be established in all areas where an overcrossing is not required. Flow controls would be established to allow an appropriate fraction of flow to enter the wetland. The design intent is to deliver an amount of water similar enough to the total loss of the wetland from evapotranspiration and infiltration. During high-precipitation events, water would be discharged from the wetland to infiltration galleries in the mine, and during periods of extreme evapotranspiration water levels would be allowed to drop slightly. During establishment of vegetation in the wetland, the water level would be maintained at as static an elevation as possible to avoid plant stress.

After approximately 10 years, vegetation would be well established, and the wetland would have functions and values similar to those lost from excavation of the Kettle Wetland. Impacts to the Kettle Wetland would be mitigated at the ratio of 2.0 acres of creation for each acre of impact. To verify that the functions and values of the mitigation wetland adequately replace those lost from excavation of the Kettle Wetland, the *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington* (Hruby 2012) method would be used (Appendix D). The initial goal is to provide an equal total number of acre-points to those lost from excavation of the Kettle Wetland. Once development of the mine site begins (current zoning is primarily for light industrial and residential land uses), the value of the mitigation wetland would be increased. This is due to changes in the landscape potential for hydrologic and habitat potential. A moderate increase to the habitat score is anticipated to occur as high-intensity land use (mining) is replaced by a mix of land use. A similar increase to the hydrologic score is anticipated as runoff from development is introduced as a new source of water to the channel feeding the wetland.

6.2 Performance Standards

To achieve the goals, performance standards have been developed that correspond to design criteria and define measurable criteria that are evaluated to predict when a mitigation element has been successfully implemented or accomplished. Table 5-1 contains site-specific information on how the mitigation goals (design objectives) would be met by the design criteria and the final performance standards that would be used to determine if the goals have been met. Interim performance standards are described in Section 8. Interim performance standards would be used to determine if the establishment of wetland functions and values is on a trajectory that would meet the final performance standards at the end of the monitoring period.

7 Monitoring Plan

Monitoring would occur for a minimum of 10 years, and until performance standards are met. Monitoring activities would focus on the collection of soil conditions, vegetation health and vigor, and wildlife use data to evaluate wetland function and compliance with the performance standards summarized in Table 7-1 and outlined in more detail in Table 8-1. Monitoring would also include photographic documentation of site features and the development of habitat on the site. Monitoring reports would be submitted annually to Ecology and the City.

In addition to the annual report, an as-built report would be completed following construction and planting of the mitigation wetland and buffer (i.e., Year 0) and submitted for review and approval. The as-built report would define existing conditions in the mitigation areas (e.g., topography, water levels, and plant communities including specific species planted). It would serve as the baseline from which achievement of mitigation objectives can be measured. Each monitoring report would document project success relative to the mitigation performance standards.

Most monitoring activities would be completed along permanent transects and fixed points established and marked during the as-built survey; however, as determined in the field, additional monitoring may be needed to document unique conditions not present at pre-established sampling locations. All monitoring would use standard ecological techniques to sample, measure, or describe vegetation, hydrologic and soil conditions, and wildlife habitat. These techniques include walk-through surveys, line-intercept sampling along transects, plot sampling, and pertinent wetland delineation procedures (Environmental Laboratory 1987).

Table 7-1
Wetland Monitoring Methods and Reporting Schedule

Design Objective	Performance Standard	Method	Month	Frequency
Forest Sapling/ Scrub-Shrub Wetland, Buffer Vegetation, Revegetation Areas	In-kind replacement ratios	Aerial photographic[1] or ground-based mapping	Aug.	Years 0, 1, 2, 3, 5, 7, and 10
	Species composition	Walk-through surveys to document all plant species present	Aug.	Years 1, 2, and 5
	Tree/shrub density	Measure by line-intercept method along transects	Aug.	Years 1, 2, and 5
	Plant growth	Walk-through surveys to estimate annual shoot growth and survival rates	Aug.	Years 1, 2, and 5
	Vegetation structure	Describe from walk-through surveys, incorporating data from above analysis, as available	Aug.	Years 1, 2, 3, 5, 7, and 10
Emergent/Aquatic Bed Wetland Vegetation, Revegetation Areas	In-kind replacement ratios	Aerial photographic or ground-based mapping	Aug.	Years 0, 1, 2, 3, 5, 7, and 10
	Species composition	Walk-through surveys to document all plant species present	Aug.	Years 1, 2, and 5
	Herbaceous plant coverage/density	Measure by plot sampling method along transects	Aug.	Years 1, 2, and 5
	Plant growth	Walk-through surveys to estimate annual shoot growth and survival rates	Aug.	Years 1, 2, and 5
	Vegetation structure	Describe from walk-through surveys, incorporating data from above analysis, as available	Aug.	Years 1, 2, 3, 5, 7, and 10
Wetland Hydrology and Soils	Soil saturation	Depth from the soil surface to groundwater measured at permanent sampling stations in forested and scrub-shrub wetland zones	Feb., Aug.	Years 1, 2, and 5
	Surface water depth	Water depths measured at permanent sampling stations in emergent and aquatic bed wetland zones	Feb., Aug.	Years 1, 2, and 5
Wildlife	Habitat structure	Description of habitat structure from walk-through surveys	Feb., Aug.	Years 1, 2, and 5
	Wildlife usage	Conduct surveys to record wildlife species and activities on site	Feb., Aug.	Years 1, 2, and 5

Note:

1. CalPortland frequently (at least annually) obtains high-resolution aerial imaging of the entire mine site that is well suited to this task.

7.1 Hydrology and Soil Conditions

Traditional wetland delineation methods would be used to evaluate soil and hydrologic conditions in the restored wetland area. Surface water depths, groundwater depths, and soil saturation would be measured by digging soil test pits at permanent sampling stations twice per year during the designated monitoring years to understand the consistency and seasonal variation of conditions.

7.2 Vegetation Structure

Planted and naturally colonizing vegetation would be monitored to measure both the success of the planting efforts and interspersion of wetland classes, as defined by Cowardin et al. (1979).

Permanent vegetation sampling and photographic points would be established within planted areas representative of the community being sampled. At least one sampling and one photographic point would be established for each 0.5 acre of each wetland type constructed. At each sampling point, either a 3.0-square-meter (m^2) quadrat for emergent or 6.0-m^2 quadrat for shrub/tree vegetation would be used to measure the following:

- All plant species, in the order of dominance, based on relative percentage cover of each species within the vegetative strata
- The species composition (i.e., percentage of each species, exotic or native, planted or colonized)
- Average height and general health of each planted species

7.3 Hydrology and Vegetation

Understanding factors that influence wetland plant survival and establishment is important to adding to the knowledge base of wetland mitigation success. Wetland hydrology is one factor that influences plant survival and establishment. Specifically, water depth, frequency of inundation, and duration of inundation are critical factors for plant survival during the first year after planting. Many plantings fail due to the mistaken notion that wetland plants need or can survive in deep water (Hammer 1997). Small and recently planted bare-root plants lack extensive root, stem, and leaf systems with aerenchyma channels to transport oxygen to the roots. Consequently, flooding and deep water inundation prevents access to air above the water surface by portions of the plant and can cause more problems for wetland plants during the first growing season than too little water.

The monitoring program for the wetland mitigation (not including buffer area) would provide an opportunity to measure wetland plant survival and growth and correlate plant survival and growth with groundwater levels to evaluate the relative success of planted wetland communities. Specifically, permanent sampling points would be established. Surface water depths, groundwater levels, elevation, percent cover of vegetation, plant height, and species wetland indicator status would be measured at these fixed sampling points along the permanent transect.

7.4 Fauna

Any wildlife species or evidence of wildlife use in the mitigation and buffer areas observed during monitoring visits would be documented.

7.5 Reporting

Annual monitoring reports would be submitted to the City and Ecology by October 1 of each monitoring year.

7.6 Site Protection

The mitigation areas are within the Pioneer Aggregates Mine and closed to the public. Once mining and reclamation of the site are complete, CalPortland would turn the site over to the owner, Weyerhaeuser Company, for eventual redevelopment consistent with the City's zoning, sensitive areas ordinance, and other regulations. CalPortland would be responsible for implementing this plan through the monitoring period, and protecting the site from trespass and vandalism while occupying the site. The site is within the City's Comprehensive Plan Community Park Zone. This zoning precludes redevelopment of the site.

8 Adaptive Management and Contingency Plan

The contingency plan is flexible so that modifications can be made to subsequent years' construction if portions of the previous year's construction do not produce the desired results; however, all contingencies cannot be anticipated. Problems or potential problems would be evaluated by a qualified wetland ecologist and the City, in coordination with Ecology. Specific contingency actions would be developed, agreed to by consensus, and implemented based on all scientifically and economically feasible recommendations. Contingencies may include the following:

- Modifying topography relative to stream elevation
- Modifying soils
- Additional plantings or changing species selections to correct excessive mortality
- Additional monitoring or unscheduled monitoring during Years 1 through 5

If, during the monitoring program, other maintenance needs are identified as necessary to ensure the success of the mitigation project, they would be implemented, unless generated by third parties or acts of nature. Table 8-1 contains specific contingency actions relative to interim performance standards.

Table 8-1
Contingency Measures for the Wetland Mitigation Site

Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action
Tree, Shrub Wetland, Buffer, Revegetation Plantings	1 to 2	Greater than 70% survival of planted stock	None
		60% to 70% survival	Evaluate reason(s) for mortality and address; replant to achieve performance standard
		Less than 60% survival	Evaluate reason(s) for mortality; consider species suitability for site conditions; replant with the same or alternate species; undertake additional monitoring
	5	Greater than 70% cover of native species	None
		60% to 70% cover of native species	Evaluate reason(s) for mortality and replant to achieve performance standard
		Less than 60% survival	Evaluate reason(s) for mortality; consider species suitability for site conditions; replant with the same or alternate species; undertake additional monitoring
Emergent and Wetland Vegetation, Buffer, Revegetation	1	Total cover 20% and at least 10% cover by planted emergent wetland species	None
		Total cover less than 20% and less than 10% cover by planted emergent wetland species	Re-evaluate the suitability of the plant species for site conditions and re-establish if necessary; consider composition of cover species and if functioning, do nothing; consider use of fertilizers or alternate species; undertake additional monitoring
	2	Total cover 40% and at least 20% cover by planted emergent wetland species	None
		Total cover less than 40% and less than 20% cover by the emergent wetland species planted	Re-evaluate the suitability of the plant species for site conditions and re-establish if necessary; consider composition of cover species and if functioning, do nothing; consider use of fertilizers or alternate species; undertake additional monitoring

Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action
Buffer	1 to 2 and 5	Same standards as tree, shrub wetland	Same contingency actions as tree, shrub wetlands
Human Restrictions	1 to 2 and 5	No evidence of human intrusion	None
		Some evidence of human intrusion, but no damage to wetlands and buffers	Check fencing, and install signage to help educate people about critical areas
		Significant evidence of human intrusion and damage to wetlands and buffers	Check fencing, install additional or alternative structure to keep people out, post additional signage

8.1 Contingency Planning and Response

This contingency plan identifies a planning process for selecting appropriate actions to address specific mitigation actions. In order to maintain the flexibility needed to respond effectively and appropriately to biological and/or physical conditions, this plan does not present a specific list of actions that would be taken to remedy specific types of mitigation. CalPortland is committed to ensuring the success of the mitigation efforts at the Pioneer Aggregates Mine, and would undertake additional appropriate actions as may be deemed necessary by Ecology or the City to ensure complete mitigation of impacts that occur as a result of the project. The contingency planning procedure consists of three elements: 1) problem recognition; 2) contingency planning; and 3) contingency response.

8.1.1 Problem Recognition

The problem recognition process is an integral part of the monitoring program. As monitoring data are collected, they would be examined and interpreted relative to the performance standards. The purpose of the process is to conduct a rational and deliberate determination of whether there is a problem area, and if so, the nature, extent, and root cause(s) of the problem. Figure 8-1 outlines this process and shows potential outcomes of the problem recognition step.

8.1.2 Contingency Planning and Response Process

The purpose of the contingency planning process is to develop contingency actions that may be necessary, depending on the results of the monitoring program and problem recognition step. Figure 8-1 outlines the contingency planning and response process.

The contingency planning process could result in implementation of an approved response action. Alternatively, it could result in agreement on an approach or set of criteria for taking further action, depending on the results of future monitoring and whether the goal of no net loss is being achieved. In the case of a failure to meet performance standards, the result would depend largely on the reasons for the failure, and the degree to which CalPortland can predict or control the conditions that contribute to the failure in meeting a specific standard for performance.

CalPortland, Ecology, and the City would make a final determination on an appropriate response, based on available information and scientifically and economically feasible recommendations. Potential responses include, but are not limited to, one or more of the following:

- Concluding that the situation does not require further action
- Expanding or modifying the monitoring program
- Developing more specific criteria to evaluate the data
- Initiating a corrective action

If CalPortland, Ecology, and the City cannot reach a consensus, then Ecology and the City would determine the response. If modified or continued monitoring is not an adequate response, the contingency planning and response process would begin as shown in Figure 8-1.

9 Mitigation for Indirect Wetland Impacts

The changes to the Vashon Aquifer that will cause indirect impacts to the Seep Wetland Complex will also result in the creation of a new, larger complex of seeps and springs. Flow from the Seep Wetland Complex varies through the year but is never more than a fraction of a cubic foot per second. The South Parcel Project will result in approximately 7 cfs of flow from springs and seeps perennially. These springs and seeps will generally emanate from the eastern and southeastern slopes of the proposed mine in the South Parcel. Generally, seeps and springs will form within about the lower one-third of the mine slope, so approximately 20 to 30 vertical feet above the Olympia Beds (Aspect 2022).

Groundwater discharge will be greatest along the central and southern portion of the eastern slope and northeastern portions of the benches and will taper off to the north, as the mine area approaches the Olympia Bed cutoff, and to the south, as the benches in the southeast corner get closer to the Sequalitchew Creek ravine. The specific locations of seeps and springs will depend on local variations in the outwash deposits related to silt content or areas of coarser materials. It is expected that there will be localized areas of greater discharge and other areas with more distributed seepage or even little to no discharge.

Areas of greater discharge (springs) will likely not support vegetation because soils will be continuously washed out of the gravel. Seeps will form slope wetlands where the rate of flow is high enough to support hydrophytic vegetation and low enough to allow organic material to accumulate and soil to form.

Due to the uncertainty around the exact location of new slope wetlands, this section of the mitigation approach relies on a phased approach. These phases include the following:

1. Identify areas with wetland hydrology once passive dewatering has reached equilibrium.
2. Establish pioneer species of native wetland vegetation within areas with wetland hydrology and upland vegetation within the buffer of the wetlands.
3. Monitor the plant communities and plant additional species as necessary to the wetland and buffer in order to meet the goals and objectives of the mitigation.
4. Monitor, maintain, and adaptively manage the wetlands and buffer until the goals and objectives of the mitigation are met and for no fewer than 10 years.

9.1 Mitigation Strategy

The overall strategy for wetland mitigation of the indirect impacts of the project will result in a temporal loss of function. Groundwater will no longer support the Seep Wetland Complex before mining proceeds to the point that new wetland hydrology is established. Initially, groundwater will be pumped from the Vashon Aquifer to allow mining. Mining of the South Parcel will proceed from

north to south creating a 3-horizontal-to-1-vertical (3H:1V) slope where the aquifer is intercepted. As mining proceeds, pumping will cease adjacent to those areas where this slope is fully established. Once pumping stops, the Vashon Aquifer will express as springs and seeps. Eventually, this expression of groundwater will create perennial seeps and springs, forming a mosaic seep wetland within a 7-acre area. Not all of this area will be wetland because flow through the aquifer will preferentially express at the surface where there is less fine-grained material in the outwash gravels.

9.2 Proposed Mitigation Site

The proposed mitigation site is located on the eastern and southeastern slopes of the proposed mine in the South Parcel in the City of DuPont, southwestern Pierce County, Section 26, Township 19 North, Range 1 East of the Willamette Meridian (Figure 9-1). The proposed mitigation site is bordered to the east by Powerline Road, to the south by residential development, and to the southwest by the Sequalitchew Creek riparian area. The proposed mitigation site is owned by Weyerhaeuser Company and is leased to CalPortland. The underlying zoning of the site is Manufacturing and Research and Residential Reserve. Currently, the site is flat with vegetation consisting of forested and scrub-shrub areas.

9.3 Goals, Objectives, and Performance Standards

The goal is to create a seep wetland complex that supports native wetland vegetation and restores wetland functions similar to the existing Seep Wetland Complex that is proposed to be indirectly affected by the project. While there will be a functional loss of wetland habitat in the existing Seep Wetland Complex, this area will still provide transitional to upland habitat that supports native plants and wildlife.

Under post-mining conditions, groundwater will emanate from the toe of the mined slope, eventually establishing wetland hydrology. Geologic borings and hydrogeologic modelling indicate that the formation of seeps and springs will occur within a 7-acre area. Within that zone a few acres will support perennial seeps and springs and that will be planted with native wetland vegetation to create a mosaic seep wetland. After approximately 10 years, vegetation will be well established, and the seep wetland complex would have functions and values similar to those lost from indirect impacts to the Seep Wetland Complex. Impacts to the Seep Wetland Complex would be mitigated at the ratio of at least 0.82 acre of creation for each the 0.13 acre of impact (a mitigation ratio of >6:1). To verify that the functions and values of the mitigation wetland adequately replace those lost from excavation of the Seep Wetland Complex, the *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington* (Hruby 2012) method would be used (Appendix D). The initial goal is to provide an equal total number of acre-points to those lost from disruption of hydrology to the Seep Wetland Complex. Once development of the mine site begins (current zoning is primarily for light industrial and residential land uses), the value of the mitigation seep wetland

complex would be increased. This is due to changes in the landscape potential for hydrologic and habitat potential. A moderate increase to the habitat score is anticipated to occur as high-intensity land use (mining) is replaced by a mix of land use. A similar increase to the hydrologic score is anticipated as runoff from development is introduced as a new source of water to the channel feeding the seep wetlands.

To achieve these goals, performance standards have been developed that correspond to design criteria and define measurable criteria that are evaluated to predict when a mitigation element has been successfully implemented or accomplished. Table 9-1 contains site-specific information on how the mitigation goals (design objectives) will be met by the design criteria and the final performance standards that would be used to determine if the goals have been met.

9.4 Monitoring and Adaptive Management

The mitigation site would be monitored annually to identify areas of sufficient wetland hydrology and development of hydric soils conditions. Once each seep wetland area is identified, any weedy vegetation species present would be removed, and native wetland vegetation would be planted in the wetland and its protective buffer. Monitoring of each identified seep wetland would occur for a minimum of 10 years and until performance standards are met. Monitoring activities would focus on the collection of soil conditions, vegetation health and vigor, and wildlife use data to evaluate seep wetland function and compliance with the performance standards summarized in Table 9-2 and outlined in more detail in Table 9-3. Monitoring would also include photographic documentation of site features and the development of habitat on the site. Monitoring reports would be submitted annually to Ecology and the City.

The annual monitoring report would document initial development of each seep wetland, including its size, condition, and buffer. The report would define existing conditions in each seep mitigation area (e.g., topography, water levels, and plant communities, including specific species planted). It would serve as the baseline from which achievement of mitigation objectives can be measured. Each monitoring report would document project success relative to the mitigation performance standards.

Most monitoring activities would be completed along transects and points established during the initial identification of seep wetland boundaries, and additional monitoring may be needed to document unique conditions. All monitoring would use standard ecological techniques to sample, measure, or describe vegetation, hydrologic and soil conditions, and wildlife habitat. These techniques include walk-through surveys, line-intercept sampling along transects, plot sampling, and pertinent wetland delineation procedures (Environmental Laboratory 1987). Detailed monitoring plans are described in Section 7.

Table 9-1
Seep Mitigation Goals with Associated Design Objectives, Design Criteria, and Final Performance Standards

Design Objectives	Design Criteria	Final Performance Standards
Mitigation Goal 1: Intercept groundwater from springs on the excavated face of the east side of the mine, which will occur at or near the contact between the Vashon recessional outwash (upper aquifer zone) and establish wetland hydrology on no less than 0.65 acre of the newly excavated slope.		
Initial objective: Establish wetland hydrology with perennial flow that is low enough to prevent soil erosion and allow for the establishment of native wetland vegetation.	Plant or otherwise stabilize slopes to allow plant establishment and soil formation.	A consistent discharge from new seeps that supports at least 0.65 acre of new slope wetland.
Mitigation Goal 2: Create a Category IV slope wetland complex consisting of emergent wetland vegetation.		
Create at least 0.82 acre of wetland consisting of emergent wetland classes.	Establish pioneer emergent wetland species covering at least 20% of the wetland and composed of at least two species by year 2. Establish emergent wetland species covering at least 40% of the wetland and composed of at least five species by year 5.	After 10 years, at least 0.65 acre of new Category IV wetland will be created and determined through delineation and meeting of the vegetation, soil, and hydrology criteria for wetlands and review of the wetland rating (Hruby 2014).
Mitigation Goal 3: Provide adequate wetland acreage, functions, and values to mitigate all project-related wetland impacts to the Seep Wetland Complex, including temporal losses.		
Monitor and record the functions and values of the mitigation site for 10 years using the *Washington State Wetland Rating System for Western Washington* (Hruby 2014).	Establish a mitigation wetland with an equal or greater **total** score as the Seep Wetland Complex (5.1 acre-points) based on the Mitigation Credits and Debits calculator (Hruby 2012).	No net loss of wetland function and no net loss of wetland area.
Mitigation Goal 4: Construct stable, vegetated slopes above the wetland mitigation site and a minimum of a 50-foot vegetated buffer around the wetland.		
Establish a 50-foot-wide forest sapling or shrub buffer around the mitigation wetland complex.	Stabilize slopes with hydroseed or other bioengineering techniques. Amend soils and plant trees on centers not greater than 15 feet and shrubs on centers not greater than 8 feet.	After 10 years, greater than 60% cover by native species.
Prevent sediment deposition from reaching the mitigation site.	Establish hydroseed for initial slope stabilization on slopes above the mitigation site. Establish forest communities for permanent slope stabilization on slopes above the wetland mitigation site.	After 10 years, no evidence of mass wasting.

Table 9-2
Seep Wetland Monitoring Methods and Reporting Schedule

Design Objective	Performance Standard	Method	Month	Frequency
A minimum of 0.65 acre of emergent slope wetland	Area with wetland hydrology and wetland vegetation	Use of standard wetland delineation methods. (Note: Hydric soil indicators will develop slowly and would not be considered a requirement for success until year 10.)	Aug.	Years 1, 2, 3, 5, 7, and 10
Emergent Wetland Vegetation, Revegetation Areas	In-kind replacement ratios	Aerial photographic or ground-based mapping	Aug.	Years 0, 1, 2, 3, 5, 7, and 10
	Species composition	Walk-through surveys to document all plant species present	Aug.	Years 1, 2, and 5
	Herbaceous plant coverage and density	Plot sampling method along transects	Aug.	Years 1, 2, and 5
	Plant growth	Walk-through surveys to estimate annual shoot growth and survival rates	Aug.	Years 1, 2, and 5
	Vegetation structure	Describe from walk-through surveys, incorporating data from above analysis, as available	Aug.	Years 1, 2, 3, 5, 7, and 10
Wetland Hydrology and Soils	Soil saturation	Depth from the soil surface to groundwater measured at permanent sampling stations in forested and scrub-shrub wetland zones	Feb., Aug.	Years 1, 2, and 5
	Surface water depth	Water depths measured at permanent sampling stations in emergent and aquatic bed wetland zones	Feb., Aug.	Years 1, 2, and 5
Wildlife	Habitat structure	Description of habitat structure from walk-through surveys	Feb., Aug.	Years 1, 2, and 5
	Wildlife usage	Surveys to record wildlife species and activities on site	Feb., Aug.	Years 1, 2, and 5

Notes:

1. CalPortland frequently (at least annually) obtains high-resolution aerial imaging of the entire mine site that is well suited to this task.

Aug.: August
Feb.: February

Table 9-3
Contingency Measures for the Seep Wetland Mitigation Site

Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action
Emergent Wetland Vegetation, Buffer, Revegetation	2	Total cover 20%, and at least 10% cover by planted emergent wetland species	None
		Total cover less than 20%, and less than 10% cover by planted emergent wetland species	Re-evaluate the suitability of the plant species for site conditions and re-establish if necessary; consider composition of cover species and if functioning, do nothing; consider use of soil amendments, fertilizers or alternate species; undertake additional monitoring
	5	Total cover 40%, and at least 20% cover by planted emergent wetland species	None
		Total cover less than 40%, and less than 20% cover by planted emergent wetland species	Re-evaluate the suitability of the plant species for site conditions and re-establish if necessary; consider composition of cover species and if functioning, do nothing; consider use of fertilizers or alternate species; undertake additional monitoring
Buffer	2	Greater than 70% survival of planted stock	None
		60% to 70% survival	Evaluate reason(s) for mortality and address; replant to achieve performance standard
		Less than 60% survival	Evaluate reason(s) for mortality; consider species suitability for site conditions; replant with the same or alternate species; undertake additional monitoring
	5	Greater than 70% cover of native species	None
		60% to 70% cover of native species	Evaluate reason(s) for mortality and replant to achieve performance standard
		Less than 60% survival	Evaluate reason(s) for mortality; consider species suitability for site conditions; replant with the same or alternate species; undertake additional monitoring

Design Feature	Monitoring Year(s)	Interim Performance Standards	Contingency Action
Human Restrictions	1 to 2 and 5	No evidence of human intrusion	None
		Some evidence of human intrusion, but no damage to wetlands and buffers	Install signage to help educate people about critical areas
		Significant evidence of human intrusion and damage to wetlands and buffers	Install fencing or alternative structure to keep people out; post additional signage

10 References

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Figures

LEGEND:

- South Parcel Expansion Area (188 ac)
- South Parcel Mineral Resource Area Expansion
- Mining Limits (existing and proposed, 620 ac)
- Pioneer Aggregates Property (791 ac)
- Kettle Wetland
- Other Wetlands (NWI)
- Streams and Canals

NOTES:
Imagery: 2017 USDA NAIP

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Figure 2-1
Vicinity Map
Wetland Mitigation Plan
Pioneer Aggregates South Parcel Project

LEGEND:

- South Parcel Expansion Area (188 ac)
- South Parcel Mineral Resource Area Expansion
- Mining Limits (existing and proposed, 620 ac)
- Pioneer Aggregates Property (791 ac)
- Kettle Wetland
- Wetland C

NOTES:
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Figure 2-2
Pioneer Aggregates Mine Plan Map
Wetland Mitigation Plan
Pioneer Aggregates South Parcel Project

LEGEND:

- South Parcel Expansion Area (188 ac)
- South Parcel Mineral Resource Area Expansion
- Mining Limits (existing and proposed, 620 ac)
- Pioneer Aggregates Property (791 ac)
- Kettle Wetland

NOTES:
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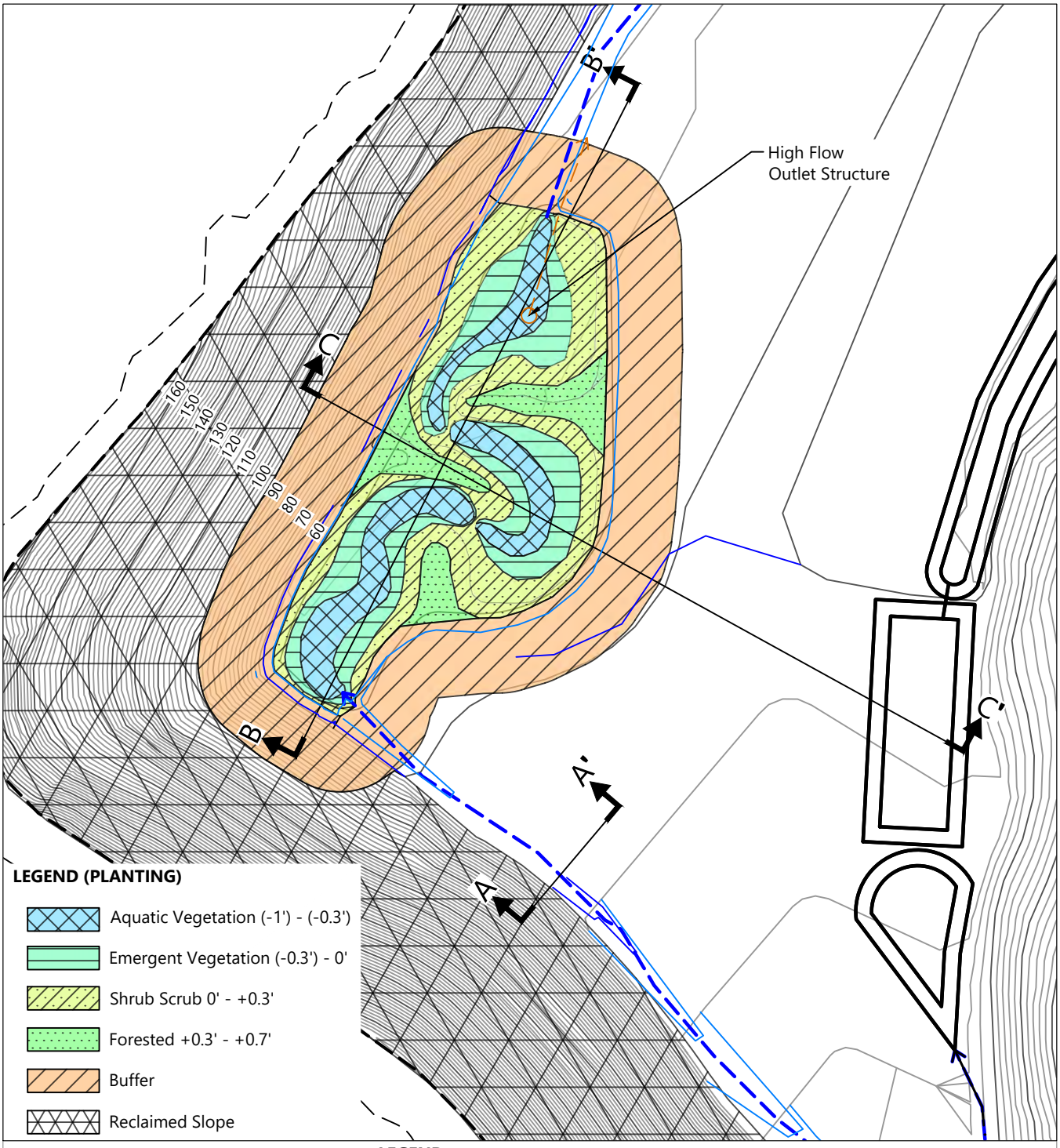
Figure 2-3
Kettle Wetland - Existing Conditions Map
Wetland Mitigation Plan
Pioneer Aggregates South Parcel Project



SOURCE: Survey by Barghausen Consulting Engineers, dated February 2010. Design from Aspect Consulting.
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VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD88)

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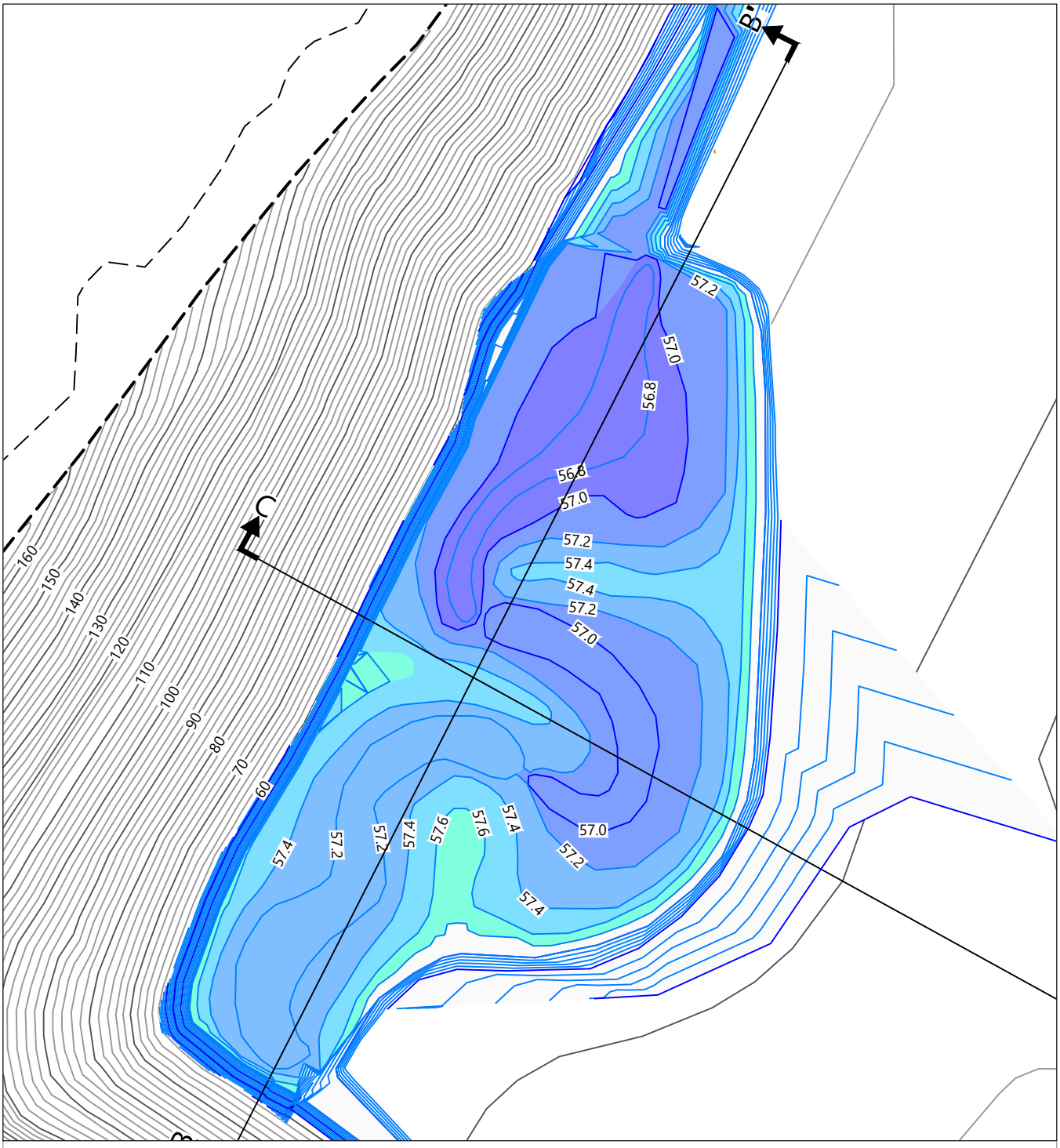
Figure 5-1
Planting Plan

Wetland Mitigation Plan
Pioneer Aggregates Mine Expansion (South Parcel) Project



SOURCE: Survey by Barghausen Consulting Engineers, dated February 2010. Design from Aspect Consulting.
HORIZONTAL DATUM: Washington State Plane South Zone, North American Datum of 1983 (NAD83), U.S. Survey Feet
VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD88)

LEGEND:

- Proposed Contour (2' and 10' Interval)
- Proposed Contour (Anchor QEA, 2' and 10' Interval)
- Proposed Channel

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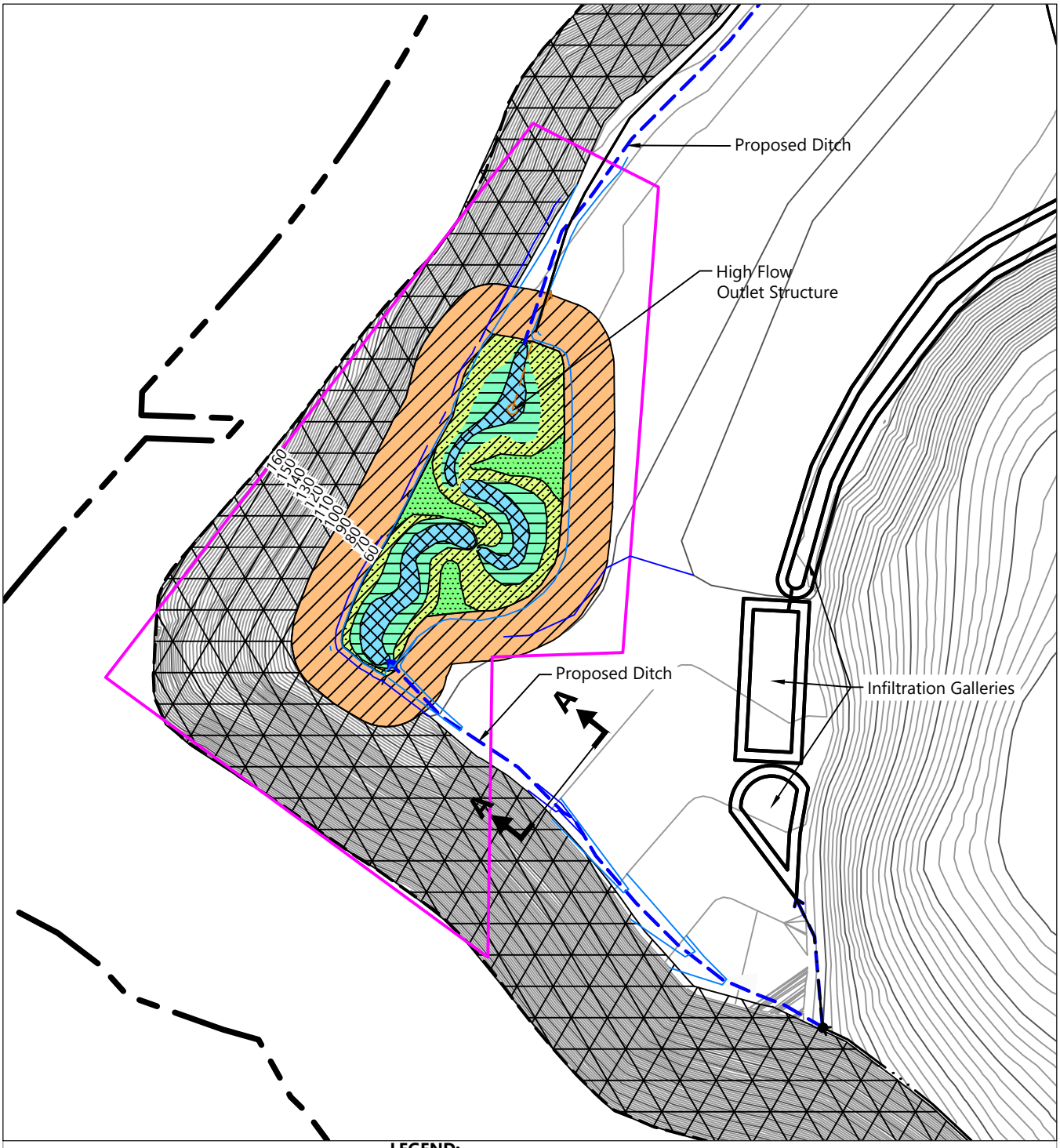
Figure 5-2
Topography Plan

Wetland Mitigation Plan
Pioneer Aggregates Mine Expansion (South Parcel) Project



SOURCE: Survey by Barghausen Consulting Engineers, dated February 2010. Design from Aspect Consulting.
HORIZONTAL DATUM: Washington State Plane South Zone, North American Datum of 1983 (NAD83), U.S. Survey Feet
VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD88)

LEGEND:

- Proposed Contour (2' and 10' Interval)
- Proposed Contour (Anchor QEA, 2' and 10' Interval)
- Overflow Outlet
- Proposed Channel
- Zoning Boundary

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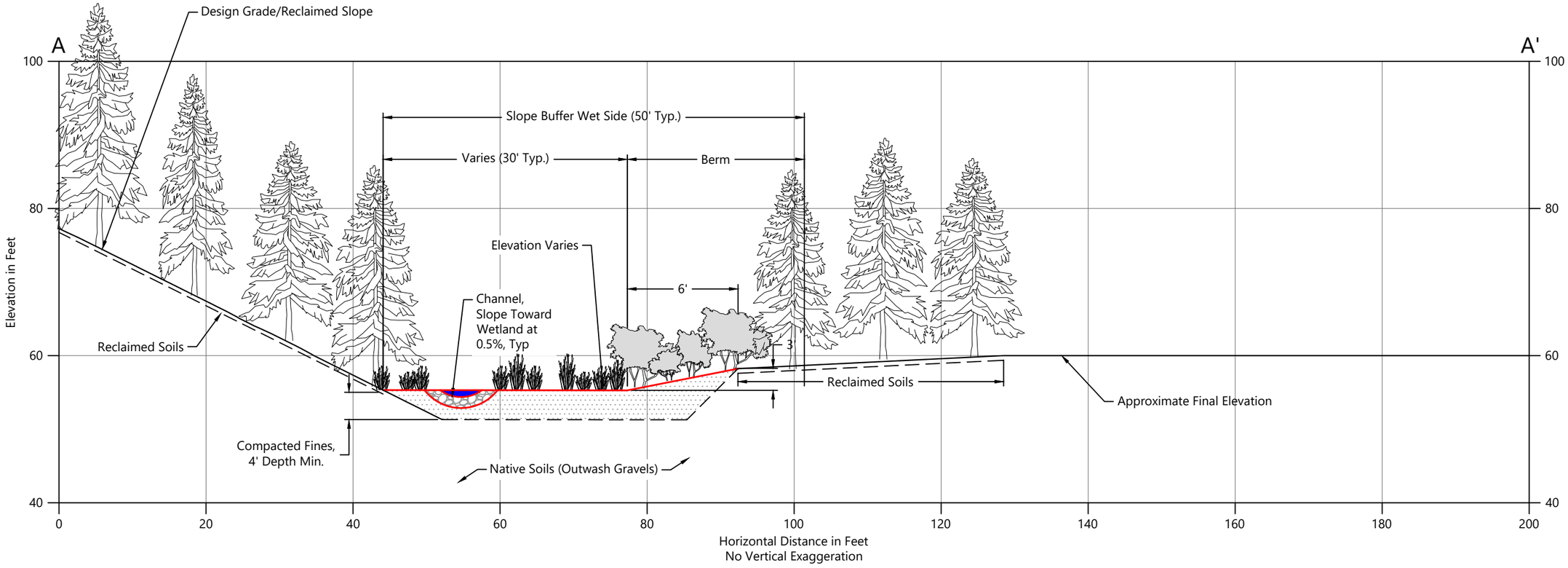
Figure 5-3
Generalized Topography and Hydrologic Connections

Wetland Mitigation Plan
Pioneer Aggregates Mine Expansion (South Parcel) Project



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VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD88)

LEGEND:

- Design Grade
- Proposed Mitigation Site Grade
- Compacted Fines

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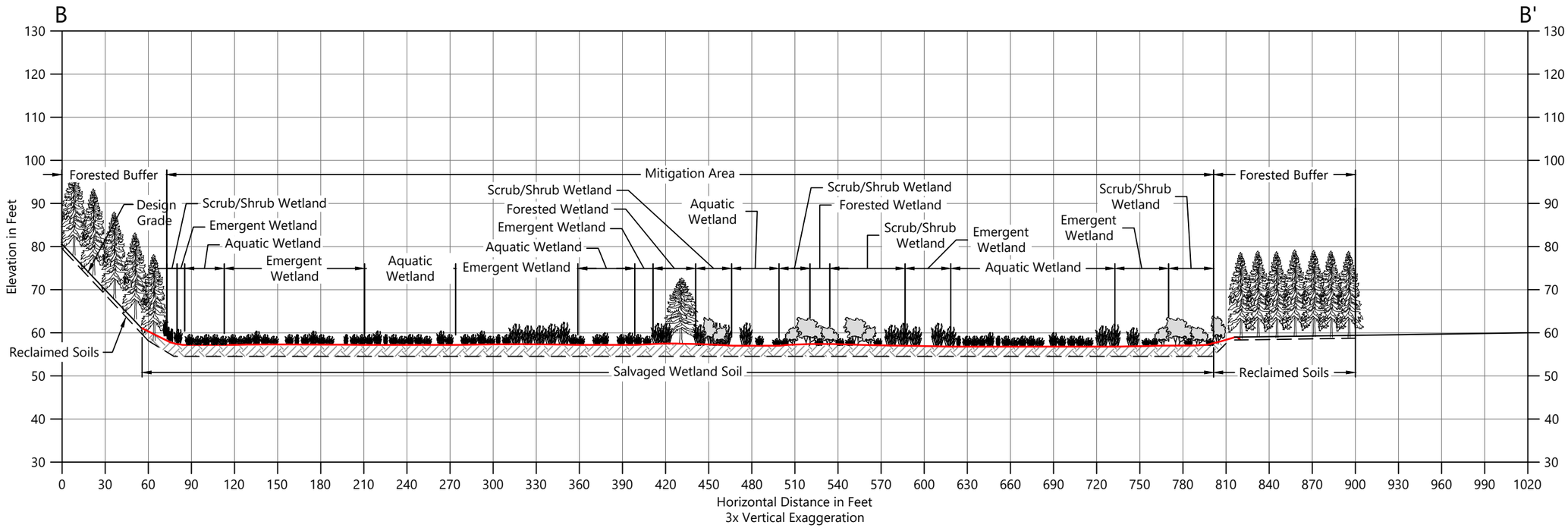
Figure 5-4
Cross Section A-A'

Wetland Mitigation Plan
Pioneer Aggregates Mine Expansion (South Parcel) Project



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VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD88)

LEGEND:

- Design Grade
- Proposed Mitigation Site Grade
- Compacted Fines
- Salvaged Wetland Soil

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Feet

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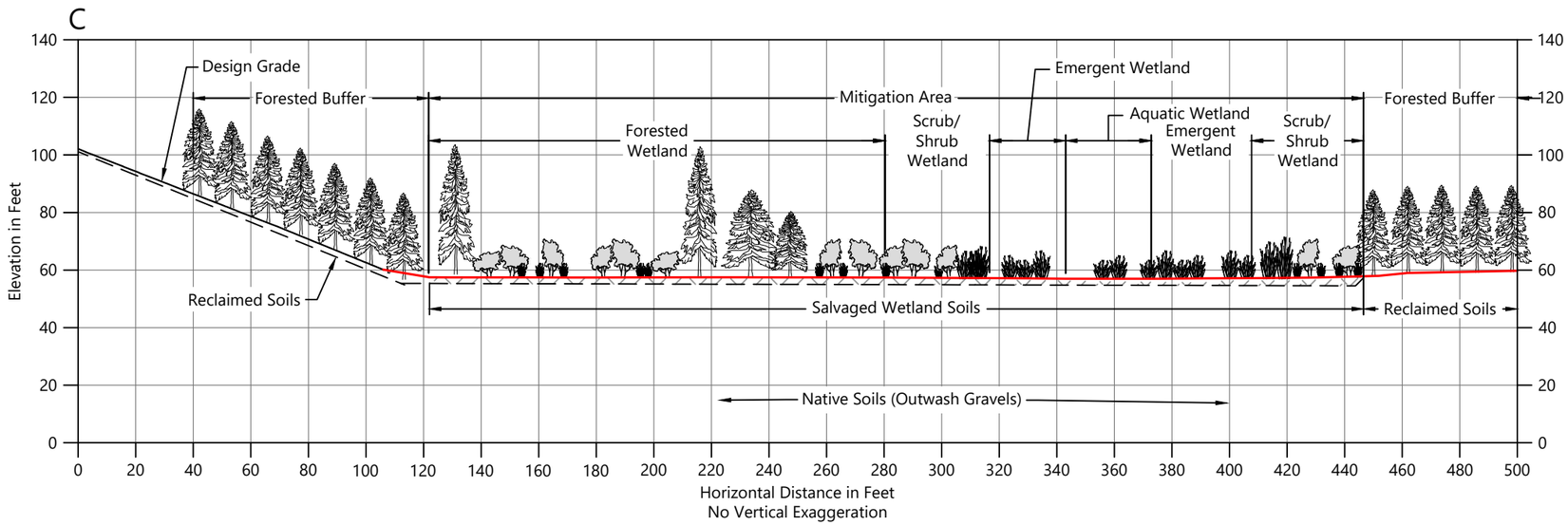
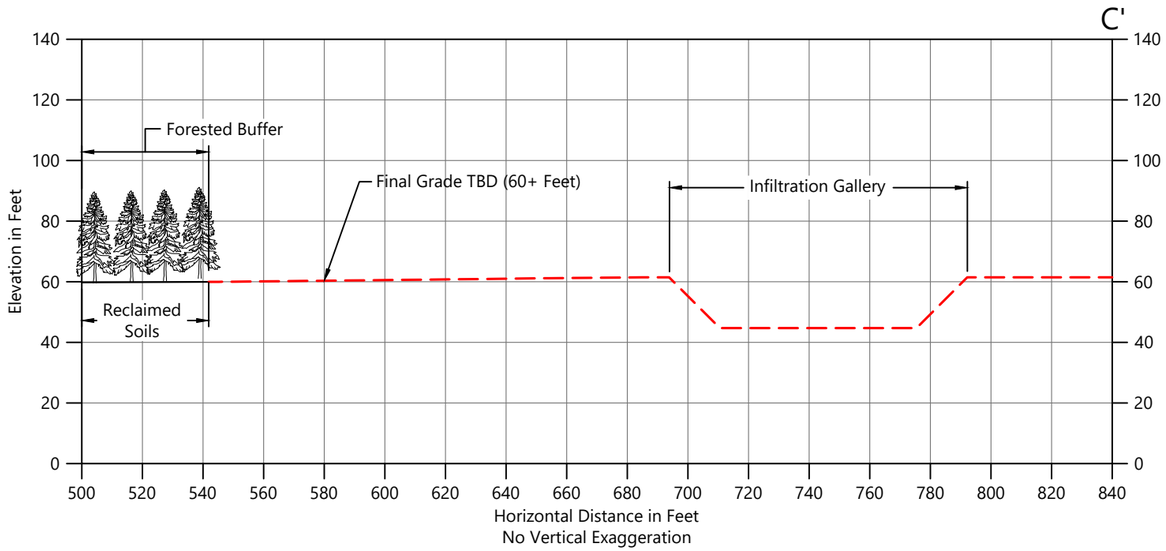
Figure 5-5
Cross Section B-B'

Wetland Mitigation Plan
Pioneer Aggregates Mine Expansion (South Parcel) Project





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VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD88)

LEGEND:

- Design Grade
- Proposed Mitigation Site Grade
- Post-Reclamation Grades to be Determined
- Compacted Fines
- Salvaged Wetland Soil

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Feet

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Figure 5-6
Cross Section C-C'
Wetland Mitigation Plan
Pioneer Aggregates Mine Expansion (South Parcel) Project

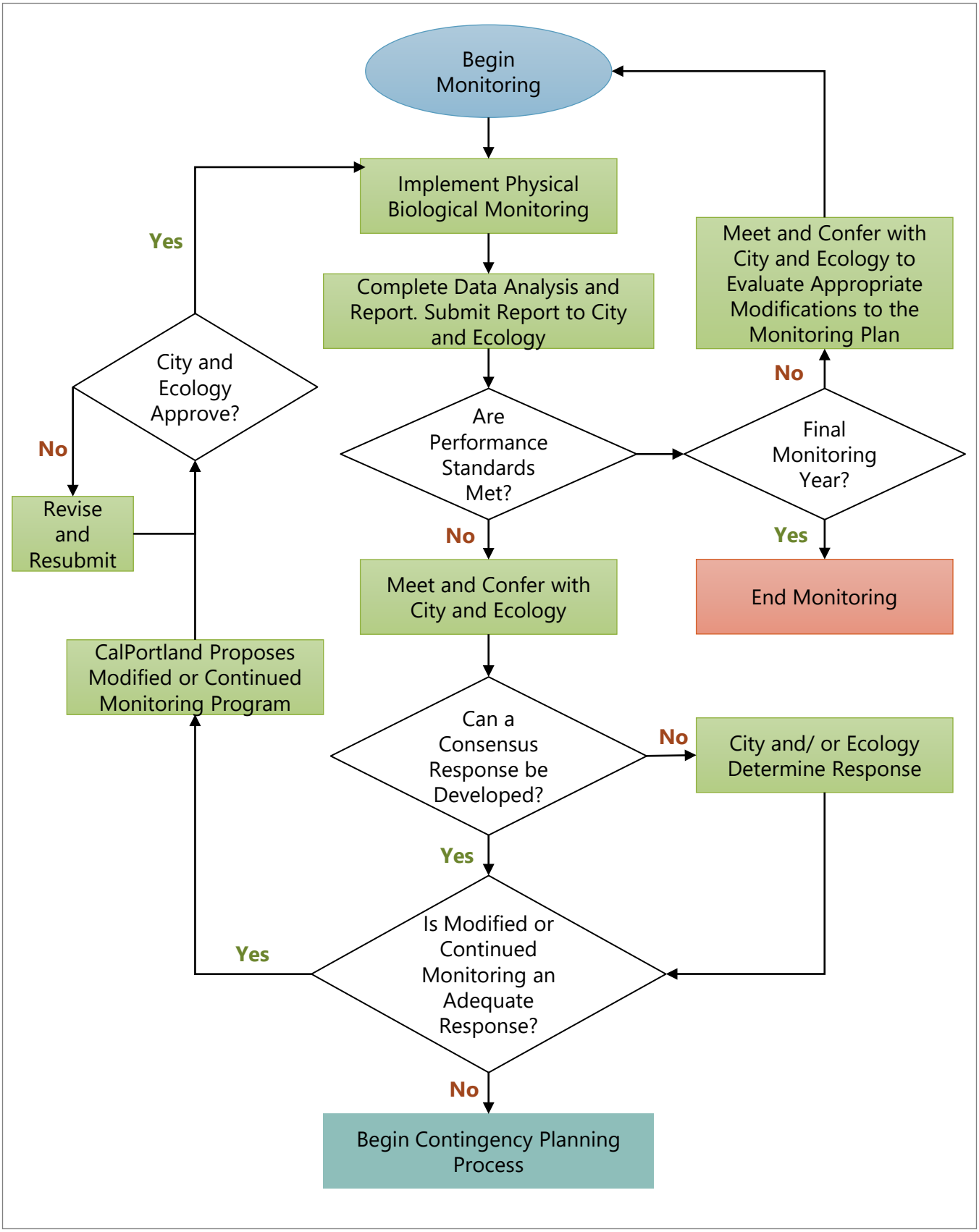

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Figure 8-1
Problem Recognition Process
Wetland Mitigation Pan
Pioneer Aggregates Mine Expansion (South Parcel) Project

Appendix A
Kettle Wetland Jurisdictional Determination

Regulatory Program

INTERIM APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers
This form should be completed by following the instructions provided
in the Interim Approved Jurisdictional Determination Form User Manual.

SECTION I: BACKGROUND INFORMATION

A. COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (AJD): 16-Apr-2019

B. ORM NUMBER IN APPROPRIATE FORMAT (e.g., HQ-2015-00001-SMJ): NWS-2018-1114

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:Washington County/parish/borough: Pierce County City: DuPont
Center coordinates of site (lat/long in degree decimal format): Lat. 47.119763, Long. -122.64934.
Map(s)/diagram(s) of review area (including map identifying single point of entry (SPOE) watershed and/or potential jurisdictional areas where applicable) is/are: ☒ attached ☒ in report/map titled .
☐ Other sites (e.g., offsite mitigation sites, disposal sites, etc.) are associated with this action and are recorded on a different jurisdictional determination (JD) form. List JD form ID numbers (e.g., HQ-2015-00001-SMJ-1): .

D. REVIEW PERFORMED FOR SITE EVALUATION:
☒ Office (Desk) Determination Only. Date: 4/4/2019.
☐ Office (Desk) and Field Determination. Office/Desk Dates: Field Date(s): .

SECTION II: DATA SOURCES

Check all that were used to aid in the determination and attach data/maps to this AJD form and/or references/citations in the administrative record, as appropriate.
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant. Title/Date: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Data sheets/delineation report are sufficient for purposes of AJD form. Title/Date: "Data Form 1" for Plots K1 through K6 dated 7/31/2007 .
☐ Data sheets/delineation report are not sufficient for purposes of AJD form. Summarize rationale and include information on revised data sheets/delineation report that this AJD form has relied upon: .
Revised Title/Date: .
☐ Data sheets prepared by the Corps. Title/Date: .
☐ Corps navigable waters study. Title/Date: .
☒ CorpsMap ORM map layers. Title/Date: "Maps, Photos and Other Supporting Information" package dated April 4, 2019.
☐ USGS Hydrologic Atlas. Title/Date: .
☐ USGS, NHD, or WBD data/maps. Title/Date: .
☐ USGS 8, 10 and/or 12 digit HUC maps. HUC number: .
☐ USGS maps. Scale & quad name and date: .
☒ USDA NRCS Soil Survey. Citation: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.
☒ USFWS National Wetlands Inventory maps. Citation: https://www.fws.gov/wetlands/data/Mapper.html.
☐ State/Local wetland inventory maps. Citation: .
☐ FEMA/FIRM maps. Citation: .
☐ Photographs: ☐ Aerial. Citation: . or ☐ Other. Citation: .
☐ LiDAR data/maps. Citation: .
☐ Previous JDs. File no. and date of JD letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .

☐ Other information (please specify): .

SECTION III: SUMMARY OF FINDINGS

Complete ORM "Aquatic Resource Upload Sheet" or Export and Print the Aquatic Resource Screen from ORM for All Waters and Features, Regardless of Jurisdictional Status – Required

A. RIVERS AND HARBORS ACT (RHA) SECTION 10 DETERMINATION OF JURISDICTION:

☐ "*navigable waters of the U.S.*" within RHA jurisdiction (as defined by 33 CFR part 329) in the review area.

- **Complete Table 1 - Required**

NOTE: If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Section 10 navigable waters list, DO NOT USE THIS FORM TO MAKE THE DETERMINATION. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Section 10 RHA navigability determination.

B. CLEAN WATER ACT (CWA) SECTION 404 DETERMINATION OF JURISDICTION: "*waters of the U.S.*" within CWA jurisdiction (as defined by 33 CFR part 328.3) in the review area. **Check all that apply.**

☐ (a)(1): All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. (Traditional Navigable Waters (TNWs))

- **Complete Table 1 - Required**

☐ This AJD includes a case-specific (a)(1) TNW (Section 404 navigable-in-fact) determination on a water that has not previously been designated as such. Documentation required for this case-specific (a)(1) TNW determination is attached.

☐ (a)(2): All interstate waters, including interstate wetlands.

- **Complete Table 2 - Required**

☐ (a)(3): The territorial seas.

- **Complete Table 3 - Required**

☐ (a)(4): All impoundments of waters otherwise identified as waters of the U.S. under 33 CFR part 328.3.

- **Complete Table 4 - Required**

☐ (a)(5): All tributaries, as defined in 33 CFR part 328.3, of waters identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 5 - Required**

☐ (a)(6): All waters adjacent to a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.

- **Complete Table 6 - Required**

☐ Bordering/Contiguous.

Neighboring:

☐ (c)(2)(i): All waters located within 100 feet of the ordinary high water mark (OHWM) of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3.

☐ (c)(2)(ii): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 and not more than 1,500 feet of the OHWM of such water.

☐ (c)(2)(iii): All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of 33 CFR part 328.3, and all waters within 1,500 feet of the OHWM of the Great Lakes.

☐ (a)(7): All waters identified in 33 CFR 328.3(a)(7)(i)-(v) where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 7 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(7) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ (a)(8): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3 not covered by (c)(2)(ii) above and all waters located within 4,000 feet of the high tide line or OHWM of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 8 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(8) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

C. NON-WATERS OF THE U.S. FINDINGS:

Check all that apply.

☐ The review area is comprised entirely of dry land.

☐ Potential-(a)(7) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(7) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☒ Potential-(a)(8) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(8) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ Excluded Waters (Non-Waters of U.S.), even where they otherwise meet the terms of paragraphs (a)(4)-(a)(8):

- **Complete Table 10 - Required**

☐ (b)(1): Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA.

☐ (b)(2): Prior converted cropland.

☐ (b)(3)(i): Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.

☐ (b)(3)(ii): Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.

☐ (b)(3)(iii): Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (a)(1)-(a)(3).

☐ (b)(4)(i): Artificially irrigated areas that would revert to dry land should application of water to that area cease.

☐ (b)(4)(ii): Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds.

☐ (b)(4)(iii): Artificial reflecting pools or swimming pools created in dry land.[1]

☐ (b)(4)(iv): Small ornamental waters created in dry land.[1]

☐ (b)(4)(v): Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water.

☐ (b)(4)(vi): Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways.[1]

☐ (b)(4)(vii): Puddles.[1]

☐ (b)(5): Groundwater, including groundwater drained through subsurface drainage systems.[1]

☐ (b)(6): Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.[1]

☐ (b)(7): Wastewater recycling structures created in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.

☐ Other non-jurisdictional waters/features within review area that do not meet the definitions in 33 CFR 328.3 of (a)(1)-(a)(8) waters and are not excluded waters identified in (b)(1)-(b)(7).

- **Complete Table 11 - Required.**

D. ADDITIONAL COMMENTS TO SUPPORT AJD: .

[1] In many cases these excluded features will not be specifically identified on the AJD form, unless specifically requested. Corps Districts may, in case-by-case instances, choose to identify some or all of these features within the review area.

Jurisdictional Waters of the U.S.

Default field entry is "N/A". Delete "N/A" and fill out all fields in the table where applicable for waters/features present in the review area.

Table 1. (a)(1) Traditional Navigable Waters

(a)(1) Waters Name	(a)(1) Criteria	Rationale to Support (a)(1) Designation Include High Tide Line or Ordinary High Water Mark indicators, when applicable.
N/A	Choose an item.	N/A

Table 2. (a)(2) Interstate Waters

(a)(2) Waters Name	Rationale to Support (a)(2) Designation
N/A	N/A

Table 3. (a)(3) Territorial Seas

(a)(3) Waters Name	Rationale to Support (a)(3) Designation
N/A	N/A

Table 4. (a)(4) Impoundments

(a)(4) Waters Name	Rationale to Support (a)(4) Designation
N/A	N/A
N/A	N/A

Table 5. (a)(5)Tributaries

(a)(5) Waters Name	Flow Regime	(a)(1)-(a)(3) Water Name to which this (a)(5) Tributary Flows	Tributary Breaks	Rationale for (a)(5) Designation and Additional Discussion. Identify flowpath to (a)(1)-(a)(3) water or attach map identifying the flowpath; explain any breaks or flow through excluded/non-jurisdictional features, etc.
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A

Table 6. (a)(6) Adjacent Waters

(a)(6) Waters Name	(a)(1)-(a)(5) Water Name to which this Water is Adjacent	Rationale for (a)(6) Designation and Additional Discussion. Identify the type of water and how the limits of jurisdiction were established (e.g., wetland, 87 Manual/Regional Supplement); explain how the 100-year floodplain and/or the distance threshold was determined; whether this water extends beyond a threshold; explain if the water is part of a mosaic, etc.
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Table 7. (a)(7) Waters

SPOE Name	(a)(7) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; discuss whether any similarly situated waters were present and aggregated for SND; discuss data, provide analysis, and summarize how the waters have more than speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 8. (a)(8) Waters

SPOE Name	(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to subject water and aggregated for SND; discuss data, provide analysis, and then summarize how the waters have more than speculative or insubstantial effect the on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Non-Jurisdictional Waters

Default field entry is “N/A”. Delete “N/A” and fill out all fields in the table where applicable for waters/features present in the review area.

Table 9. Non-Waters/No Significant Nexus

SPOE Name	Non-(a)(7)/(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water DOES NOT have a Significant Nexus	Basis for Determination that the Functions DO NOT Contribute Significantly to the Chemical, Physical, or Biological Integrity of the (a)(1)-(a)(3) Water. Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to the subject water; discuss data, provide analysis, and summarize how the waters did not have more than a speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water.
SPOE	Kettle Wetland (KW)	Puget Sound (PS) or Sequalitchew Creek (SC)	See MFR in the administrative record for this project for Similarly Situated Waters and Significant Nexus Determination dated April 5, 2019 for further rationale to support a finding of no significant nexus.

Table 10. Non-Waters/Excluded Waters and Features

Paragraph (b) Excluded Feature/Water Name	Rationale for Paragraph (b) Excluded Feature/Water and Additional Discussion.
N/A	N/A
N/A	N/A

Table 11. Non-Waters/Other

Other Non-Waters of U.S. Feature/Water Name	Rationale for Non-Waters of U.S. Feature/Water and Additional Discussion.
N/A	N/A

CENWS-ODR
Reference: NWS-2018-1114; Small, John (AJD (JD Only))

MEMORANDUM FOR RECORD

SUBJECT: **Similarly Situated Waters and Significant Nexus Determination**
The waters specified at paragraph (a)(8) require a determination whether they are similarly situated. Under this step, the agencies apply factors in the determination of when waters evaluated under paragraph (a)(8) should be considered either individually or in combination for purposes of a significant nexus analysis. A determination of ''similarly situated'' requires an evaluation of whether a group of waters in the region that meet the distance thresholds set out under paragraph (a)(8) can reasonably be expected to function together in their effect on the chemical, physical, or biological integrity of downstream traditional navigable waters, interstate waters, or the territorial seas. Similarly situated waters can be identified as sufficiently close together for purposes of this paragraph of the regulation when they are within a contiguous area of land with relatively homogeneous soils, vegetation, and landform (*e.g.,* plain, mountain, valley, etc.).

A water has a significant nexus when any single function or combination of functions performed by the water, alone or together with similarly situated waters in the region, contributes significantly to the chemical, physical, or biological integrity of the nearest water identified in paragraphs (a)(1) through (3).

1. Subject Wetland
    a. Soils: Per the USDA's "Web Soil Survey" mapper, the soils at the location of the Kettle Wetland (KW) are classified as "Spanaway sandy loam," which is not a hydric soil. Per the ORM JD viewer, the KW is "well drained." A site visit was not conducted by the Corps for this AJD, therefore no soil samples were taken, but a site visit was conducted for a previous AJD for this wetland (NWS-2008-911). Kettle wetlands, such as the subject wetland, exist within glacially carved, static depressions, so they do not tend to change quickly as other types of wetlands might. Therefore, it is appropriate to consider previous soil findings at the KW. In the 2007 soil study, soil was described as following: "Soils consist of 16 to 20 inches of black peat above a layer of lower permeability silty clay. The peat contained low chroma (less than 1) with slightly decomposed wood fragments indicative of extended periods of inundation. Some areas beneath the peat also contained organic lenses within the silty clay layer. The silty clay layer appears to correspond with the "dead ice" phenomenon associated with the formation of kettle wetlands. Upland soils adjacent to the wetland boundary are composed of high chroma (greater than or equal to 2), dry, brown Spanaway gravelly sandy loam. The wetland boundary corresponded with a clear change in soils from gravelly sandy loam to peat." It was also previously noted that surface saturation was often present, but soils were not always saturated to a depth of 12 inches.

b. Vegetation: PEM1F, Palustrine, Emergent, Persistent, Semipermanently Flooded. Per ORM JD Viewer, the "GAP Landcover – Vegetation Class" of the KW is mostly "Forest and Woodland" but also contains "Developed and Other Human Use." Per the 2007 data sheets, wetland vegetation included pacific dogwood, red elderberry, shining willow, rose spirea, Douglas fir, Scouler's willow, beaker hazelnut and other native species.

c. Landform: Per ORM JD viewer, the landform surrounding the KW is classified as "Irregular Plains." The KW is 1.7 acres in size and sits within a 40-foot, glacially carved depression. Relatively flat topography exists east of the KW, but to the west is a large slope leading down into a large, manmade depression that exists from mining activity on the property. West of the large mining pit, topography slopes upward again, then an approximately 200-foot forested buffer exists before reaching escarpment features that drop 200 feet to Puget Sound (PS). The topography between the KW and Sequalitchew Creek (SC) is flat to slightly concave.

d. Proximity: The KW is approximately 2,900 feet east of the PS. The KW is approximately 2,500 feet north of SC. It is also 200 feet above Puget Sound in elevation. There are other kettle wetlands within the geographic area, but there are no other waters within the SPOE or the review area.

2. Similarly Situated Characteristics

a. wetland of peat soils atop lesser permeable silty/clay soils, surrounded by well drained soils

b. within forested woodlands, containing native shrubs and other native vegetation

c. wetland surrounded by irregular plains

d. within 3,000 feet of PS

3. Similarly Situated Waters Identified

a. There are no other waters within the small SPOE, therefore, no similarly situated waters were identified.

4. Significant Nexus Determination

The subject water alone, does not significantly affect the chemical, physical, or biological integrity of Puget Sound or Sequalitchew Creek based on the discussion below:

Because of the concave topography between the KW and PS, it is unlikely that surface water sheet-flowing through the KW makes its way to PS. Therefore, it is unlikely that the KW is performing filtration or sediment trapping functions for PS.

Because of the lesser-permeable layer of silty clay under the KW, it is unlikely that there is measurable ground water connection to the PS.

Because of disconnectivity and the heavily mined/disturbed nature of the immediately surrounding area, it is unlikely that wildlife would use the KW, therefore, it is likely that the KW is performing very low wildlife habitat functions.

There are no features (drainages, flow paths, sloped topography) to suggest that surface water running through the KW would then reach SC. Additionally, an approximate 200-foot forested buffer exists around SC. It is unlikely that the KW is performing filtration or sediment trapping functions for SC, or contributing any kind of organic input to SC.

The KW is not performing functions in flood attenuation. The KW contains a small 100-year flood plain in its center but it is not within a floodplain associated with another water and it is not in close-enough proximity to SC to attenuate flood water associated with overflow of the creek. The depression was created after glacial carving, and saturated wetland conditions came to exist in response to this topography, not in response to recurrent saturation from flood waters.

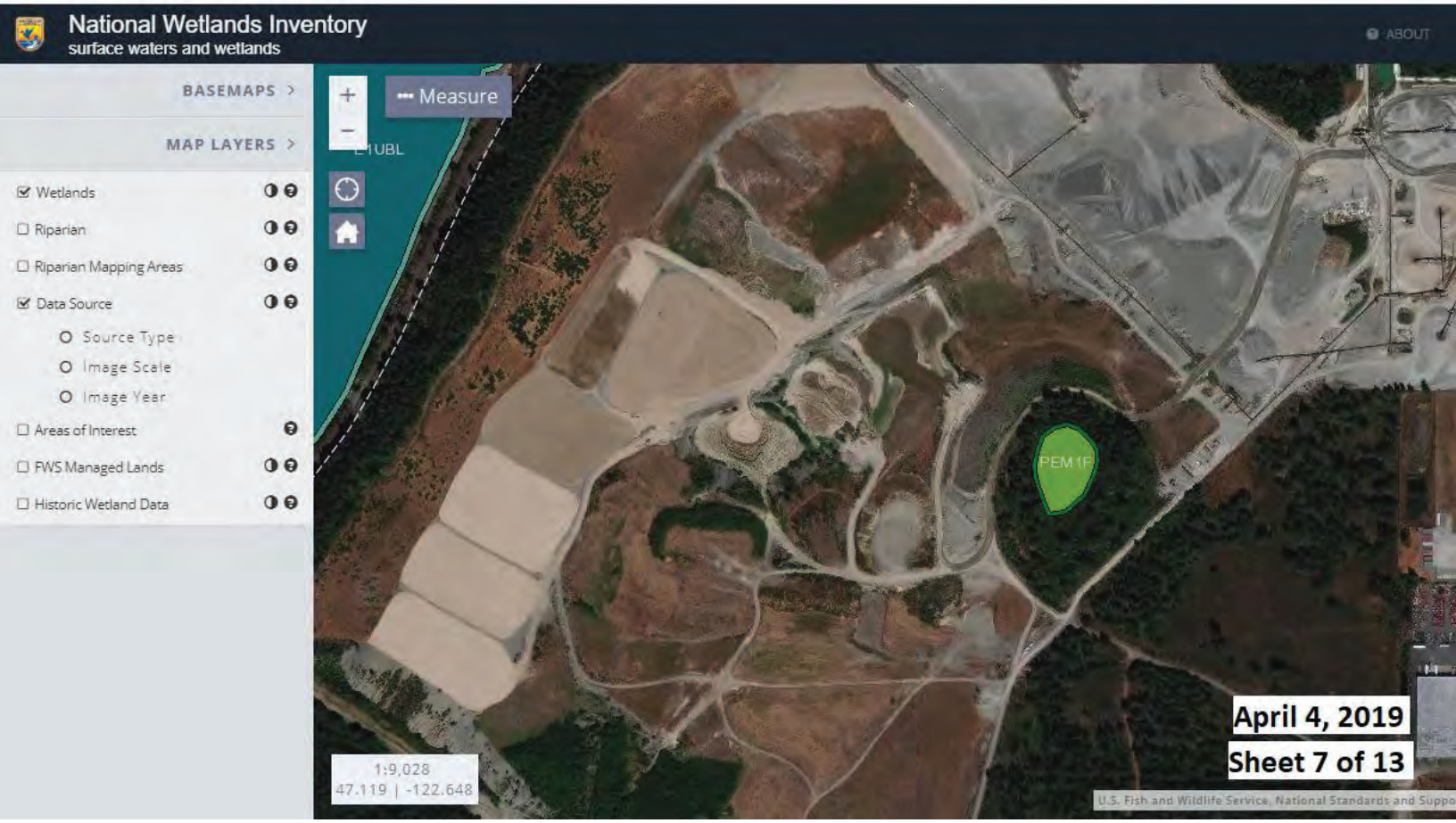
5. Conclusion: Because there is not a significant nexus, Kettle Wetland is not a water of the U.S.

Halie Endicott 5 April 2019

Halie Endicott Date
Project Manager

Kristina G. Tong 16 April 2019

Reviewed by: Kristina G. Tong, Section Chief Date


National Wetlands Inventory
surface waters and wetlands
ABOUT
BASEMAPS
MAP LAYERS
Wetlands
Riparian
Riparian Mapping Areas
Data Source
Source Type
Image Scale
Image Year
Areas of Interest
FWS Managed Lands
Historic Wetland Data
Measure
L1UBL
PEM1F
1:9,028
47.119 | -122.648
April 4, 2019
Sheet 7 of 13
U.S. Fish and Wildlife Service, National Standards and Suppo

Search

Map Unit Legend

Joint Base Lewis-McChord Area, Washington, Parts of Pierce and Thurston Counties (WA777)
Pierce County Area, Washington (WA653)

Joint Base Lewis-McChord Area, Washington, Parts of Pierce and Thurston Counties (WA777)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
110	Spanaway gravelly sandy loam, 0 to 3 percent slopes	65.2	5.6%
996	Dumps	136.3	11.7%
Subtotals for Soil Survey Area		**201.5**	**17.3%**

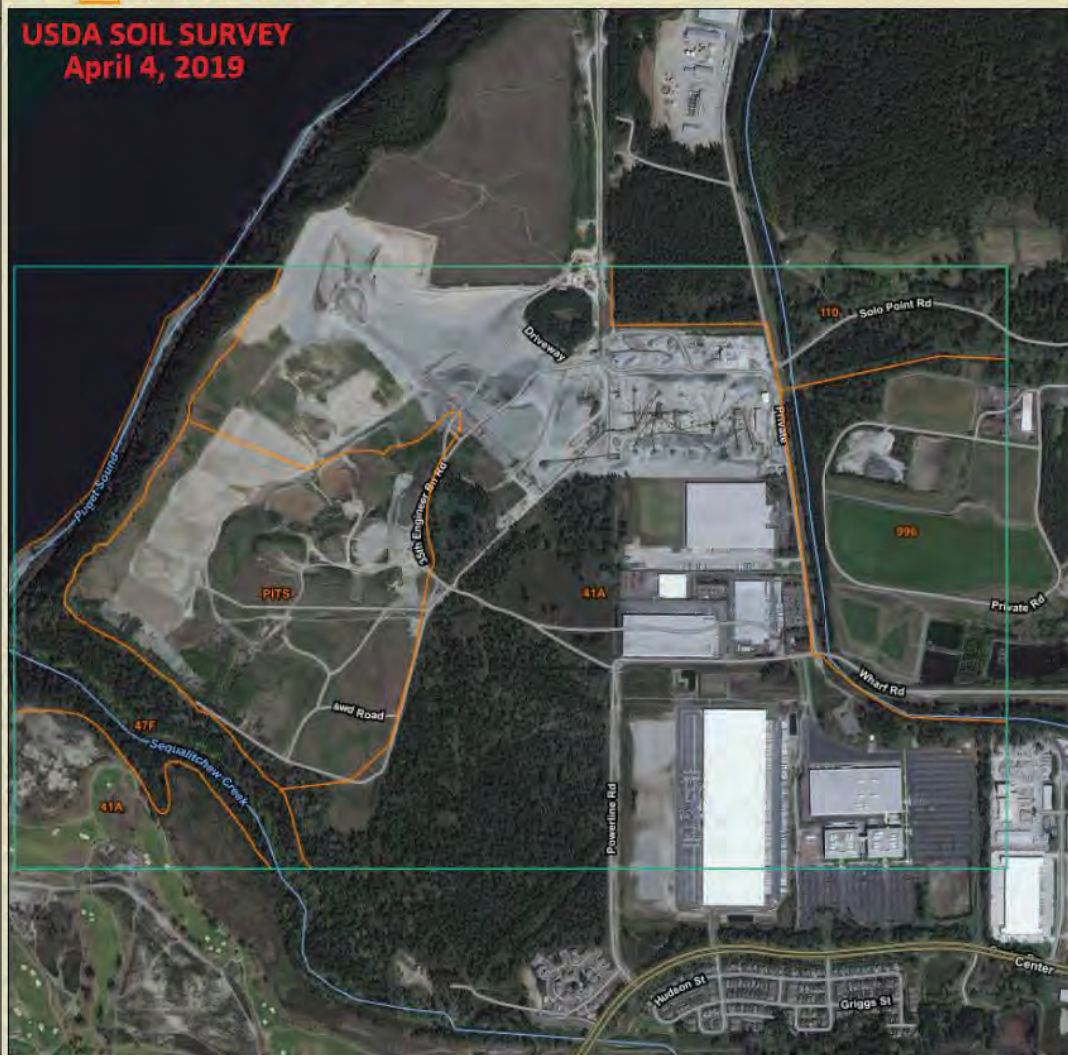
Pierce County Area, Washington (WA653)

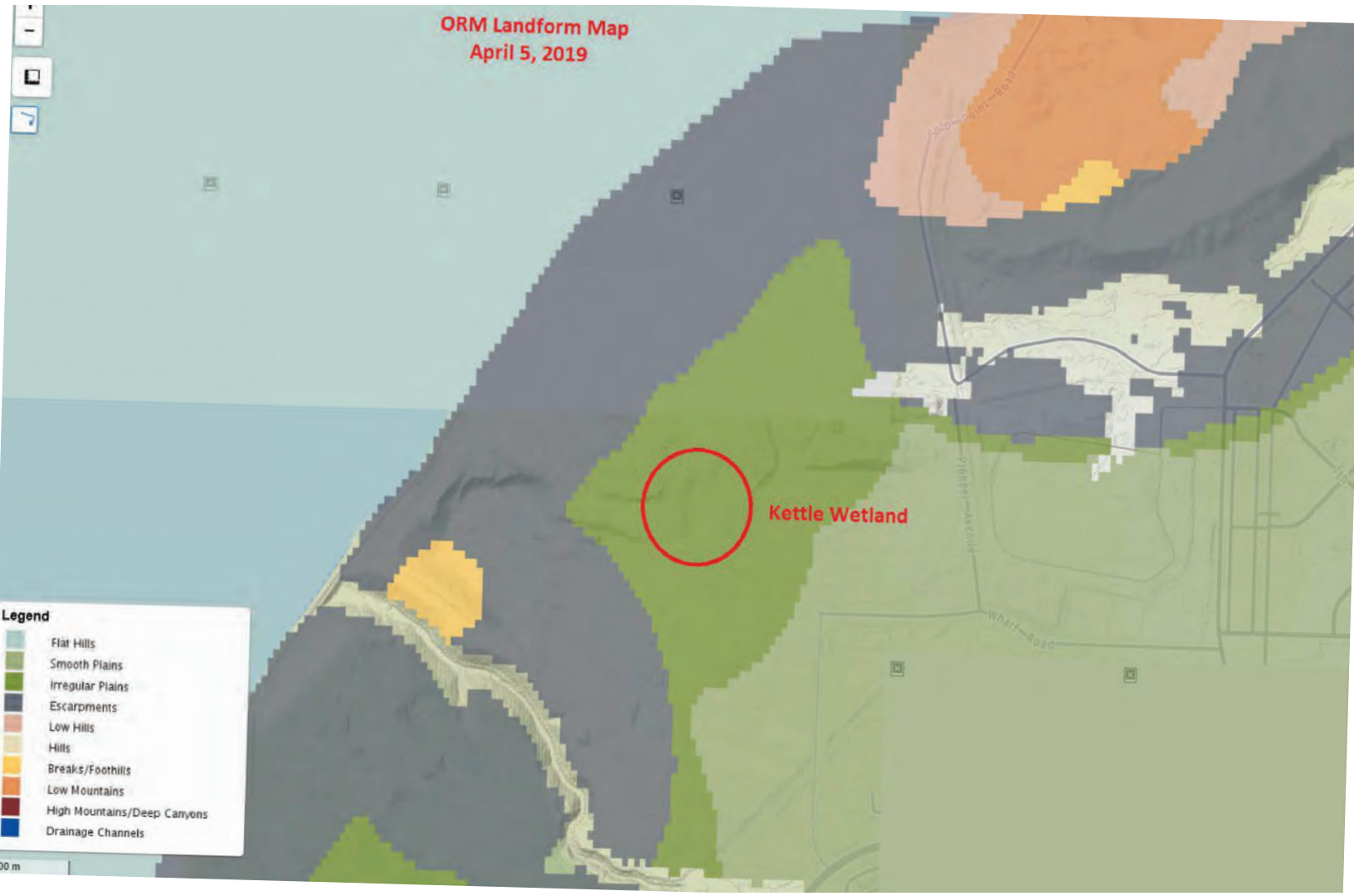
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
41A	Spanaway gravelly sandy loam	632.4	54.2%
47F	Xerochrepts, 45 to 70 percent slopes	94.6	8.1%
PITS	Pits	175.4	15.0%

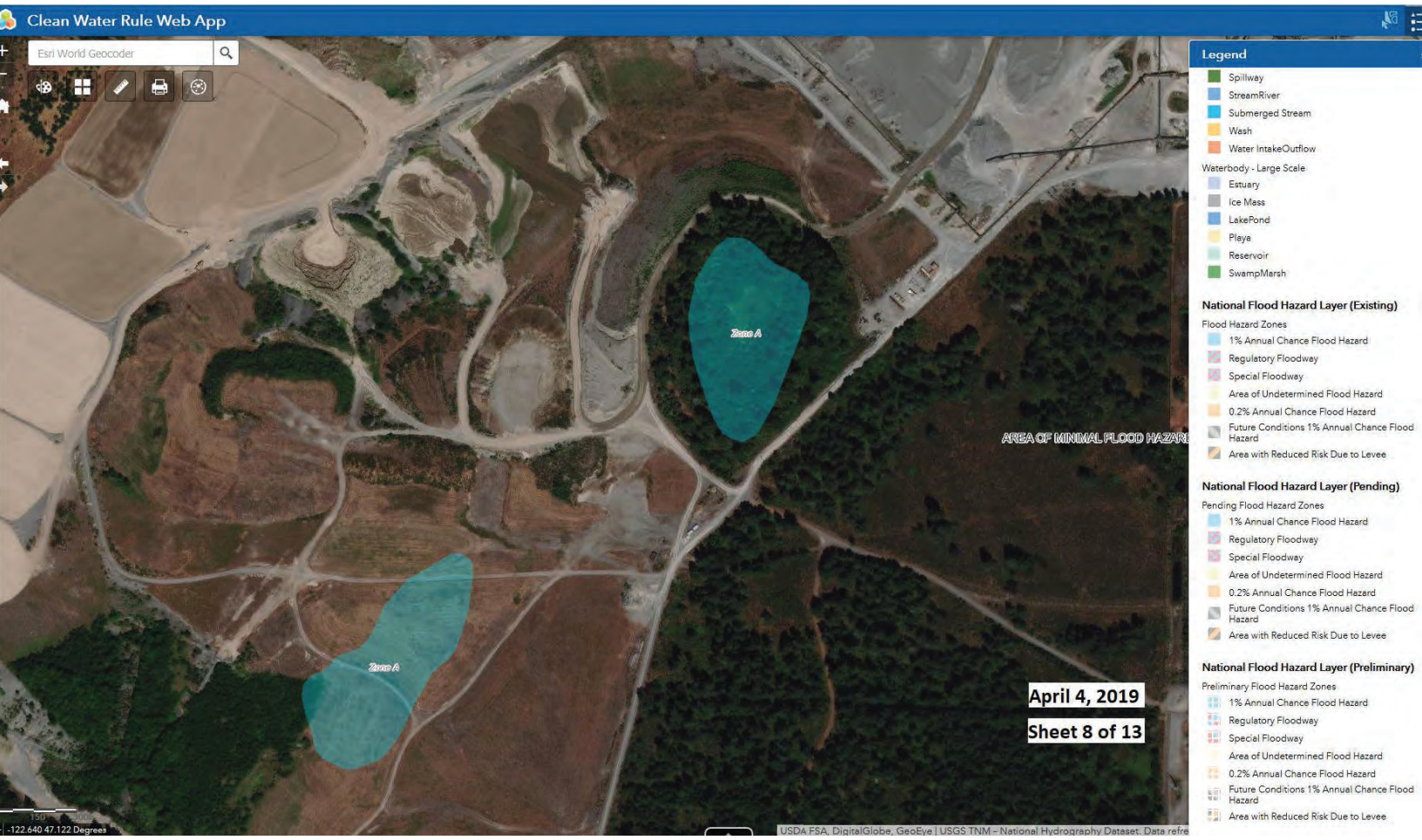
Legend

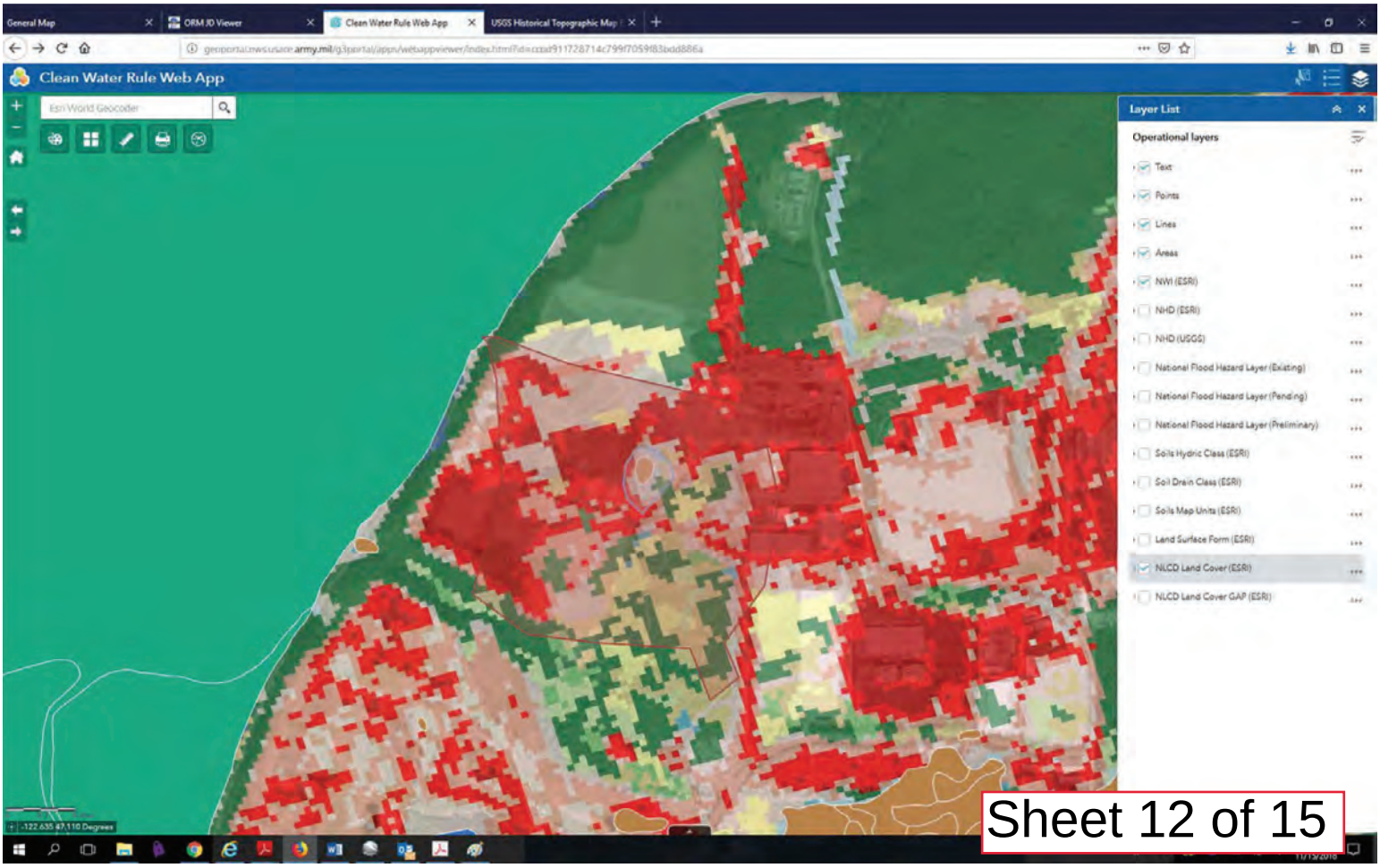
Soil Map

Scale (not to scale)




ORM Landform Map
April 5, 2019
Kettle Wetland
Legend
Flat Hills
Smooth Plains
Irregular Plains
Escarpments
Low Hills
Hills
Breaks/Foothills
Low Mountains
High Mountains/Deep Canyons
Drainage Channels
Pilot Point Road
Pioneer Avenue
Wharf Road


Clean Water Rule Web App
Esri World Geocoder
Zone A
Zone A
AREA OF MINIMAL FLOOD HAZARD
April 4, 2019
Sheet 8 of 13
-122.640 47.122 Degrees
USDA FSA, DigitalGlobe, GeoEye | USGS TNM - National Hydrography Dataset: Data refre
Legend
Spillway
StreamRiver
Submerged Stream
Wash
Water IntakeOutflow
Waterbody - Large Scale
Estuary
Ice Mass
LakePond
Playa
Reservoir
SwampMarsh
National Flood Hazard Layer (Existing)
Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
National Flood Hazard Layer (Pending)
Pending Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee
National Flood Hazard Layer (Preliminary)
Preliminary Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Risk Due to Levee


General Map
ORM JD Viewer
Clean Water Rule Web App
USGS Historical Topographic Map
Clean Water Rule Web App
Esri World Geocoder
Layer List
Operational layers
Text
Points
Lines
Areas
NWI (ESRI)
NHD (ESRI)
NHD (USGS)
National Flood Hazard Layer (Existing)
National Flood Hazard Layer (Pending)
National Flood Hazard Layer (Preliminary)
Soils Hydric Class (ESRI)
Soil Drain Class (ESRI)
Soils Map Units (ESRI)
Land Surface Form (ESRI)
NLCD Land Cover (ESRI)
NLCD Land Cover GAP (ESRI)
Sheet 12 of 15

Appendix B
Wetland Mitigation Plan Checklist

Mitigation Plan Checklist

Adapted from Ecology (2006)

Section (Page)	Omitted	Content Description
Introduction and Summary of Document		
1		Cover / Title Page
1		Project Name
1		Reference numbers (e.g., Corps application number)
1		Date of publication
1		Who it was prepared for and by / contact information
i		Table of Contents
ii		List of Tables
ii		List of Figures
(1)		Responsible Parties
(2)		Executive Summary
Proposed Development Project		
4		Project description
Figures 2-1, 2-2, 2-3		Project location, maps
2		Type of development (existing and proposed land uses)
2		Size of the development project
2.1		Construction schedule
2		Description of the development site (baseline conditions)
	X	Historic and current land uses and zoning designations
2.3		Existing wetlands on, or adjacent to, the development site
2.4		Other aquatic resources on, or adjacent to, the development site
	X	Known historic or cultural resources on the development site
Figures 1, 2		Maps showing the baseline conditions of the development site and adjacent properties
Assessment of the Impacts at the Development Site		
3		Area (acreage) of wetland impacts
Appendix C		Description of the water regime
Appendix C		Description of the soils
Appendix C		Description of the vegetation
Appendix C		Description of fauna using the site
Appendix C		Position and function of the wetland(s) in the landscape
Appendix C		Description of functions provided by the wetlands
3		Wetland rating

Section (Page)	Omitted	Content Description
3		Buffers
Appendix C		Water quality
Mitigation Approach		
4.1		Mitigation sequencing
4.2		Project-specific goals
4.3		Mitigation strategy
Proposed Mitigation Site(s)		
5.1		Location, including map
5.1		Site ownership
5		Site selection rationale
5		Site constraints
Existing (Baseline) Conditions of the Mitigation Site		
5.1		Historic and current land uses and zoning designations
5.1		Known historic or cultural resources on the mitigation site
2.9		Existing wetlands on, or adjacent to, the development site
2.4		Other aquatic resources on, or adjacent to, the development site
	X[1]	Maps showing current contours as surveyed. This is needed particularly when mitigation activities will alter ground elevations.
	X[1]	Description of the water regime
	X[1]	Description of the soils
	X[1]	Description of the vegetation
	X[1]	Description of fauna using the site
	X[2]	Position and function of the wetland(s) in the landscape
	X[2]	Description of functions provided by the wetlands
	X[2]	Wetland rating
	X[2]	Buffers
	X[2]	Water quality
	Figures 1, 2	Maps related to the existing conditions of the mitigation site, existing wetlands, and adjacent properties.
Mitigation Site Plans / Design		
5		Description of Site Plan/Design
5.2.1		Description of the water regime and how adequate amounts of water will be provided to support a wetland
4.1.3		Type of development (existing and proposed land uses) Discussion of how the mitigation plan will compensate for lost and degraded functions
Figures 4-9		Schematic drawings
Figures 7-9		Section drawings showing relationship of topography to water regime and vegetation

Section (Page)	Omitted	Content Description
Figure 5		Grading Plan / Site Maps
Figures 1-9		Orientation and scale
Figures 4, 5		Existing and proposed elevation contours
Figure 5		Spot elevations for low points, high points, and structures
Figure 2		Property boundaries
Figure 3		On-site wetland boundaries
	X	On-site floodplain and ordinary high water mark boundaries
	X	Survey of benchmarks
	X	Location and elevation of soil borings or test pits
	X	Location and elevation of water level sampling devices
	X	Location of soils to be stockpiled, if any
Figure3		Description of methods of erosion control and bank stabilization
Figure 6		Buffer areas for the mitigation site and their boundaries
5.2.1		Water Regime
5.2.1		Description of the proposed frequency and duration of flooding, inundation, or soil saturation
5.2.1		Description of the proposed groundwater and surface water sources and characteristics
	X[3]	Description of the elevation of the water table and dates measured
Figure. 5-X[4]		Engineering drawings of any proposed water control structures
5.2.2		Soils
Appendix A		Soils logs from on-site evaluation
5.2.2		Description of how the soil characteristics will be affected by the mitigation activities
	X[3]	Description of the elevation of the water table and dates measured
Figure. 5-X[4]		Engineering drawings of any proposed water control structures
Figure 5-1		Planting / Landscape Plans
Figures 5-1, 5-2		Topographic map showing typical planting scheme (distribution and spacing of vegetation)
Figure 11		List of plant materials
Figure 11		Other planting details
	X	Expected natural revegetation from existing seed bank and natural recruitment from nearby sites.
	X	Description of methods to control invasive species
	X	A plan for irrigating the plants
	X	Description of soil amendments
Figures 5-6, 5-7		Section drawings showing water levels in relation to plant distributions
Figure. 5-X[4]	X	Description of protective features (fences, signs)
Figure. 5-X[4]	X	Map of location and type of habitat structures

Section (Page)	Omitted	Content Description
	X	Examples of Similar Mitigation Projects
	X	Description of the experience the designer has had with the type of mitigation proposed
	X	Examples of other sites that have used the same approach
	X	Other information that demonstrates that the high-risk plan will be successful
Site-Specific Goals, Objectives, and Performance Standards		
6.1		Goals
6.1		Objectives for each goal
6.2		Performance standards for each objective
Monitoring Plan		
7		Variables to be measured
7		Sampling methods for each variable
7		Schedule for sampling each variable
	X	A map of sampling locations or describe how the locations will be determined for each monitoring event
	X	Laboratory methods to be used, if applicable
7.5		Timetable for reporting monitoring results to the agencies (final plan only)
Site Protection		
7.6		Describe measures that will be taken to protect the site over the long term
	X	Copies of legal documents (e.g., conservation easement, deed restriction) (final plan only)
Maintenance and Contingency Plans (final plan only)		
8		Maintenance plan
8		Description of and reason for each maintenance activity planned
8		Maintenance schedule for each activity (where applicable)
8.1		Contingency plan
Figure 8-1		Initiating procedures
	X	Description of contingency funds
Implementation Schedule (final plan only)		
4.3		Construction sequence for grading, water diversions, plantings, etc.
	X	Time schedule and completions dates
	X	Permit conditions specifying time limits
Financial Assurances (final plan only)		

Notes:

1. The mitigation site is inside the active mine; grading will continue to be changed as part of normal operations until the mitigation site is constructed.
2. The mitigation site is currently entirely upland.
3. The mitigation site is not intended to interact directly with existing water table.
4. Not included in this draft.

Appendix C
Kettle Wetland Delineation Report

March 2021 updated May 2025
Pioneer Aggregates Mine Expansion (South Parcel)

ANCHOR QEA

Kettle Wetland Delineation Report

Prepared for CalPortland

March 2021 updated May 2025
Pioneer Aggregates Mine Expansion (South Parcel)

Kettle Wetland Delineation Report

Project Number: 190217-01.01

Updated to reflect changes to the Washington State Wetland Rating System for Western Washington made in 2023.

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APPENDICES

Attachment A Field Data Forms

Attachment B Ecology Wetland Rating Forms

ABBREVIATIONS

DMC	City of DuPont Municipal Code
Ecology	Washington State Department of Ecology
FAC	facultative
FACW	facultative wetland
HGM	Hydrogeomorphic
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland
PEM	palustrine emergent
PHS	Priority Habitats and Species
PSS	palustrine scrub-shrub
Report	*Kettle Wetland Delineation Report*
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife

1 Introduction

This *Kettle Wetland Delineation Report* (Report) provides the wetland delineation results for the Kettle Wetland located in DuPont, Washington (Township 19 North, Range 1 East, Section 23). This Report has been prepared to compile the information from previous Kettle Wetland delineation reports into one cohesive document. Information in this Report is based on the Kettle Wetland delineation results presented in the *North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor Environmental 2007) and the *Addendum to the 2007 North Sequalitchew Creek Project Impact Area Wetland Delineation Report* (Anchor QEA 2018).

The initial Kettle Wetland delineation was performed by Anchor Environmental wetland scientists on July 31 and August 9, 2007 (Anchor Environmental 2007). On December 6, 2017, Anchor QEA wetland scientists performed a wetland boundary verification site visit (Anchor QEA 2018). On October 22 and December 5, 2019, Anchor QEA wetland scientists performed site visits verifying that the Kettle Wetland boundary and wetland features were consistent with the 2007 and 2017 reports (Anchor QEA 2019). A vicinity map showing the Kettle Wetland in relationship to the existing DuPont Aggregates mine and South Parcel Expansion Area is presented as Figure 1. An aerial photograph of the Kettle Wetland showing the mapped soils, wetland data plot locations, and wetland boundary flag locations is shown as Figure 2.

Section 2 of this Report describes the wetland delineation and verification methods, and Section 3 describes the findings of the wetland delineation and verification. Wetland field data forms are included in Appendix A. The Washington State Department of Ecology (Ecology) wetland rating forms are included in Appendix B.

1.1 Review of Existing Information

As part of the Kettle Wetland delineation analysis, Anchor Environmental and Anchor QEA wetland scientists reviewed the following sources of information to support the 2007 and 2017 field observations and preparation of this Report:

- Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2007, 2017, 2020)
- U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper for National Wetlands Inventory (NWI) map information (USFWS 2017, 2020)
- DuPont City Code (City of DuPont 2007, 2017, 2020)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps (WDFW 2017, 2020)
- Aerial photographs, Google Earth, December 2020

2 Methods

This section describes the methodology used to perform the 2007 wetland delineation and the 2017 and 2019 wetland verification site visits and field investigation procedures. These methods are consistent with current federal and state agency requirements, as well as local (City of DuPont) jurisdiction requirements, for performing wetland delineations and identifying protective wetland buffer widths.

2.1 Data Collection

As specified by the City of DuPont Municipal Code (DMC; City of DuPont 2007, 2017, 2020), in 2007, 2017, and 2019 the Kettle Wetland boundary was identified, delineated, and verified according to the methods defined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and Ecology's *Washington State Wetland Identification and Delineation Manual* (Ecology 1997). Soil colors were classified by their numerical description, as identified on a Munsell Soil Color Chart (Munsell 1994). In 2017 and 2019 the wetland boundary was also identified and verified according to the methods defined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (USACE 2010).

The U.S. Army Corps of Engineers (USACE; Environmental Laboratory 1987) defines wetlands as "those areas that are inundated or saturated by surface or groundwater 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 method for delineating wetlands is based on the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is "the macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present." Hydric soils are "formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Wetland hydrology "encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season" (Ecology 1997). Data collection methods for each of these parameters are described in the following subsections.

In 2007, a total of six data plots were sampled and recorded (Anchor Environmental 2007). Vegetation, soils, and hydrology information was collected at each of the plots and recorded on field datasheets (Appendix A). The Kettle Wetland boundary was determined based on plot data and visual observations of the wetland. The Kettle Wetland boundary and data plot locations were flagged and surveyed.

In 2017, vegetation, soil, and hydrology information was collected at sample plots in locations similar to the previous 2007 delineation plots (Anchor QEA 2018). In addition, the boundary of the Kettle Wetland was walked with a handheld Trimble GPS that contained the mapped 2007 wetland delineation boundary for comparison with the 2017 site conditions. The wetland boundary observed during the 2017 investigation was nearly identical to the 2007 delineation boundary; therefore, no additional flagging or survey of the wetland boundary was performed in 2017.

In 2019, the boundary of the Kettle Wetland was walked for comparison with the 2007 and 2017 site conditions (Anchor QEA 2019). Again, no discernable change in the wetland boundary was observed; therefore, no additional flagging or survey of the wetland boundary was performed in 2019.

2.1.1 Vegetation

Plant species occurring in each plot were recorded on field data forms, with one data form per plot (Appendix A). Percent cover for each plant species was estimated in the plot, and dominant plant species were identified. At each plot, trees within a 30-foot radius, shrubs within a 15-foot radius, and emergents within a 3-foot radius from the center of the plot were identified and recorded. A plant indicator status, designated by USFWS (Reed 1988, 1993), was assigned to each species, and a determination was made as to whether the vegetation in the plot was hydrophytic. To meet the hydrophytic parameter, more than 50% of the dominant species, with 20% or greater cover, must have an indicator of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Table 1 provides the wetland indicator status categories.

Table 1
Wetland Plant Indicator Definitions

Indicator Status	Description
Obligate Wetland (OBL)	Plant species occur almost always in wetlands (estimated probability greater than 99%) under natural conditions.
Facultative Wetland (FACW)	Plant species usually occur in wetlands (estimated probability 67% to 99%) but are occasionally found in non-wetlands.
Facultative (FAC)	Plant species are equally likely to occur in wetlands or non-wetlands (estimated probability 34% to 66%).
Facultative Upland (FACU)	Plant species usually occur in non-wetlands (estimated probability 67% to 99%) but are occasionally found in wetlands.
Obligate Upland (UPL)	Plant species occur almost always in non-wetlands (estimated probability greater than 99%) under natural conditions.

2.1.2 Soils

Soils were sampled in each plot and evaluated for hydric soil indicators. Soil pits were dug to a depth of 18 inches, unless prevented by impenetrable substrate. Hydric soil indicators include low soil

matrix chroma, gleying, and redoximorphic (or "redox") features. Redox features are spots of contrasting color that occur within the soil matrix (the predominant soil color). Gleyed soils are predominantly bluish, greenish, or grayish in color. Soils having a chroma of 2 or less are positive indicators of hydric soils (Environmental Laboratory 1987; USACE 2010).

2.1.3 Hydrology

Wetland hydrology was evaluated at each plot to determine whether it "encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season" (Ecology 1997). Field observations of saturation, inundation, and other indicators of wetland hydrology, such as water-stained leaves and drainage patterns in wetlands, were recorded.

2.2 Wetland Classifications

Wetland community types are discussed according to the USFWS classification developed by Cowardin et al. (1979) for use in the NWI. This system, published in 1979 by a team of USFWS scientists led by L.M. Cowardin, bases the classification of wetlands on their physical characteristics, such as the general type of vegetation in the wetland (e.g., trees, shrubs, grass) and how much, and where, water is present in the wetland. The Cowardin system provides a classification for every known wetland type that occurs throughout the United States and, under this system, a wetland can be classified as having one or more wetland classification types. The Kettle Wetland contained the following Cowardin community types:

- **Palustrine scrub-shrub (PSS):** These wetlands have at least 30% cover of woody vegetation that is less than 20 feet high.
- **Palustrine emergent (PEM):** These wetlands have erect, rooted, herbaceous vegetation present for most of the growing season in most years.

2.3 State Hydrogeomorphic Classification System

Scientists have come to understand that wetlands can perform functions in different ways. The way a wetland functions depends to a large degree on hydrologic and geomorphic conditions. To recognize these differences among wetlands, a way to group or classify them has been developed. This classification system, called the Hydrogeomorphic (HGM) Classification, groups wetlands into categories based on the geomorphic and hydrologic characteristics that control many functions.

The *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)* (Hruby and Yahnke 2023) incorporates the HGM Classification system as part of the questionnaire for characterizing a wetland's functions. The rating system uses only the highest grouping in the classification, i.e., wetland class. Wetland classes are based on geomorphic settings, such as Riverine, Slope, Lake-fringe, or Depressional. A classification key is provided within the rating form to help

identify which of the following HGM Classifications apply to the wetland: Riverine; Depressional; Slope; Lake-fringe; Tidal Fringe; or Flats.

2.4 Other Data Sources

Existing information was referenced to identify potential wetlands or site characteristics indicative of wetlands. The sources of reference information that supported field observations are identified in Section 1.1, Review of Existing Information.

2.5 Wetland Ratings

In 2007, wetland ratings were determined using the most current version of Ecology guidance in *Washington State Wetland Rating System for Western Washington: Revised* (Ecology 2004) and *Wetland Rating Form – Western Washington, Version 2* (Ecology 2006) and according to the City of DuPont wetland rating criteria, as defined in the DMC (City of DuPont 2007).

For the 2017 verification, wetland ratings were determined using the most current version of Ecology guidance in the *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) and according to the DMC (City of DuPont 2017). The DMC has been updated since the 2017 wetland verification was performed. The Kettle Wetland rating under the current DMC (City of DuPont 2020) has been identified in this Report. This was subsequently updated using the *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)* (Hruby and Yahnke 2023). This did not affect the functional assessment or wetland rating.

The rating system developed by Ecology is used to differentiate wetlands based on their sensitivity to disturbance, their significance in the watershed, their rarity, ability to be replaced, and the beneficial functions they provide to society. The Ecology rating system requires the user to collect specific information about the wetland in a step-by-step process. Three major functions are analyzed (water quality improvement, hydrologic functions, and habitat). Ratings are based on a point system, where points are given if a wetland meets specific criteria related to the wetland's potential and the opportunity to provide certain benefits.

Per Ecology's rating system, wetlands are categorized according to the following criteria and to points given:

- **Category I wetlands (23 or more points)** represent a unique or rare wetland type, are more sensitive to disturbance, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.
- **Category II wetlands (20 to 22 points)** are difficult, though not impossible, to replace, and provide high levels of some functions.

- **Category III wetlands (16 to 19 points)** have moderate levels of functions. They have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- **Category IV wetlands (less than 16 points)** have the lowest levels of functions and are often heavily disturbed.

The current DMC classifies wetlands into four categories (Categories I, II, III, and IV) based on the updated 2014/2023 Ecology Wetland Rating System for Western Washington (City of DuPont 2020).

2.6 Wetland Functional Assessment

During the 2017 wetland verification, the functional values of wetlands were rated according to *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014). Using Ecology's system, wetlands were rated based on a point system where points were awarded to three functional value categories (water quality improvement, hydrologic functions, and habitat). Detailed scoring, based on Ecology wetland rating forms, is provided in Appendix B.

3 Wetland Delineation Results

This section describes the wetland delineation results of the 2007 wetland delineation (Anchor Environmental 2007) and 2017 (Anchor QEA 2018) and 2019 (Anchor QEA 2019) wetland verification site visits. Overall, no discernable changes in the Kettle Wetland vegetation, soils, or hydrologic characteristics or the wetland boundary or were observed across the various investigations.

3.1 Kettle Wetland

The Kettle Wetland is a 1.78-acre enclosed, depressional HGM class wetland dominated by a PEM vegetation class with a PSS vegetation class along the wetland boundary. Forty-eight flags were used to identify the Kettle Wetland boundary in 2007. The Kettle Wetland boundary was confirmed to be unchanged during the 2017 and 2019 investigations. The Kettle Wetland is identified on the USFWS Wetlands Mapper for NWI Map Information (USFWS 2007, 2017, 2020) and WDFW PHS maps (WDFW 2017, 2020). The boundary of the Kettle Wetland is shown in Figure 1 in relationship to other wetlands in the vicinity and in detail on Figure 2. The following subsections provide a description of the Kettle Wetland vegetation, soils, and hydrology.

3.1.1 Vegetation

Similar vegetation species were observed in the Kettle Wetland during the 2007, 2017, and 2019 investigations. The PEM communities consist of common mare's tail (*Hippuris vulgaris*), creeping spike rush (*Eleocharis palustris*), giant bur-reed (*Sparganium eurycarpum*), water parsnip (*Sium suave*), reed canarygrass (*Phalaris arundinacea*), water ladysthumb (*Polygonum amphibium*), mild waterpepper (*Polygonum hydropiperoides*), skunk cabbage (*Lysichiton americanus*), inflated sedge (*Carex vesicaria*), and northern bugleweed (*Lycopus uniflorus*). Aquatic species observed include pondweed (*Potamogeton* sp.) and lesser duckweed (*Lemna minor*).

Along the wetland boundary, the PSS community consists of Pacific willow (*Salix lasiandra*), Scouler's willow (*Salix scouleriana*), sitka willow (*Salix sitchensis*), red-osier dogwood (*Cornus sericea*), and hardhack (*Spiraea douglasii*). Other vegetation along the wetland boundary consists of stinging nettle (*Urtica dioica*), blue elderberry (*Sambucus caerulea*), beaked hazelnut (*Corylus cornuta*), and Henderson sedge (*Carex hendersonii*).

Kettle Wetland upland buffer vegetation includes tree, shrub, grass, and herbaceous species. Dominant tree species include big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), western red cedar (*Thuja plicata*), bitter cherry (*Prunus emarginata*), Douglas hawthorne (*Crataegus douglasii*), blue elderberry, and Pacific madrone (*Arbutus menziesii*). Dominant shrub species include trailing blackberry (*Rubus ursinus*), salal (*Gaultheria shallon*), snowberry (*Symphoricarpos albus*), Scot's broom (*Cytisus scoparius*), Oregon grape (*Mahonia*

nervosa), bald-hip rose (*Rosa gymnocarpa*), oceanspray (*Holodiscus discolor*), sword fern (*Polystichum munitum*), saskatoon (*Amelanchier alnifolia*), red huckleberry (*Vaccinium parvifolium*), and bracken fern (*Pteridium aquilinum*). Herbaceous species include velvet grass (*Holcus lanatus*), western wild-rye (*Elymus glaucus*), colonial bent-grass (*Agrostis capillaries*). Vine species include manroot (*Marah oreganus*). Data plot vegetation is presented in the field data forms in Appendix A.

3.1.2 Soils

Kettle wetlands were formed during glacial retreat, when the stagnant melting ice sheet left large blocks of stranded glacial ice called "dead ice." Glacial meltwater would often flow around these stagnant ice blocks, depositing sediment. When the ice blocks later melted, kettles were formed where sediment had been deposited adjacent to the ice blocks. The ice-contact sediment is typically an unstratified silt, sand, and gravel, much lower in permeability than the adjacent outwash. An ablation till can also be formed in kettles when stagnant ice evaporates, leaving the glacial fines once contained in the ice as a low-permeability deposit. Kettles generally are present in the area as closed topographic depressions, some of which are lakes, bogs, and marshes. Over time, peat, silt, and clay collect in these quiet waters, producing the peat and wetland deposits encountered near the ground surface in these low areas.

The NRCS has mapped one soil series in the location of the Kettle Wetland (USDA 2007, 2017, 2020), Spanaway gravelly sandy loam (0% to 6% slopes). These soils are glacial outwash. These soils are very steep and moderately well drained to somewhat excessively drained. Spanaway soils are not classified as hydric soils by the NRCS. Mapped soils are shown in Figure 2.

Kettle Wetland soil characteristics were the same during the 2007 and 2017 investigations. Soils consist of 16 to 20 inches of black peat above a layer of lower permeability silty clay. The peat contained low chroma (less than 1) with slightly decomposed wood fragments indicative of extended periods of inundation. Some areas beneath the peat also contained thin organic lenses within the silty clay layer. The silty clay layer appears to correspond to the "dead ice" phenomenon associated with the formation of kettle wetlands. Upland soils adjacent to the wetland boundary are composed of high chroma (greater than or equal to 2), dry, brown Spanaway gravelly sandy loam. The wetland boundary corresponded with a clear change in soils from gravelly sandy loam to peat. Data plot soils are presented in the field data forms in Appendix A.

3.1.3 Hydrology

The Kettle Wetland is located within the Chambers/Clover Basin Water Resource Inventory Area 12 (Ecology 2020) and the Sequalitchew Creek drainage basin, and it is hydrologically connected with the Vashon aquifer (CH2M Hill 2003a). There are no streams that drain into or out of the Kettle Wetland. The Kettle Wetland is more than 1/2 mile from a Water of the United States and has no surface water connection to any other waterbody. As an enclosed depression, precipitation falling

within the existing vegetated wetland buffer drains toward the Kettle Wetland. The PEM area is inundated for all or most of the year. Water levels in the Kettle Wetland fluctuate seasonally, from 1 to 2 feet during the summer, to 4 to 6 feet during the winter. The width of the open water component also varies seasonally from 50 feet during the summer to several hundred feet during the winter. Water levels in the wetland were monitored intermittently at a staff gauge installed in the wetland in 1999 (CH2M Hill 2003b). Water levels over the monitoring period ranged from a high of 6.22 feet in December 1999, to the soil surface (0.63 foot) in October 1999.

Similar Kettle Wetland hydrology characteristics were observed during the 2007, 2017, and 2019 investigations. Inundation of up to 3 feet was present throughout the central portion of the Kettle Wetland. Within the wetland near the edges, soil saturation ranged from near the surface to greater than 20 inches. However, several secondary indicators of wetland hydrology were observed in areas with peat soils where saturation was well below the surface, including sediment deposits, water marks, and the FAC neutral test. No saturation, standing water, or indications of wetland hydrology were observed in adjacent upland areas. Data plot hydrology is presented in the field data forms in Appendix A.

Data was collected at six data plots, K-1 through K-6 (Appendix A). Plots K-1, K-4, and K-5 contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. Plots K-2, K-3, and K-6 contained no hydric soil or wetland hydrology, although K-3 contained hydrophytic vegetation.

3.2 Regulatory Framework

Guidance from USFWS, Ecology, and the City of DuPont was used to determine the wetland classifications. Information and excerpts from the specific guidance language are provided in the following subsections.

3.2.1 USFWS Classification

The Kettle Wetland has been classified using the system developed by Cowardin et al. (1979) for use in the NWI. Table 2 lists the USFWS classifications for the Kettle Wetland and the connection to surface water.

Table 2
U.S. Fish and Wildlife Service Wetland Classifications

Wetland	USFWS Classification	Surface Water Connection
Kettle	PSS and PEM	None

3.2.2 Ecology Rating, Classification, and Functions and Values Scores

Per the current DMC (City of DuPont 2020), wetland ratings are determined using Ecology's *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)* (Hruby and Yahnke 2023). Under the 2014/2023 Ecology wetland rating system, the Kettle Wetland is rated as Category III wetland. Table 3 lists the 2014/2023 Ecology and local (City of DuPont) wetland rating and classification.

Table 3
Summary of Wetland Classes and Ratings Using Ecology 2014/2023 Wetland Rating Systems

Wetland	Area (acres)	Hydrogeomorphic Classification	2014[1] State Rating (Ecology)	Local Rating (City of DuPont)[2]
Kettle	1.78	Depressional	III	III

Notes:

1. Hruby, T. & Yahnke, A. (2023). *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)*. Publication #23-06-009. Washington Department of Ecology.
2. City of DuPont, 2020. City of DuPont Municipal Code. Accessed December 8, 2020. Available at http://www.codepublishing.com/WA/DuPont/.

For the 2014/2023 Ecology wetland rating system (Hruby and Yahnke 2023), a low, moderate, or high rating is based on three functions: 1) Water Quality Improvement; 2) Hydrologic; and 3) Habitat. Within each of these three functions are three sub-function categories: 1) Site Potential; 2) Landscape Potential; and 3) Value. Each of these sub-function categories is rated as low, moderate, or high. Wetland functional values and scores for the Kettle Wetland under the 2014/2023 Ecology rating system are shown in Table 4. The 2014 Ecology wetland rating forms are provided in Appendix B and reflect the 2023 update (Hruby and Yahnke 2023).

Table 4
Summary of Functions and Values: 2014/2023 Wetland Rating Scores

Wetland and Function	Water Quality Improvement	Hydrologic	Habitat	Total Functions Score[1]
Kettle Wetland				
Site Potential	High	High	High	
Landscape Potential	Moderate	Moderate	Low	
Value	Low	Low	Moderate	
Score Based on Rating[1]	6	6	6	18

Notes:

1. Potential total score per function is 9, for a potential total score of 27.

3.3 Wetland Functional Assessment

The following subsections provide a description of the functions of the Kettle Wetland based on the 2014/2023 Ecology wetland rating system.

3.3.1 Water Quality Improvement Functions

The Kettle Wetland has a high function score for the potential to improve water quality for removal of sediments, nutrients, and toxics, because it is a closed depression with no surface water outlet. The Kettle Wetland also has dense vegetation to trap sediments and pollutants, and the soil characteristics include organic material.

The Kettle Wetland has a moderate function score for the landscape potential to support water quality functions because of the potential of the surrounding land uses to generate pollutants and discharge stormwater to the wetland.

The Kettle Wetland has a low function score to provide water quality improvement valuable to society because it is not located in the vicinity of aquatic resources that are on the Ecology 303(d) list, and there is no surface flow from the wetland to other waterbodies.

3.3.2 Hydrologic Functions

The Kettle Wetland provides a high function score for potential to reduce flooding and erosion based on the absence of surface water outflows from the wetland, the depth of storage provided by the wetland during wet periods, and the contribution of the wetland to storage in the watershed.

The Kettle Wetland provides a moderate functions score for potential to support hydrologic functions based on the potential for surrounding land uses to generate pollutants and discharge stormwater to the wetland.

The Kettle Wetland has a low function score to provide hydrologic functions valuable to society because it is located in a landscape where it does not potentially flow downgradient into areas where flooding has damaged human or natural resources.

3.3.3 Habitat Functions

The Kettle Wetland has a high function score for the potential to provide habitat due to the vegetative structure (number of Cowardin [1979] vegetation classes), the number of water regimes or hydroperiods, the plant richness, the habitat diversity, and special habitat features present.

The Kettle Wetland has a low score for the landscape potential to support habitat functions because of the characteristics of disturbed and undisturbed habitats surrounding the wetland and the land use intensity of the surrounding area.

The Kettle Wetland has a moderate function score to provide habitat functions valuable to society because of the presence of snags within the wetland The 2014/2023 Ecology wetland rating forms are included in Attachment A.

3.4 City of DuPont Wetland Buffer Guidance

Required wetland buffers have been identified according to the current DMC Chapter 25.105.050 (City of DuPont 2020). The DMC identifies minimum protective buffer widths based on the wetland category, per the 2014/2023 Ecology rating system. The Kettle Wetland is a Category III wetland.

Wetland boundaries are shown in Figure 2. Table 5 summarizes DMC ratings and buffer widths based on the 2014/2023 Ecology rating system.

Table 5
Wetland Rating and Standard Buffer Widths

Wetland	2014 State Rating (Ecology)[1]	Local Rating (City of DuPont)	Buffer Width (feet)[2]
Kettle	III	III	75

Note:
1. Hruby, T. & Yahnke, A. (2023). *Washington State Wetland Rating System for Western Washington: 2014 Update (Version 2)*. Publication #23-06-009. Washington Department of Ecology.
2. City of DuPont, 2020. City of DuPont Municipal Code. Accessed December 8, 2020. Available at http://www.codepublishing.com/WA/DuPont/.

3.5 Wetland Delineation and Typing Limitations

Wetland identification is an inexact science, and differences of professional opinion occasionally occur between trained individuals. Final determinations for wetland boundaries and typing concurrence or adjustments to these are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in hydrology or land use. In addition, the definition of jurisdictional wetlands may change. If a physical change occurs in the basin, or if 3 years pass before the proposed project is undertaken, another wetland survey should be conducted. The results and conclusions expressed herein represent Anchor QEA's professional judgment based on the information available.

4 References

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Figures

LEGEND:

- South Parcel Expansion Area (188 ac)
- South Parcel Mineral Resource Area Expansion
- Mining Limits (existing and proposed, 620 ac)
- Pioneer Aggregates Property (791 ac)
- Kettle Wetland
- Other Wetlands (NWI)
- Sequalitchew Creek

NOTES:
Imagery: 2017 USDA NAIP

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ANCHOR QEA

Figure 1
Vicinity Map
Kettle Wetland Delineation Report
Pioneer Aggregates South Parcel Project

LEGEND:

- South Parcel Expansion Area (188 ac)
- South Parcel Mineral Resource Area Expansion
- Mining Limits (existing and proposed, 620 ac)
- Pioneer Aggregates Property (791 ac)
- Data Plot
- Wetland Boundary Flag
- Kettle Wetland
- Sequalitchew Creek

NOTES:
Imagery: 2017 USDA NAIP

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ANCHOR QEA

Figure 2
Kettle Wetland Map
Kettle Wetland Delineation Report
Pioneer Aggregates South Parcel Project

Attachment A
Field Data Forms

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K1
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Salix lasiandra	T 60%	FACW+	Urtica dioica	H 15%	FAC+
Pseudotsuga menziesii	T 20%	FACU	Sium suave	H 5%	OBL
Sambucus racemosa	T 5%	FACU			
Spiraea douglasii	S 15%	FACW			
Salix lasiandra	S 10%	FAC+			
Symphoricarpus albus	S 15%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/2 = 50%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No	Sediment Deposits: ☒ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: >20 inches			

Check all that apply & explain below:	Other (explain):
☐ Stream, lake or gage data	
☐ Aerial photographs	
☐ Other	

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Dupont muck

Drainage Class Very poorly drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	O1	10YR 2,1	None	None	Peat (black, decomposed wood/twigs and peat)	
14-20	O2	10YR 2,1	None	None	Gravelly peat	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☒ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K2
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Polystichum munitum	H 20%	FACU	Pseudotsuga menziesii	T 20%	FACU
Rubus ursinus	H 40%	FACU	Holodiscus discolor	T 10%	NI
Mahonia nervosa	S 20%	FACU	Sambucus racemosa	T 15%	FACU
Symphoricarpos albus	S 20%	FACU	Corylus cornuta	T 10%	FACU
Marah oreganus	V 20%	NI	Carex hendersonii	H 15%	FAC
Salix lasiandra	T 40%	FAC+	Urtica dioica	H 5%	FAC+

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/7 = 14%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: None inches			

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Spanaway gravelly sandy loam

Drainage Class Somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	A	10YR 2,2	None	None	Gravelly sandy loam (brown). Gravel prevented further shovel penetration.	

Hydric Soil Indicators: (check all that apply)

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

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	8/9/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K3
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Sambucus racemosa	S 40%	FACU			
Cornus nutallii	S 50%	NI			
Urtica dioica	H 15%	FAC+			
Galium aparine	H 5%	FACU			
Rubus ursinus	H 5%	FACU			
Tolmiea menziesii	H 5%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 0/2 = 0%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☒ No	Sediment Deposits: ☐ Yes ☒ No
Based on: Observation	Drift Lines: ☐ Yes ☒ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☐ Yes ☒ No
Depth to saturated soil: None inches		

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Spanaway gravelly sandy loam

Drainage Class Somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	A	7.5YR 2.5,1	None	None	Loamy gravel; Gravel prevented further penetration.	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks: Soil chroma is low because color is black, but no other indications of hydric soil are present. No indications of wetland hydrology are present.

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	8/9/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K4
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Salix lasandra	S 40%	FAC+			
Cornus nutallii	S 50%	NI			
Moss	H 10%	None			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/2 = 50%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No	Sediment Deposits: ☒ Yes ☐ No
Based on: Observation	Drift Lines: ☒ Yes ☐ No	Drainage Patterns: ☐ Yes ☒ No
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No
Depth to free water in pit: 20 inches	FAC Neutral: ☐ Yes ☒ No	Water-stained Leaves: ☒ Yes ☐ No
Depth to saturated soil: 1 inches		

Check all that apply & explain below:	Other (explain):
☐ Stream, lake or gage data	
☒ Aerial photographs	
☐ Other	

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Dupont muck

Drainage Class Very poorly drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A1	7.5YR 2.5,1	None	None	Siilty peat (decomposed organic debris)	
8-15	A2	7.5YR 2.5,1	7.5YR 3,2	40% 2 inches	Silty peat with gleyed colors	
15-17	B1	7.5YR 3,2	2.5Y 5,6	10% 1/2 inch	clayey silt with organic lenses	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☒ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES: Matrix chroma <=2 with mottles

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	8/9/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K5
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Salix lasiandra	T 30%	FAC+			
Salix scouleriana	T 30%	FAC			
Cornus nutallii	S 30%	NI			
Spirea douglasii	S 40%	FACW			
Oenanthe sarmentosa	H 20%	OBL			
Solanum dulcamara	H 5%	FAC+			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 4/5 = 80%

Check all indicators that apply and explain below:

- ☒ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☒ Yes ☐ No	Sediment Deposits: ☒ Yes ☐ No	
Based on: Observation	Drift Lines: ☒ Yes ☐ No	Drainage Patterns: ☐ Yes ☒ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☒ No	Local Soil Survey: ☐ Yes ☒ No	
Depth to free water in pit: 20 inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☒ Yes ☐ No	
Depth to saturated soil: 1 inches			

Check all that apply & explain below:	Other (explain):
☐ Stream, lake or gage data	
☒ Aerial photographs	
☐ Other	

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Dupont muck

Drainage Class Very poorly drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	A1	7.5YR 2.5,1	None	None	Siilty peat (decomposed organic debris)	
14-16	A2	7.5YR 2.5,1	10YR 6,2	20% 1 inch	clayey silt (chalky) and silty peat	
16-20	B	10YR 6,2	None	None	clayey silt (chalky)	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Kettle Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: K6
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Polystichium munitum	S 20%	FACU	Galium aparine	H 10%	FACU
Corylus cornuta	T 80%	FACU	Tolmiea menziesii	H 10%	FACU
Salix scouleriana	T 20%	FAC			
Urtica dioica	S 10%	FAC+			
Symphoricarpus albus	S 10%	FACU			
Rubus ursinus	H 10%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/3 = 33%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: None inches			
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):		

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Spanaway gravelly sandy loam

Drainage Class Somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A	10YR 2,2	None	None	Sandy gravel. Gravel prevented further shovel penetration.	

Hydric Soil Indicators: (check all that apply)

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

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

Attachment B
Ecology Wetland Rating Forms

Wetland name or number Kettle

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Kettle Wetland Date of site visit: November 2017

Rated by C. Douglas Trained by Ecology? ☐ Yes ☐ No Date of training 2007

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 _____

OVERALL WETLAND CATEGORY III (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

X **Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
	Circle the appropriate ratings									
Site Potential	**H**	M	L	**H**	M	L	**H**	M	L	
Landscape Potential	H	**M**	L	H	**M**	L	H	M	**L**	
Value	H	M	**L**	H	M	**L**	H	**M**	L	**TOTAL**
Score Based on Ratings	6			6			6			**18**

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	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	X

Wetland name or number Kettle_____

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 another 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 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 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 (*can be added to figure above)*	S 4.1	
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 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)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number Kettle

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 – 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 Kettle_____

◯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 Kettle

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water 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 (QUESTION 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 flowing outlet. points = 2 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	3
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	4
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 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded 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	4
Total for D 1 Add the points in the boxes above	**16**

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **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 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	1
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 questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	**1**

Rating of Landscape Potential If score is: ☐ **3 or 4 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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	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 = 2 No = 0	0
Total for D 3 Add the points in the boxes above	**0**

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

Wetland name or number Kettle _____

DEPRESSIONAL AND FLATS WETLANDS

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 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 outlet points = 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 outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland 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) points = 0	7
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of 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 = 0 Entire wetland is in the Flats class points = 5	5
Total for D 4 Add the points in the boxes above	**16**

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. 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	1
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	1
Total for D 5 Add the points in the boxes above	**2**

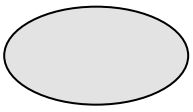
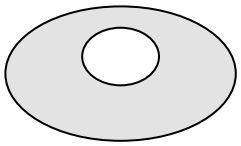
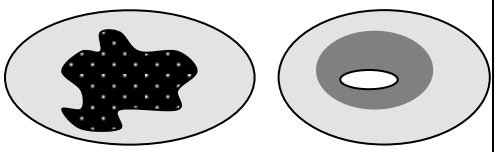
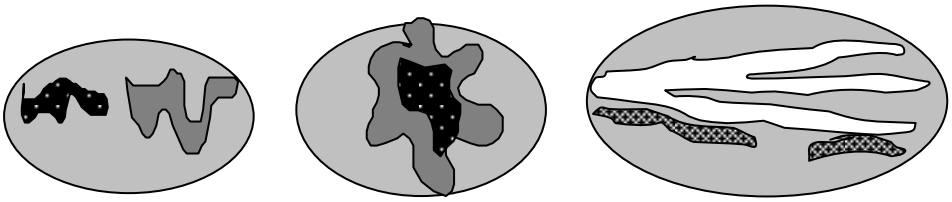
Rating of Landscape Potential If score is: ☐ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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 cannot reach areas that flood. *Explain why* _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	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	0
Total for D 6 Add the points in the boxes above	**0**

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

Wetland name or number Kettle _____

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.* __X__Aquatic bed — 4 structures or more: points = 4 __X__Emergent — 3 structures: points = 2 __X__Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __X__Forested (areas where trees have > 30% cover) — 1 structure: points = 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	4
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*). __X__Permanently flooded or inundated — 4 or more types present: points = 3 __X__Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 __X__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	2
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.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	2
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 or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	3

Wetland name or number Kettle

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.* __X__Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __X__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)* __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)* __X__Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	4
Total for H 1 Add the points in the boxes above	**11**

Rating of Site Potential If score is: ☐ **15-18 = H** ☐ **7-14 = M** ☐ **0-6 = L** *Record the rating on 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*). *Calculate:* % undisturbed habitat 5 **+** [(% moderate and low intensity land uses)/2] 2.5 **=** 7.5 % If total accessible habitat is: > 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 = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 20 **+** [(% moderate and low intensity land uses)/2] 5 **=** 25 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**-1**

Rating of Landscape Potential If score is: ☐ **4-6 = H** ☐ **1-3 = M** ☐ **< 1 = L** *Record the rating on the 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 applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — 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 has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	**1**

Rating of Value If score is: ☐ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number Kettle

WDFW Priority Habitats

Priority habitats listed by WDFW (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. 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:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – 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.

X **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 name or number Kettle

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands 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** ◯No= **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? ◯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) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ◯Yes = **Category I** ◯No = **Category II**	◯**Cat. I** ◯**Cat. 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 Wetlands of High Conservation Value? ◯Yes – Go to **SC 2.2** ◯No – Go to **SC 2.3** 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** ◯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 their website? ◯Yes = **Category I** ◯No = **Not a WHCV**	◯**Cat. I**
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 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 plant species in Table 4 are present, the wetland is a bog. 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**	◯**Cat. I**

Wetland name or number Kettle

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre 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 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) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* ◯Yes – Go to **SC 5.1** ◯No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland 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). — 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**	◯**Cat. I** ◯**Cat. 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 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: 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 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** 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 I** ◯**Cat. II** ◯**Cat. III** ◯**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	NA

ATTACHMENT B2

WETLAND VEGETATION SUMMARY

Attachment 2
Wetland Vegetation Summary

Scientific Name	Common Name	Indicator Status1	Kettle	Seep
Acer circinatum	Vine maple	FAC-		x
Acer macrophylum	Big-leaf maple	FACU	x	x
Alnus rubra	Red alder	FAC	x	x
Agrostis capillaris	Colonial bent-grass	FAC	x	x
Amelanchier alnifolia	Saskatoon	FACU	x	
Arbutus menziesii	Pacific madrone	UPL	x	
Athyrium filix-femina	Lady fern	FAC+		x
Carex hendersonii	Henderson's sedge	FAC	x	
Carex vesicaria	Inflated sedge	OBL	x	
Cirsium arvense	Canada thistle	FACU+		x
Claytonia sibirica	Siberian miner's lettuce	FAC-		x
Cornus nuttalli	Pacific dogwood	UPL	x	
Cornus sericea	Red-osier dogwood	FACW	x	
Corylus cornuta	Beaked hazelnut	FACU	x	
Cytisus scoparius	Scot's broom	UPL	x	
Dactylis glomerata	Orchardgrass	FACU		x
Eleocharis palustris	Creeping spike rush	OBL	x	
Elymus glaucus	Western wild-rye	FACU	x	
Epilobium ciliatum	purple-leaved willow herb	FACW-		x
Equisetum hyemale	Scouring rush	FACW		x
Equisetum telmateia	Giant horsetail	FACW		x
Galium aparine	Cleavers	FACU	x	x
Gaultheria shallon	Salal	FACU	x	
Geum macrophyllum	Large-leaf avens	FACW-		x
Hippuris vulgaris	Common mare's tail	OBL	x	
Holcus lanatus	Velvetgrass	FAC	x	x
Holodiscus discolor	Oceanspray	UPL	x	
Ilex aquifolium	English holly	FACU		x
Juncus effusus	Common rush	FACW		x
Lemna minor	Lesser duckweed	OBL	x	
Lycopus uniflorus	Northern bugleweed	OBL	x	
Lysichiton americanus	Skunk cabbage	OBL	x	
Mahonia nervosa	Oregon grape	UPL	x	
Maianthemum dilatatum	False lily-of-the-valley	FAC		x
Marah oreganus	Manroot	UPL	x	
Oenanthe sarmentosa	Water parsley	OBL	x	
Phalaris arundacea	Reed canary grass	FACW	x	
Polygonum amphibium	Water laydsthumb	OBL	x	
Polygonum hydropiperoides	Mild waterpepper	OBL	x	
Polystichum munitum	Sword fern	FACU	x	x
Populus balsamifera	Black cottonwood	FAC	x	
Potamogeton sp.	Pondweed	OBL	x	
Prunus emarginata	Bitter cherry	FACU	x	
Pseudotsuga menziesii	Douglas fir	FACU	x	x
Pteridium aquilinum	Bracken fern	FACU		
Rhamnus purshiana	Cascara	FAC-		x
Rosa gymnocarpa	Bald hip rose	FACU	x	
Rubus spectabilis	Salmonberry	FAC+		x
Rubus ursinus	Trailing blackberry	FACU	x	x
Salix lasiandra	Pacific willow	FACW+	x	
Salix scouleriana	Scouler's willow	FAC	x	
Salix sitchensis	Sitka willow	FACW	x	
Sambucus caerulea	Blue elderberry	FACU	x	

Attachment 2
Wetland Vegetation Summary

Sambucus racemosa	Red elderberry	FACU	x	
Sium suave	water parsnip	OBL	x	
Solanum dulcamara	Evening nightshade	FAC+	x	
Sparganium eurycarpum	Giant bur-reed	OBL	x	
Spirea douglasii	Hardhack	FACW	x	
Stachys cooleyae	Stachy's hedgenettle	FACW		x
Symphoricarpos albus	Snowberry	FACU	x	
Taraxacum officinale	Common dandelion	FACU		x
Thuja plicata	Western red cedar	FAC	x	x
Tolmiea menziesii	Youth-on-age	FAC	x	
Urtica dioica	Stinging nettle	FAC+	x	
Vaccinium parvifolium	Red huckleberry	UPL	x	x

FAC = facultative

FACU = Facultative upland

FACW = facultative wetland

OBL = obligate wetland

UPL = upland

ATTACHMENT B3

WASHINGTON STATE DEPARTMENT OF ECOLOGY WETLAND RATING RESULTS

Table A3-1
Ecology Wetland Ratings - Kettle Wetland

Depressional Wetlands	Kettle
Water Quality	
D1.1	3
D1.2	4
D1.3	5
D1.4	4
D1 Total	**16**
D2 Total	**1**
D1*D2 Total	**16**
Hydrologic	
D3.1	4
D3.2	7
D3.3	5
D3 Total	**16**
D4 Total	**1**
D3*D4 Total	**16**
Habitat	
H1.1	4
H1.2	2
H1.3	2
H1.4	3
H1.5	3
H1 Total	**14**
H2.1	4
H2.2	1
H2.3	0
H2.4	0
H2 Total	**5**
H1 + H2 Total	**19**
Function Score	
Water Quality	16
Hydrology	16
Habitat	19
Total	**51**

Notes:

Category

Cat 1 = greater than 70

Cat 2 = 51-69

Cat 3 = 30-50

Cat 4 = less than 30

Table A3-2
Ecology Wetland Ratings - Slope Wetland

Slope Wetlands	Seep
Water Quality	
S1.1	0
S1.2	0
S1.3	3
S1 Total	**3**
S2 Total	**1**
S1*S2 Total	**3**
Hydrologic	
S3.1	3
S3.2	0
S3 Total	**3**
S4 Total	**1**
S3*S4 Total	**3**
Habitat	
H1.1	1
H1.2	1
H1.3	1
H1.4	1
H1.5	0
H1 Total	**4**
H2.1	5
H2.2	4
H2.3	4
H2.4	5
H2 Total	**18**
H1 + H2 Total	**22**
Function Score	
Water Quality	3
Hydrology	3
Habitat	22
Total	**28**

Notes:

Category

Cat 1 = greater than 70

Cat 2 = 51-69

Cat 3 = 30-50

Cat 4 = less than 30

ATTACHMENT B4

WASHINGTON STATE FUNCTIONAL ASSESSMENT SPREADSHEET

SITE **Glacier-DuPont** #AU- Kettle

Depressional Closed

Summary of Function Assessments

Function	Index
Potential for Removing Sediment	10
Potential for Removing Nutrients	10
Potential for Removing Heavy Metals and Toxic Organics	9
Potential for Reducing Peak Flows	10
Potential for Reducing Decreasing Downstream Erosion	10
Potential for Groundwater Recharge	7
General Habitat Suitability	5
Habitat Suitability for Invertebrates	4
Habitat Suitability for Amphibians	5
Habitat Suitability for Anadromous Fish	N/A
Habitat Suitability for Resident Fish	N/A
Habitat Suitability for Wetland Associated Birds	4
Habitat Suitability for Wetland Associated Mammals	4
Native Plant Richness	6
Primary Production and Export	N/A

	Depressional Closed		**Potential for**		**Potential for**		**Potential for**		**General Habitat**		**Habitat Suitability**		**Habitat Suitability**	
SITE	**Glacier-DuPont**		**Removing Nutrients**		**Removing Toxics**		**Recharging Groudwater**		**Suitability**		**for Invertebrates**		**for Amphibians**	
		#AU- Kettle	**Index =**	**10**	**Index =**	**9**	**Index =**	**7**	**Index =**	**5**	**Index =**	**4**	**Index =**	**5**
Date			NOTE: If the score for a function is used as a variable in another function model it is normalized to 1 not 10)											
			Variable	**Score**	**Variable**	**Score**	**Variable**	**Score**	**Variable**	**Score**	**Variable**	**Score**	**Variable**	**Score**
	LANDSCAPE DATA													
D1	Area of AU	0.72												
D2	Area of contributing basin (upgradient watershed)	3.58					**Vperm**		**Vbuffcond**				**Vbuffcond**	
D3	Land use within 1km of AU							0.1		0.8				0.8
D3.1	Undeveloped Forest	10			**Vsorp**		D48.1	0	D42	4			D42	4
D3.2	Agriculture (field and pasture)	0	**Vsorp**			1	D48.2	0						
D3.3	Clear cut logging (<5yrs since clearing)	0		1	D47.3	0	D48.3	1	**V%closure**				**Vsubstrate**	
D3.4	Urban/commercial	50	D47.3	0						0.5	**Vsubstrate**			0.75
D3.5	High density residential (> 1residence/acre)	0			**Vph**		**Veffectarea2**		D17	20		0.6	D46.1	1
D3.6	Low density residential (<= 1 residence/acre)	0	**Vvegcover**			0		0.95			D46.1	1	D46.2	1
D3.7	Undeveloped areas,	40		1	D26.1	7	D8.1	95	**Vstrata**		D46.2	1	D46.3	1
	WATER REGIME		D14.1	0			D8.3	0		0.2	D46.3	1	D46.4	0
D4			D14.2	0			D14.6	0	D21	2	D46.4	0	D46.5	0
D4.1			D14.3	0	**Vtotemergent**						D46.5	0	D46.6	0
D4.2			D14.4	30		0.97	Index for	7	**Vsnags**		D46.6	0	D46.7	0
D5			D14.5	70	D14.1	0	Recharging Groundwater			0.0	D46.7	0	D46.8	0
D6			D14.6	0	D14.2	0			D31	0	D46.8	0		
D7					D14.3	0			D31.1	0.0			**Vwintersp**	
D8	Inundation				D14.4	30			**Vveginterspp**		**Vwintersp**			0.00
D8.1	Percent ponded or inundated for >1 month	95			D14.5	70				0.3		0.00	D38	0
D8.2	Percent of AU with permanent standing water	90			D16	90			D39	1	D38	0		
D8.3	Percent of AU with permanent open water	0											**Vlwd**	
D8.4	Percent of AU with unvegetated bars or mudflats	0	**Index**						**Vlwd**		**Vlwd**			0.8
D8.5	Unvegetated bars or mudflats	0	**for Removing**		**Veffectarea1**					0.8		0.8	D44	7
D9	Inundation regimes		**Nutrients**	10		0.95			D44	7	D44	7	D45	1
D9.1	Permanently Flooded	1			D8.1	95			D45	1	D45	1		
D9.2	Seasonally Flooded	1											**Vwater**	
D9.3	Occasionally Flooded (<= 1 month)	1							**Vhydrop**		**Vstrata**			0.5
D9.4	Saturated but seldom inundated	0			Index for	9				0.67		0.2	D8.3	0
D9.5					Removing Toxics				D9.1	1	D21	2	D14.6	0
D9.6									D9.2	1			D9.1	1
D10									D9.3	1	**Vveginterspp**			
D11									D9.4	0		0.333	**Vsubstruc**	
D11.1											D39	1		1
D11.2									**Vwaterdepth**				D35	4
D11.3										1.0	**Vassoc**			
D12	water depths present in AU								D12.1	1.0		0.4		
D12.1	0-20cm (<8in)	1							D12.2	1.0	D20	3		
D12.2	20-100cm(8-40in)	1							D12.3	1.0				
D12.3	>100cm (>40in)	1									**Vhydrop**		sum positive variables	
D13									**Vwintersp**			0.667		3.85
D13.1										0.0	D9.1	1		
D13.2									D38	0	D9.2	1		
D13.3											D9.3	1	**reducers**	
D13.4									**Vprichness**		D9.4	0	**Vphow**	
	VEGETATION									0.7				1
D14	Cowardin Classes (as % area of AU)								D19.1	27.0	**Vaquatstruc**		D26.2	7
D14.1	Forest - evergreen	0							D19.2	1.0		0		
D14.2	Forest -deciduous	0									D25	0	**Vupcover**	
D14.3	Scrub-shrub - evergreen	0							**Vmature**					0.8
D14.4	Scrub Shrub - deciduous	30								0.0	sum positive variables		D3.2	0
D14.5	Emergent	70							D22	0.0		3	D3.3	0
D14.6	Aquatic Bed	0											D3.4	50
D15	Does D8.3 + D8.4 + sum (D14.1 to D14.6) = 100 ?	1							**Vedgestruc**		**reducers**		D3.5	0
D16	% area of herbaceous understory	90								0.3	**Vtannins**		D3.6	0
D17	% area of AU with >75% closure of canopy	20							D41	1.0		1		
D18											D36	0	**score for reducers**	
D19	Plant Richness													0.8
D19.1	number of native plant species	27							**reducer**					
D19.2	number of non- native plant species	1							**Vupcover**		Index for Invertebrate		Index for Amphibian	
D20	The number of plant assemblages	3								1.0	Habitat	4	Habitat	5
D21	The maximum number of strata	2							D3.3	0.0				
D21.1	"vine" stratum dominated by non-native Blackberries	0							D3.4	50.0				
D22	Mature trees present in AU	0							D3.5	0.0				
D23	Sphagnum bogs								D3.6	0.0				
D23.1	Sphagnum bog component is > 75% of area in AU	0												
D23.2	Sphagnum bog component is 50%-75% of area in AU	0												
D23.3	Sphagnum bog component is 25%-49% of area in AU	0												
D23.4	Sphagnum bog component is 1 - 25% of area in AU	0							Index for General					
D23.5	NO Sphagnum bog component in AU	0							Habitat	5				
D24	Dominance by non-native plant species													
D24.1	% area of non-native species >75%	0												
D24.2	% area of non-native species 50-75%	0												
D24.3	%area of non-native species 25-49%	0												
D24.4	% area of non-native species 1-24%	1												
D24.5	NO cover of non-natives in the AU	0												
	HABITAT CHARACTERISTICS													
D25	structure categories in aquatic bed vegetation	0												
D26	pH													
D26.1	pH of interstitial water	7												
D26.2	pH of open or standing water	7												
D27	AU is within 8 km (5mi) of estuary	1												
D28	AU is within 1.6km (1 mi) of a lake	0												
D29	AU is within 5km (3 mi) of an open field (	0												
D30	>1 hectare (2.5 ac) of preferred woody vegetation	1												
D31	snags	0												
D31.1	At least one snag has a DBH greater than 30cm	0												

SITE	Depressional Closed Glacier-DuPont #AU- Kettle		Potential for Removing Nutrients Index = 10	Potential for Removing Toxics Index = 9	Potential for Recharging Groudwater Index = 7	General Habitat Suitability Index = 5	Habitat Suitability for Invertebrates Index = 4	Habitat Suitability for Amphibians Index = 5
D32								
D33	AU has upland islands	0						
D34								
D35	Key for rating egg-laying structures for amphibians	4						
D36	Tannins present in surface waters	0						
D37	Steep banks suitable for denning	1						
D38	Interspersion between vegetation and open water	0						
D39	Interspersion between Cowardin vegetation classes	1						
D40								
D41	EDGE of AU:	1						
D42	BUFFER of AU:	4						
D43	CORRIDORS of AU:	0						
D44	large woody debris in AU **outside of perm. water**	7						
D45	large woody debris **in permanent water** of AU	1						
	SOILS and SUBSTRATES							
D46	Composition of surface layer (above soil)							
D46.1	deciduous leaf litter	1						
D46.2	other plant litter	1						
D46.3	decomposed organic	1						
D46.4	exposed cobbles	0						
D46.5	exposed gravel	0						
D46.6	exposed sand	0						
D46.7	exposed silt	0						
D46.8	exposed clay	0						
D47	Soil Types							
D47.1	Peat	3						
D47.2	Muck	0						
D47.3	Mineral with clay fraction <30%	0						
D47.4	Clay (clay fraction >30%)	0						
D48	Permeability of soils in seasonally inundated areas							
D48.1	High	0						
D48.2	Moderate	0						
D48.3	Slow	1						
D49								
D49.1								
D49.2								
D49.3								

	Depressional Closed		**Habitat Suitability**	**Habitat Suitability**	**Native Plant**
SITE	**Glacier-DuPont**		**For Birds**	**For Mammals**	**Richness**
		#AU- Kettle	**Index =** **4**	**Index =** **4**	**Index =** **6**
Date					
			Variable **Score**	**Variable** **Score**	**Variable** **Score**
	LANDSCAPE DATA				
D1	Area of AU	0.72			
D2	Area of contributing basin (upgradient watershed)	3.58	**Vbuffcond**	**Vbuffcond**	**Vstrata**
D3	Land use within 1km of AU		0.8	0.8	0.4
D3.1	Undeveloped Forest	10	D1 0.72	D42 4	D21 2
D3.2	Agriculture (field and pasture)	0	D42 4		D21.1 0
D3.3	Clear cut logging (<5yrs since clearing)	0			
D3.4	Urban/commercial	50	**Vsnags**	**Vwaterdepth**	**Vassoc**
D3.5	High density residential (> 1residence/acre)	0	0	1	0.4
D3.6	Low density residential (<= 1 residence/acre)	0	D31 0	D12.1 1	D20 3
D3.7	Undeveloped areas,	40		D12.2 1	
	WATER REGIME		**Vvegintersp**	D12.3 1	**Vmature**
D4			0.3333		0
D4.1			D39 1	**Vcorridor**	D22 0
D4.2				0	
D5			**Vedgestruc**	D43 0	**Vnplants**
D6			0.33		0.9
D7			D41 1	**Vbrowse**	D19.1 27
D8	Inundation			1	
D8.1	Percent ponded or inundated for >1 month	95	**Vspechab**	D30 1	**Vbogs**
D8.2	Percent of AU with permanent standing water	90	0.5		1
D8.3	Percent of AU with permanent open water	0	D8.5 0	**Vemergent2**	D23.4 0
D8.4	Percent of AU with unvegetated bars or mudflats	0	D27 1	1	D23.5 0
D8.5	Unvegetated bars or mudflats	0	D28 0	D1 0.72	Score for variables
D9	Inundation regimes		D29 0	D14.5 70	2.7
D9.1	Permanently Flooded	1	D33 0		
D9.2	Seasonally Flooded	1	**Vpow**	**Vwintersp2**	
D9.3	Occasionally Flooded (<= 1 month)	1	0.00	0.00	**reducers**
D9.4	Saturated but seldom inundated	0	D8.3 0	D1 0.72	**Vnonnat**
D9.5				D38 0	1
D9.6			**Sinverts**		D24.1 0
D10			0.4	**Vow**	D24.2 0
D11				0	D24.3 0
D11.1			**Samphib**	D1 0.72	
D11.2			0.5	D8.3 0	
D11.3					Index for Native Plant Ri
D12	water depths present in AU			**Vbank**	6
D12.1	0-20cm (<8in)	1		1	
D12.2	20-100cm(8-40in)	1		D37 1	
D12.3	>100cm (>40in)	1	sum positive variables		
D13			2.91		
D13.1					
D13.2					
D13.3					
D13.4			**reducers**		
	VEGETATION		**V%closure**		
D14	Cowardin Classes (as % area of AU)		1		
D14.1	Forest - evergreen	0	D17 20		
D14.2	Forest -deciduous	0			
D14.3	Scrub-shrub - evergreen	0			
D14.4	Scrub Shrub - deciduous	30		sum of variables	
D14.5	Emergent	70		4.8	
D14.6	Aquatic Bed	0			
D15	Does D8.3 + D8.4 + sum (D14.1 to D14.6) = 100 ?	1	**score for reducers**	**reducers**	
D16	% area of herbaceous understory	90	1	**Vupcover**	
D17	% area of AU with >75% closure of canopy	20		0.7	
D18				D3.4 50	
D19	Plant Richness		Index for Bird Habitat	D3.5 0	
D19.1	number of native plant species	27	4	D3.6 0	
D19.2	number of non- native plant species	1			
D20	The number of plant assemblages	3		**score for reducers**	
D21	The maximum number of strata	2		0.7	
D21.1	"vine" stratum dominated by non-native Blackberries	0			
D22	Mature trees present in AU	0			
D23	Sphagnum bogs			Index for Mammal Habitat	
D23.1	Sphagnum bog component is > 75% of area in AU	0		4	
D23.2	Sphagnum bog component is 50%-75% of area in AU	0			
D23.3	Sphagnum bog component is 25%-49% of area in AU	0			
D23.4	Sphagnum bog component is 1 - 25% of area in AU	0			
D23.5	NO Sphagnum bog component in AU	0			
D24	Dominance by non-native plant species				
D24.1	% area of non-native species >75%	0			
D24.2	% area of non-native species 50-75%	0			
D24.3	%area of non-native species 25-49%	0			
D24.4	% area of non-native species 1-24%	1			
D24.5	NO cover of non-natives in the AU	0			
	HABITAT CHARACTERISTICS				
D25	structure categories in aquatic bed vegetation	0			
D26	pH				
D26.1	pH of interstitial water	7			
D26.2	pH of open or standing water	7			
D27	AU is within 8 km (5mi) of estuary	1			
D28	AU is within 1.6km (1 mi) of a lake	0			
D29	AU is within 5km (3 mi) of an open field (	0			
D30	>1 hectare (2.5 ac) of preferred woody vegetation	1			
D31	snags	0			
D31.1	At least one snag has a DBH greater than 30cm	0			

SITE	Depressional Closed Glacier-DuPont	#AU- Kettle	Habitat Suitability For Birds Index =	4	Habitat Suitability For Mammals Index =	4	Native Plant Richness Index =	6
D32								
D33	AU has upland islands	0						
D34								
D35	Key for rating egg-laying structures for amphibians	4						
D36	Tannins present in surface waters	0						
D37	Steep banks suitable for denning	1						
D38	Interspersion between vegetation and open water	0						
D39	Interspersion between Cowardin vegetation classes	1						
D40								
D41	EDGE of AU:	1						
D42	BUFFER of AU:	4						
D43	CORRIDORS of AU:	0						
D44	large woody debris in AU **outside of perm. water**	7						
D45	large woody debris **in permanent water** of AU	1						
	SOILS and SUBSTRATES							
D46	Composition of surface layer (above soil)							
D46.1	deciduous leaf litter	1						
D46.2	other plant litter	1						
D46.3	decomposed organic	1						
D46.4	exposed cobbles	0						
D46.5	exposed gravel	0						
D46.6	exposed sand	0						
D46.7	exposed silt	0						
D46.8	exposed clay	0						
D47	Soil Types							
D47.1	Peat	3						
D47.2	Muck	0						
D47.3	Mineral with clay fraction <30%	0						
D47.4	Clay (clay fraction >30%)	0						
D48	Permeability of soils in seasonally inundated areas							
D48.1	High	0						
D48.2	Moderate	0						
D48.3	Slow	1						
D49								
D49.1								
D49.2								
D49.3								

Attachment A
2014 Ecology Wetland Rating Forms

These are Attachment B to the Wetland Delineation Report which is Appendix C of this Wetland Mitigation Plan

Appendix D
Wetland Mitigation Credit/Debit Calculations

Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Washington

Debit Worksheet (corrected 2/20/18) **Project** kettle only

Mitigation Project is: Advanced [ ] Concurrent: 1.5 Delayed: [ ]

Only fill in boxes that are highlighted. Use Temporal Loss Factors from the table below (Appendix E).

Input Ratings for Functions from Scoring Sheet

	Wetland Unit Altered (#1)			**Wetland Unit Altered (#2)**			**Wetland Unit Altered (#3)**		
	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Site Potential (H,M,L)	H	H	H						
Landscape Potential (H,M,L)	M	M	L						
Value (H,M,L)	L	L	M						
Score for Wetland Unit	6	6	6	3	3	3	3	3	3
Acres of **non-forested** areas impacted	1.78								
Basic mitigation requirement (BMR)	10.68	10.68	10.68	0	0	0	0	0	0
Temporal loss factor (see below)	1.5								
DEBITS	16.02	16.02	16.02	0	0	0	0	0	0
Acres of Deciduous **forest** impacted									
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor									
DEBITS	0	0	0	0	0	0	0	0	0
Acres of **Evergreen Forest** impacted									
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0
Acres of **Cat. 1 Deciduous forest**									
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0
Acres of **Cat. 1 Evergreen forest**									
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0

TOTALS

	Wetland Unit Altered (#1)			**Wetland Unit Altered (#2)**			**Wetland Unit Altered (#3)**		
Function	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Acre-points	**16.02**	**16.02**	**16.02**	**0**	**0**	**0**	**0**	**0**	**0**

Total Debits by Function	Improving Water Quality	Hydrologic	Habitat
Acre-points	**16.02**	**16.02**	**16.02**

Timing of Mitigation	**Temporal Loss Factor**
Advance – At least two years has passed since plantings were completed ~~or one year since "as-built" plans were submitted to regulatory agencies~~	1.25
Concurrent – Physical alterations at mitigation site are completed within a year of the impacts, but planting may be delayed by up to 2 years if needed to optimize conditions for success.	
For impacts to an emergent or shrub community	1.5
For impacts to a deciduous forested wetland community	2.0
For impacts to an evergreen forested wetland community	2.5
For impacts to a deciduous Category I forested wetland community	3
For impacts to an evergreen Category I forested wetland community	3.5
Delayed - Construction is not completed within one year of impact, but is completed (including plantings if required) within 5 growing seasons of impact.	
For impacts to an emergent or shrub community	3
For impacts to a deciduous forested wetland community	4
For impacts to an evergreen forested wetland community	5
For impacts to a deciduous Category I forested wetland community	6
For impacts to an evergreen Category I forested wetland community	7

Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Washington

Credit Worksheet (corrected 2/20/18) **Project** CalPortland DuPont S. Parcel Expansion

Only fill in boxes that are highlighted. Use risk factors in table below.

Mitigation Project is: Advanced Concurrent 1

This spreadsheed can calculate credits for three <u>separate</u> mitigation sites.

Input Ratings for Functions from Scoring Sheet.

	Site 1	W/O development		Site 2			Site 3	W/ development	
Insert a "1" in cell if creation or re-establishment	1						1		
Rating of Unit BEFORE mitigation	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Site Potential (H,M,L)									
Landscape Potential (H,M,L)									
Value (H,M,L)									
Score for Wetland Unit	0	0	0	3	3	3	0	0	0

	Site 1			Site 2			Site 3		
Rating of Unit AFTER mitigation	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Site Potential (H,M,L)	M	M	M				M	M	H
Landscape Potential (H,M,L)	M	M	M				H	H	H
Value (H,M,L)	H	L	H				H	L	L
Score for Wetland Unit	7	5	7	3	3	3	8	6	7
Lift in Functions	7	5	7	0	0	0	8	6	7

CREATION and RE-ESTABLISHMENT									
Acres created or re-established **(aquatic bed, shrub, forest)**	2.9						2.9		
Basic mitigation Credit	20.3	14.5	20.3	0	0	0	23.2	17.4	20.3
Risk Factor (see below)	0.9						0.9		
CREDITS	18.27	13.05	18.27	0	0	0	20.88	15.66	18.27
Acres created or re-established **(emergent)**	0.4						0.4		
Basic mitigation Credit	2.8	2	2.8	0	0	0	3.2	2.4	2.8
Risk Factor (see below)	0.9						0.9		
CREDITS	2.52	1.8	2.52	0	0	0	2.88	2.16	2.52
REHABILITATION AND ENHANCEMENT									
Acres rehabilitated or enhanced **(aquatic bed, shrub, forest)**	0								
Basic mitigation Credit	0	0	0	0	0	0	0	0	0
Risk Factor (see below)	1								
CREDITS	0	0	0	0	0	0	0	0	0
Acres rehabilitated or enhanced (**emergent**)	0								
Basic mitigation Credit	0	0	0	0	0	0	0	0	0
Risk Factor (see below)	1								
CREDITS	0	0	0	0	0	0	0	0	0
PRESERVATION									
Acres of **wetlands preserved**	0								
Score for wetland functions from Scoring Sheet									
Sum of scaling factors (Appendix E)									
CREDITS	0	0	0	0	0	0	0	0	0
Acres of **upland preserved**	0								
Habitat score for upland									
Sum of scaling factors (Appendix E)									
CREDITS			0			0			0

TOTALS		**Site 1**			**Site 2**			**Site 3**	
Function	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Acre-points	**20.79**	**14.85**	**20.79**	**0**	**0**	**0**	**23.76**	**17.82**	**20.79**

Total Credits by Function for Project	Improving Water Quality	Hydrologic	Habitat
Acre-points	**44.55**	**32.67**	**41.58**

Risk Factors:

Type of Mitigation	Risk Factor
Advance Mitigation The site meets **criteria in Charts 1 and 3** of the site selection guidance [i.e., identified in a local plan and is sustainable] **AND** meets the **criteria in Charts 4-11** for the appropriate functions. (All worksheets for Chart 3 and in Appendix B of Ecology publication #09-06-032 for western Washington or #10-06-007 for eastern Washington are submitted) ***Advance*** *means that at least two years has passed since plantings were completed ~~or one year since "as-built" plans were submitted to regulatory agencies.~~*	1.0
Advance mitigation without meeting criteria in Ecology publication #09-06-032 or #10-06-007	0.83
Concurrent Mitigation Mitigation site meets **criteria in Charts 1 and 3** of the site selection guidance [i.e., identified in a local plan and is sustainable] **AND** meets the **criteria in Charts 4-11** for the appropriate functions. (All worksheets for Chart 3 and in Appendix B of Ecology publication #09-06-032 or #10-06-007 are submitted) *Risk factor applies to all types of mitigation.*	0.9
Mitigation site chosen meets the **criteria in Charts 2 and 3** of the site selection guidance [i.e., identified as a site with potential and that is sustainable]; **AND** meets **criteria in Charts 4-11** for the appropriate functions. (All worksheets for Chart 3 and in Appendix B of Ecology publication #09-06-032 or #10-06-007 are submitted) *Risk factor applies to all types of mitigation.*	0.80
Site does not meet criteria in site selection guide, or guide was not used. **Re-establishment, rehabilitation, or enhancement** that results in an aquatic bed, shrub, or forest community	0.67
Re-establishment, rehabilitation, or enhancement that results in an emergent community	0.5
Creation of an aquatic bed, shrub, or forest community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10.	0.67
Creation of an emergent community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10.	0.5
Creation of an aquatic bed, shrub, or forest community without adequate hydrologic data.	0.5
Creation of an emergent community without adequate hydrologic data.	0.4

The functions and values of the mitigation site are expected to increase with the development of the surrounding area. Once mining is complete the entire site will be redeveloped changing the Landscape Potential of the wetland. The following changes are anticipated.

D 2.1 and D 5.1 will change from 0 points to 1 point if stormwater from new roadways and development is introduced.

D 2.2 and D 5.2 will change from 0 points to 1 point if areas within 150 feet of the wetland (outside the buffer) are developed and generate pollutants.

H 1.2 will change from 2 points to 3 points if stormwater creates additional hyrdoperiods.

H 2.3 will change from -2 points to 0 points as land use intensity on the mine floor decreases from

Wetland name or number _____

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Mitigation wetland Date of site visit: _____

Rated by _____ Trained by Ecology? ☐ Yes ☐ No Date of training _____

HGM Class used for rating Depressional & Flats Wetland has multiple HGM classes? ☐ Yes ☑ No

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY III (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
X **Category III** - Total score = 16 - 19
_____ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		List appropriate rating (H, M, L)		
Site Potential	M	M	M	
Landscape Potential	M	M	M	
Value	H	L	L	**Total**
Score Based on Ratings	7	5	5	**17**

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	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	**X**

Wetland name or number _____

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 another 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 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 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 (*can be added to another figure*)	S 4.1	
Boundary of area within 150 ft of the wetland (*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 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)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number _____

HGM Classification of Wetland in Western Washington

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

☑ 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.*

NOTES and FIELD OBSERVATIONS:

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water 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 (QUESTION 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 flowing outlet. points = 2 ☐ 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	2
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 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded 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	2
Total for D 1 Add the points in the boxes above	**9**

Rating of Site Potential If score is: ☐ **12 - 16 = H** ☑ **6 - 11 = M** ☐ **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 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 questions D 2.1 - D 2.3? Source waterfowl droppings, herbivore grazing Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	**1**

Rating of Landscape Potential If score is: ☐ **3 or 4 = H** ☑ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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	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 = 2 No = 0	2
Total for D 3 Add the points in the boxes above	**2**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number _____

DEPRESSIONAL AND FLATS WETLANDS

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 or flat depression with no surface water leaving it (no outlet)	points = 4	2
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 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	
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.*		1
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
☐ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
☐ The wetland is a "headwater" wetland	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)	points = 0	
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*		3
☐ 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 = 0	
☐ Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	**6**

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 function of the site?		
D 5.1. Does the wetland unit 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 land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0	1
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 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):		0
• 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 cannot reach areas that flood. Explain why	points = 0	
☐ There are no problems with flooding downstream of the wetland.	points = 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	0
Total for D 6	Add the points in the boxes above	**0**

Rating of Value If score is: ☐ **2 - 4 = H** ☐ **1 = M** ☑ **0 = L** *Record the rating on the first page*

Wetland name or number _____

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.*

☑ Aquatic bed	4 structures or more: points = 4	2
☑ Emergent	3 structures: points = 2	
☑ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points - 1	
☐ Forested (areas where trees have > 30% cover)	1 structure: points = 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	2
☐ Seasonally flooded or inundated	3 types present: points = 2	
☑ Occasionally flooded or inundated	2 types present: points = 1	
☑ Saturated only	1 types present: points = 0	
☐ Permanently flowing stream or river in, or adjacent to, the wetland		
☐ Seasonally flowing stream in, or adjacent to, the wetland		
☐ **Lake Fringe wetland**	**2 points**	
☐ **Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

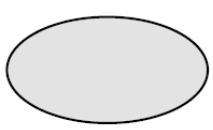
Count the number of plant species in the wetland that cover at least 10 ft^2.
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

1

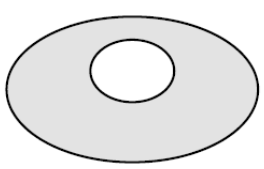
If you counted:	> 19 species	points = 2
	5 - 19 species	points = 1
	< 5 species	points = 0

H 1.4. Interspersion of habitats

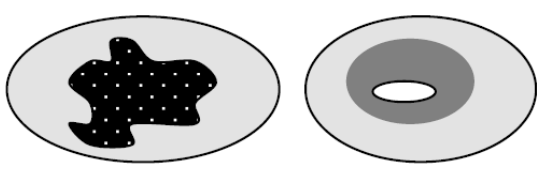
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points



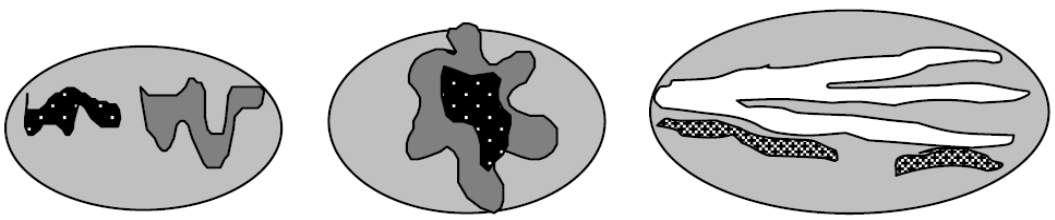
Low = 1 point



Moderate = 2 points

3

All three diagrams in this row are **HIGH** = 3 points



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*) ☑ 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* ☑ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	4
Total for H 1 Add the points in the boxes above	**12**

Rating of Site Potential If Score is: ☐ **15 - 18 = H** ☑ **7 - 14 = M** ☐ **0 - 6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat function of the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 10 % undisturbed habitat + (10 % moderate & low intensity land uses / 2) = 15% If total accessible habitat is: > 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 = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 20 % undisturbed habitat + (10 % moderate & low intensity land uses / 2) = 25% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**1**

Rating of Landscape Potential If Score is: ☐ **4 - 6 = H** ☑ **1 - 3 = M** ☐ **< 1 = L** *Record the rating on the 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 applies to the wetland being rated*. Site meets ANY of the following criteria: points = 2 ☐ 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 has 1 or 2 priority habitats (listed on next page) with in 100m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If Score is: ☐ **2 = H** ☐ **1 = M** ☑ **0 = L** *Record the rating on the first page*

Wetland name or number _____

WDFW Priority Habitats

Priority habitats listed by WDFW (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.
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**: Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – 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 name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.*	**Category**
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** ☐ No = **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? ☐ Yes = **Category I** ☐ 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 than 10% cover of non-native plant species. (If non-native species are *Spartina* , see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or 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 Wetlands of High Conservation Value? ☐ Yes - Go to **SC 2.2** ☐ No - Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not 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 to SC 2.4** ☐ No = **Not 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 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 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 plant species in Table 4 are present, the wetland is a bog. 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 1 contiguous acre 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 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**

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) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to **SC 5.1** ☐ No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland 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).

☐ 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 103

☐ Grayland-Westport: Lands west of SR 105

☐ Ocean Shores-Copalis: 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 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**

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**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form

Appendix E
Indirect Wetland Impacts Credit/Debit Calculations

Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Washington

Debit Worksheet (corrected 2/20/18) **Project**

Mitigation Project is: Advanced | Concurrent: | Delayed: 3

Only fill in boxes that are highlighted. Use Temporal Loss Factors from the table below (Appendix E).

Input Ratings for Functions from Scoring Sheet

	Wetland Unit Altered (#1)			**Wetland Unit Altered (#2)**			**Wetland Unit Altered (#3)**		
	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Site Potential (H,M,L)	L	L	L						
Landscape Potential (H,M,L)	L	L	L						
Value (H,M,L)	H	L	H						
Score for Wetland Unit	5	3	5	3	3	3	3	3	3
Acres of **non-forested** areas impacted	0.13								
Basic mitigation requirement (BMR)	0.65	0.39	0.65	0	0	0	0	0	0
Temporal loss factor (see below)	3								
DEBITS	1.95	1.17	1.95	0	0	0	0	0	0
Acres of Deciduous **forest** impacted	0								
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor									
DEBITS	0	0	0	0	0	0	0	0	0
Acres of **Evergreen Forest** impacted	0								
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0
Acres of **Cat. 1 Deciduous forest**	0								
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)									
DEBITS	0	0	0	0	0	0	0	0	0
Acres of **Cat. 1 Evergreen forest**	0								
Basic mitigation requirement (BMR)	0	0	0	0	0	0	0	0	0
Temporal loss factor (see below)	0								
DEBITS	0	0	0	0	0	0	0	0	0

TOTALS

	Wetland Unit Altered (#1)			**Wetland Unit Altered (#2)**			**Wetland Unit Altered (#3)**		
Function	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Acre-points	**1.95**	**1.17**	**1.95**	**0**	**0**	**0**	**0**	**0**	**0**

Total Debits by Function	Improving Water Quality	Hydrologic	Habitat
Acre-points	**1.95**	**1.17**	**1.95**

Timing of Mitigation	**Temporal Loss Factor**
Advance – At least two years has passed since plantings were completed ~~or one year since "as-built" plans were submitted to regulatory agencies~~	1.25
Concurrent – Physical alterations at mitigation site are completed within a year of the impacts, but planting may be delayed by up to 2 years if needed to optimize conditions for success.	
For impacts to an emergent or shrub community	1.5
For impacts to a deciduous forested wetland community	2.0
For impacts to an evergreen forested wetland community	2.5
For impacts to a deciduous Category I forested wetland community	3
For impacts to an evergreen Category I forested wetland community	3.5
Delayed - Construction is not completed within one year of impact, but is completed (including plantings if required) within 5 growing seasons of impact.	
For impacts to an emergent or shrub community	3
For impacts to a deciduous forested wetland community	4
For impacts to an evergreen forested wetland community	5
For impacts to a deciduous Category I forested wetland community	6
For impacts to an evergreen Category I forested wetland community	7

Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Washington

Credit Worksheet (corrected 2/20/18) **Project**

Only fill in boxes that are highlighted. Use risk factors in table below.

Mitigation Project is: Advanced Concurrent 1

This spreadsheed can calculate credits for three separate mitigation sites.

Input Ratings for Functions from Scoring Sheet.

	Site 1			**Site 2**			**Site 3**		
Insert a "1" in cell if creation or re-establishment	1								
Rating of Unit BEFORE mitigation	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Site Potential (H,M,L)	L	L	L						
Landscape Potential (H,M,L)	L	L	L						
Value (H,M,L)	L	L	L						
Score for Wetland Unit	0	0	0	3	3	3	3	3	3

	Site 1			**Site 2**			**Site 3**		
Rating of Unit AFTER mitigation	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Site Potential (H,M,L)	L	L	L						
Landscape Potential (H,M,L)	L	L	L						
Value (H,M,L)	L	L	L						
Score for Wetland Unit	3	3	3	3	3	3	3	3	3
Lift in Functions	3	3	3	0	0	0	0	0	0

CREATION and RE-ESTABLISHMENT									
Acres created or re-established **(aquatic bed, shrub, forest)**									
Basic mitigation Credit	0	0	0	0	0	0	0	0	0
Risk Factor (see below)									
CREDITS	0	0	0	0	0	0	0	0	0
Acres created or re-established **(emergent)**	0.82								
Basic mitigation Credit	2.46	2.46	2.46	0	0	0	0	0	0
Risk Factor (see below)	0.8								
CREDITS	1.968	1.968	1.968	0	0	0	0	0	0
REHABILITATION AND ENHANCEMENT									
Acres rehabilitated or enhanced **(aquatic bed, shrub, forest)**									
Basic mitigation Credit	0	0	0	0	0	0	0	0	0
Risk Factor (see below)									
CREDITS	0	0	0	0	0	0	0	0	0
Acres rehabilitated or enhanced (**emergent**)									
Basic mitigation Credit	0	0	0	0	0	0	0	0	0
Risk Factor (see below)									
CREDITS	0	0	0	0	0	0	0	0	0
PRESERVATION									
Acres of **wetlands preserved**									
Score for wetland functions from Scoring Sheet									
Sum of scaling factors (Appendix E)									
CREDITS	0	0	0	0	0	0	0	0	0
Acres of **upland preserved**									
Habitat score for upland									
Sum of scaling factors (Appendix E)									
CREDITS			0			0			0

TOTALS	**Site 1**			**Site 2**			**Site 3**		
Function	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat	Improving Water Quality	Hydrologic	Habitat
Acre-points	**1.968**	**1.968**	**1.968**	**0**	**0**	**0**	**0**	**0**	**0**

Total Credits by Function for Project	Improving Water Quality	Hydrologic	Habitat
Acre-points	**1.968**	**1.968**	**1.968**

Risk Factors:

Type of Mitigation	Risk Factor
Advance Mitigation The site meets **criteria in Charts 1 and 3** of the site selection guidance [i.e., identified in a local plan and is sustainable] **AND** meets the **criteria in Charts 4-11** for the appropriate functions. (All worksheets for Chart 3 and in Appendix B of Ecology publication #09-06-032 for western Washington or #10-06-007 for eastern Washington are submitted) ***Advance*** *means that at least two years has passed since plantings were completed ~~or one year since "as-built" plans were submitted to regulatory agencies.~~*	1.0
Advance mitigation without meeting criteria in Ecology publication #09-06-032 or #10-06-007	0.83
Concurrent Mitigation Mitigation site meets **criteria in Charts 1 and 3** of the site selection guidance [i.e., identified in a local plan and is sustainable] **AND** meets the **criteria in Charts 4-11** for the appropriate functions. (All worksheets for Chart 3 and in Appendix B of Ecology publication #09-06-032 or #10-06-007 are submitted) *Risk factor applies to all types of mitigation.*	0.9
Mitigation site chosen meets the **criteria in Charts 2 and 3** of the site selection guidance [i.e., identified as a site with potential and that is sustainable]; **AND** meets **criteria in Charts 4-11** for the appropriate functions. (All worksheets for Chart 3 and in Appendix B of Ecology publication #09-06-032 or #10-06-007 are submitted) *Risk factor applies to all types of mitigation.*	0.80
Site does not meet criteria in site selection guide, or guide was not used. **Re-establishment, rehabilitation, or enhancement** that results in an aquatic bed, shrub, or forest community	0.67
Re-establishment, rehabilitation, or enhancement that results in an emergent community	0.5
Creation of an aquatic bed, shrub, or forest community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10.	0.67
Creation of an emergent community with data showing there is adequate water to maintain wetland conditions 5 years out of every 10.	0.5
Creation of an aquatic bed, shrub, or forest community without adequate hydrologic data.	0.5
Creation of an emergent community without adequate hydrologic data.	0.4

Wetland name or number Seep

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Seep Wetlands #1 & #2 (adjacent & same features) Date of site visit: November 2017

Rated by C. Douglas Trained by Ecology? ☒ Yes ☐ No Date of training 2007

HGM Class used for rating Slope 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 _____

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

X **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H M L	H M L	H M L	
Landscape Potential	H M L	H M L	H M L	
Value	H M L	H M L	H M L	**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	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	X

Wetland name or number Seep_____

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 another 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 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 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 (*can be added to figure above)*	S 4.1	
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 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)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number Seep

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 – 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 Seep

◉ 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 Seep

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

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*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	0
S 1.2. The soil 2 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 surface (>75% cover), and uncut means not grazed or mowed and plants are higher 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	3
Total for S 1 Add the points in the boxes above	**3**

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

S 2.0. Does the landscape have the potential 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 = 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	**0**

Rating of Landscape Potential If score is: ☐ **1-2 = M** ☒ **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 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	1
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 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 unit is found*. Yes = 2 No = 0	0
Total for S 3 Add the points in the boxes above	**2**

Rating of Value If score is: ☒ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number Seep

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

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 points = 0	0

Rating of Site Potential If score is: ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
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 No = 0	0

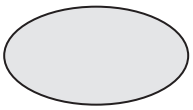
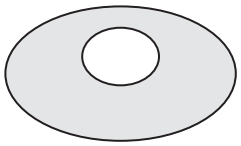
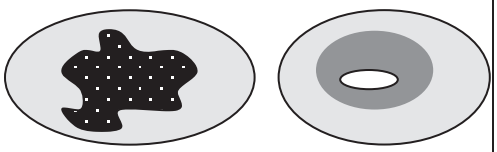
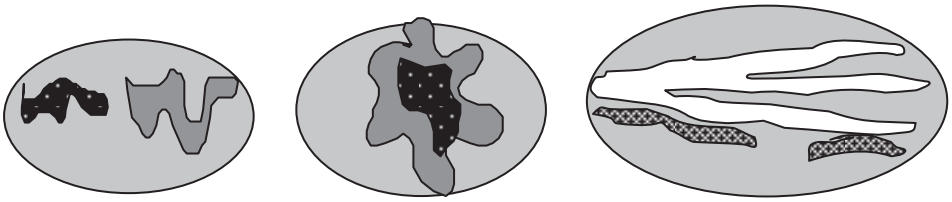
Rating of Landscape Potential If score is: ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

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 = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
S 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	0
Total for S 6 Add the points in the boxes above	**0**

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number Seep _____

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.* ____Aquatic bed — 4 structures or more: points = 4 __X__Emergent — 3 structures: points = 2 __X__Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ____Forested (areas where trees have > 30% cover) — 1 structure: points = 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	1
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 __X__Occasionally flooded or inundated — 2 types present: points = 1 __X__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	1
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.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
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 or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	1

Wetland name or number Seep

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.* _X_ 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)* ____ 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*)	1
Total for H 1 Add the points in the boxes above	**5**

Rating of Site Potential If score is: ☐ **15-18 = H** ☐ **7-14 = M** ☒ **0-6 = L** *Record the rating on 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*). *Calculate:* % undisturbed habitat 10 + [(% moderate and low intensity land uses)/2] 0 = 10 % If total accessible habitat is: > 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 = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 30 + [(% moderate and low intensity land uses)/2] 2.5 = 33 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**0**

Rating of Landscape Potential If score is: ☐ **4-6 = H** ☐ **1-3 = M** ☒ **< 1 = L** *Record the rating on the 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 applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 ☒ 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 has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	**2**

Rating of Value If score is: ☒ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number Seep

WDFW Priority Habitats

Priority habitats listed by WDFW (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. 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:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – 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 name or number Seep

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands 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** ◯No= **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? ◯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) ☒ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☒ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ◯Yes = **Category I** ◯No = **Category II**	◯**Cat. I** ◯**Cat. 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 Wetlands of High Conservation Value? ◯Yes – Go to **SC 2.2** ◯No – Go to **SC 2.3** 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** ◯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 their website? ◯Yes = **Category I** ◯No = **Not a WHCV**	◯**Cat. I**
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 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 plant species in Table 4 are present, the wetland is a bog. 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**	◯**Cat. I**

Wetland name or number Seep

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre 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 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) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* ◯ Yes – Go to **SC 5.1** ◯ No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland 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). ☒ 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**	◯ **Cat. I** ◯ **Cat. 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 103 ☒ Grayland-Westport: Lands west of SR 105 ☒ Ocean Shores-Copalis: 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 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** 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 I** ◯ **Cat. II** ◯ **Cat. III** ◯ **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	NA

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Seep Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: SES-2
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Epilobium ciliatum	H 40%	FACW-	Taraxacum officinale	H 5%	FACU
Athyrium filix fermina	H 20%	FAC+	Juncus effusus	H 10%	FACW
Acer macrophyllum	T 20%	FACU	Geum macrophyllum	H 10%	FAC+
Alnus rubra	T 40%	FAC	Rubus spectabilis	S 15%	FAC+
Agrostis capillaris	H 15%	FAC	Pseudotsuga menziesii	T 10%	FACU
Holcus lanatus	H 5%	FAC			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 3/4 = 75%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☒ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: 0 - at surface inches			

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Xerochrepts, 45 to 79 percent slopes

Drainage Class Moderately well drained to somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	A	10YR 4,2	2.5YR 4,8	1/4 inch 20%	Silty sand	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Seep Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: SES-3
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Polystichum munitum	S 40%	FACU	Maianthemum dilatatum	H 5%	FAC
Athyrium filix fermina	S 20%	FAC	Vaccinium parvifolium	S 10%	NI
Acer circinatum	S 25%	FAC-	Alnus rubra	T 10%	FAC
Acer circinatum	H 10%	FAC-	Acer macrophyllum	T 5%	FACU
Rubus ursinus	H 10%	FACU	Acer circinatum	T 10%	FAC-
Rubus spectabilis	H 10%	FAC+			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 1/3 = 33%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: None inches			
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):		

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Xerochrepts, 45 to 79 percent slopes

Drainage Class Moderately well drained to somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-12	A	10YR 2,2	None	None	Very gravelly silt loam with organic component	

Hydric Soil Indicators: (check all that apply)

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

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Seep Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: SES-4
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Holcus lanatus	H 20%	FAC	Rubus spectabilis	S 10%	FAC+
Athyrium filix fermina	H 40%	FAC	Acer macrophyllum	T 10%	FAC-
Claytonia sibirica	H 25%	FAC-			
Alnus rubra	T 20%	FAC			
Rubus ursinus	H 10%	FACU			
Dactylis glomerata	H 10%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 3/4 = 75%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: 1 inches			

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Xerochrepts, 45 to 79 percent slopes

Drainage Class Moderately well drained to somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-24	A	5 YR 4,2	2.5YR 4,6	1/2 inch 20%	Slightly silty sand (hard packed)	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Seep Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: SES-5
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Equisetum telmateia	H 25%	FACW	Juncus effusus	H 10%	FACW
Athyrium filix fermina	H 20%	FAC			
Alnus rubra	S 20%	FAC			
Agrostis capillaris	H 15%	FAC			
Cirsium arvense	H 15%	FAC-			
Galium aparine	H 10%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 3/3 = 100%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: 12 inches			

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☐ **Yes** ☒ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Xerochrepts, 45 to 79 percent slopes

Drainage Class Moderately well drained to somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-10	A1	10YR 4,2	None	None	Gravelly sandy loam	
10-14	A2	10YR 3,2	None	None	Slightly gravelly sandy loam	

Hydric Soil Indicators: (check all that apply)

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

Hydric soils present? ☐ **Yes** ☒ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

DATA FORM 1
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site:	Sequalitchew Seep Wetland	Date:	7/31/2007
Applicant/owner:	Glacier DuPont	County:	Pierce
Investigator(s):	Dan Berlin	State:	WA
		S/T/R:	S23 T19N R1E

Do normal circumstances exist on the site?	☒ Yes	☐ No	Community ID:
Is the site significantly disturbed (atypical situation)?	☐ Yes	☒ No	Transect ID:
Is the area a potential problem area?	☐ Yes	☒ No	Plot ID: SES-6
Explanation of atypical or problem area:			

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

Dominant Plant Species	*Stratum	Indicator	Dominant Plant Species	*Stratum	Indicator
Rubus ursinus	H 20%	FACU	Athyrium filix fermina	H 15%	FAC
Equisetum telmateia	H 40%	FACW	Lapsana communis	H 10%	NI
Rubus spectabilis	S 20%	FAC+			
Acer macrophyllum	T 40%	FAC-			
Alnus rubra	T 40%	FAC			
Galium aparine	H 10%	FACU			

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 3/5 = 60%

Check all indicators that apply and explain below:

- ☐ Regional knowledge of plant communities
- ☐ Physiological or reproductive adaptations
- ☐ Technical Literature
- ☐ Wetland plant list (nat'l or regional)
- ☐ Morphological adaptations
- ☐ Wetland plant database
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☒ Yes ☐ No	Water Marks: ☐ Yes ☐ No	Sediment Deposits: ☐ Yes ☐ No	
Based on: Observation	Drift Lines: ☐ Yes ☐ No	Drainage Patterns: ☐ Yes ☐ No	
Depth of inundation: None inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No	
Depth to free water in pit: None inches	FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☐ Yes ☐ No	
Depth to saturated soil: 2 inches			

Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):

Wetland hydrology present? ☒ **Yes** ☐ **No**

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase) : Xerochrepts, 45 to 79 percent slopes

Drainage Class Moderately well drained to somewhat excessively drained

Field observations confirm mapped type? ☒ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-16	A	7.5YR 4,2	2.5YR 5,8	1/2 to 3/4 inch 50%	Gravelly silty loam	

Hydric Soil Indicators: (check all that apply)

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

Hydric soils present? ☒ **Yes** ☐ **No**

Rationale for decision/Remarks:

Wetland Determination

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

Rationale/Remarks:

NOTES:

Attachment 5.d

1201 3rd Avenue, Suite 2600
Seattle, Washington 98101
206.287.9130
ANCHOR QEA

Memorandum

May 8, 2025

To: Barb Kincaid, Planning Director (City of DuPont)

From: John Small (Anchor QEA)

cc: Pete Stoltz (CalPortland), Steve Roos (HCMP)

Re: South Parcel Project consistency with DMC 25.105.080(4)

Under the proposed Project, mining within the Mineral Resource Overlay would result in the removal of the isolated 1.78-acre Kettle Wetland and its buffer. Any development proposal within a critical area or its buffer, as determined by the director, shall require a Critical Areas Alteration Permit (CAAP) unless it qualifies for an exemption or exception under DMC 25.105.070 (DMC 25.105.080). Development outside a critical area or buffer that may nonetheless adversely affect the critical area or buffer may be conditioned pursuant to the city's substantive authority under the State Environmental Policy Act and DMC 23.01.150

This memorandum summarizes how the proposal to mine the kettle wetland meets the criteria for CAAP approval in DuPont Municipal Code (DMC) 25.105.080(4)(a)(i)-(vi) as well as DMC 25.105.080(4)(b), 25.105.080(4)(c), and 25.105.080(4)(d).

> **DMC 25.105.080(4)(a)(i)** *The proposal minimizes the impact in accordance with mitigation as defined in DMC 25.105.030.215.*

The kettle wetland is an isolated Class III wetland located in the middle of the designated Mineral Resource Overlay. The aggregates surrounding the Kettle cannot be feasibly removed without altering the hydrology of the wetland. Therefore, there are no project alternatives that allow for extraction of the designated mineral resources that would allow for avoiding, minimizing, rectifying, reducing, or eliminating the effects on wetland hydrology. If left untouched, the wetland would be an isolated mound surrounded by areas that would be entirely excavated in accordance with the mining plan. Therefore, of the mitigation options set forth in DMC 25.105.030.215, the only appropriate and beneficial approach for the kettle wetland is "*compensating* for the impact by replacing, enhancing, or providing substitute resources or environments," and then "*monitoring"* the mitigation project to ensure success and taking appropriate corrective action as needed." With respect to compensation, the mitigation plan includes provisions to create a new wetland with functions that are equal or better to those of Kettle Wetland inclusive of any temporary loss of function during establishment of the new wetland functions. The mitigation wetland will be twice the size of the Kettle Wetland, consistent with the requirements of DMC 25.105.050§(1)(d)(vii). Then, the new wetland will be monitored for 10 years during which specific performance metrics must be met. Failure to meet

these metrics will trigger adaptive management actions including but not limited to: modifying topography, modifying soils, additional planting, modifying hydrology, additional monitoring. Details regarding both the compensation and monitoring are provided in the response to Criterion 4(a)(iv) below.

DMC 25.105.080(4)(a)(ii) *The proposal does not pose an unreasonable threat to the public health, safety. or welfare on or off the development proposal site.*

By following the mitigation sequence in the City's CAO, the project's impacts to the kettle wetland do not pose a threat to public health, safety, or welfare. *See* DMC 25.105.020(5). More broadly, the project as a whole does not pose unreasonable threats to public health, safety, or welfare. The project is on private property with no public access. Access to the mine area, including the South Parcel Expansion Area and both the existing kettle wetland and the mitigation wetland are restricted in accordance the Federal Mine Safety and Health Act of 1977, and other federal, state, and local requirements that ensure public safety in and around active mines. Offsite effects to the public health, safety, or welfare are limited to fugitive dust and noise, which will be managed to remain within established regulatory standards and were found not to be significant in the Project SEPA EIS. Changes in traffic associated with the project were also found not to be significant in the Project EIS.

DMC 25.105.080(4)(a)(iii) *The proposal is consistent with the general purposes of the critical areas ordinance (CAO) and the public interest.*

The consistency of the proposal with the purposes of the CAO, as stated in DMC 25.105.010(1)-(10), is demonstrated by the materials submitted in the application as follows.

(1) The proposal protects critical areas functions by meeting the development regulations in the DMC that concern development in wetlands.

(2) The purpose stated in DMC 25.105.010(2) is not directly relevant to private development, but providing wetland area on land that will be preserved as open space within the city creates the opportunity for the City to educate the public as to the long-term importance of environmentally critical areas and the responsibilities of the city to protect and preserve the natural environment for future generations

(3) Providing mitigation within the city that will result in no net loss of wetland function, value, or area, as demonstrated by the credit calculations in the Wetland Mitigation Plan for impacts to the kettle wetland. No mining or development is proposed within any stream or stream buffer.

(4) The mitigation measures in the Wetland Mitigation Plan analyzed impacts and mitigation associated with the proposal was developed and analyzed based on best available

science.

(5) The City's commitment to good stewardship is reflected in its extensive critical areas regulations, including its wetland mitigation requirements. The project will comply with those requirements.

(6) The proposed alteration of the kettle wetland will have no adverse impacts with regard to public safety, loss of life, property damage, or financial loss due to flooding, erosion, landslides, seismic events, soil subsidence or steep slope failures;.

(7) The proposal was studied extensively over many years resulting in extensive documentation within the application that will allow the city to confidently approve the proposal based on the requirements of DMC 25.105.

(8) This provision applies to the City's responsibilities not the applicant's .

(9) This provision applies to the City's responsibilities not the applicant's.

(10) A Final EIS has been published by the City and the proposal is undergoing a full SEPA review. The proposed mine expansion is located entirely within the City's Mineral Resource Overlay District and the proposal will facilitate future development that is consistent with the City's Comprehensive Plan.

DMC 25.105.080(4)(a)(iv) T*he proposed alterations to the kettle wetland are mitigated in accordance with the mitigation requirements and standards of* [DMC Chapter 25.105].

As noted above, the proposal includes a Wetland Mitigation Plan developed consistent with the Washington Department of Ecology guidelines and the DMC. The mitigation sequencing approach used is described in detail in Section 4.1 of the plan. In summary, no alternatives exist that allows avoiding, minimizing, rectifying, reducing, or eliminating impacts to the wetland in concert with mining in accordance with the Mineral Resource Overlay designation of the site. The only appropriate mitigation is *compensation* and *monitoring*. The mitigation design and the mitigation ratio proposed meets the requirements of DMC 25.105.050§(1)(d)(vii) which is 2:1 for Category 3 wetlands. The mitigation plan provides a detailed set of steps for monitoring the newly created wetland to ensure that there is no net loss in ecological functioning. The new wetland will be monitored for 10 years during which specific performance metrics must be met. Failure to meet these metrics will trigger adaptive management actions including but not limited to: modifying topography, modifying soils, additional planting, modifying hydrology, additional monitoring.

DMC 25.105.080(4)(a)(v) *The proposal protects the critical area functions and values consistent with the best available science.*

As explained in the Mitigation Plan, the project will result in equal or greater wetland function by establishing twice the wetland acreage lost with a compensatory wetland. This ratio is consistent with DMC 25.105.050.(1)(d)(vii) .

DMC 25.105.080(4)(a)(vi) *The proposal is consistent with other applicable regulations and standards. The granting of a critical areas permit should not be construed as approval of any other required underlying permit or approval for the development proposal.*

Under DMC 25.105.050(1)(c)(vi) of the City's critical areas regulations, alterations of a Class III wetland are allowed when the applicant demonstrates through a wetlands analysis report and mitigation plan that the mitigation requirements of DMC 25.105.050,(1)(d) and (e) can be met. The mitigation plan meets the mitigation standards contained in DMC 25.105.050,(1)(d):

DMC 25.105.050(1)(d)(i)(A)(i) Avoidance of impacts is impracticable and inconsistent with the mineral resource designation of the site.

DMC 25.105.050(1)(d)(i)(A)(ii) The wetland mitigation plan establishes that the proposed mitigation will result in no net loss of wetland function using the Washington Department of Ecology Credit/ Debit method[i]

DMC 25.105.050(1)(d)(i)(B) The wetland mitigation plan was prepared in accordance with the guidance found in, Wetland Mitigation in Washington State Part 2: Developing Mitigation Plans[ii] and Selecting Wetland Mitigation Sites Using a Watershed Approach (Western Washington)[iii]

DMC 25.105.050(1)(d)(i)(C) Financial surety is provided under state law (Surface Mining Reclamation Act 78.44 RCW for financial surety).

DMC 25.105.050,(1)(d)(i)(D) The wetland mitigation plan proposes mitigation at a ratio of 2:1 consistent with DMC 25.105.050(1)(d)(vii)

Here, the applicant has prepared a Critical Areas Report and a Wetland Mitigation Plan that demonstrates the requirements of DMC 25.105.050(1)(d) and (e) can be met. In addition to meeting these City regulatory standards, the project also meets applicable federal and state standards. The US Army Corps of Engineers has determined it does not have jurisdiction over the impacts to the kettle wetland because it is an isolated wetland, but the wetland mitigation will be reviewed and approved under an Agreed Order with the Washington State Department of Ecology under State Water Pollution Control Act.

DMC 25.105.080(4)(b) *The city may condition the underlying permit or approval for any alteration or development within or adjacent to a critical area or its buffer. Additional conditions may be placed on the proposal if it is in close enough proximity to and likely to effect a critical area*

or its buffer as determined by the director. Additional conditions will be established as necessary to mitigate impacts to critical areas permit shall be attached to the underlying permit or approval.

The following conditions regarding the kettle wetland are recommended.

- Glacier Northwest will follow all wetland mitigation measures identified in the Wetland Mitigation Plan.
- Glacier Northwest will obtain an Agreed Order (AO) specifying requirements and conditions associated with mitigation of the Kettle Wetland. The applicant will forward a copy the AO to the City of DuPont before any ground disturbance occurs within the Kettle Wetland or its buffer.
- Glacier Northwest will comply with the requirements of the AO with Ecology.

DMC 25.105.080(4)(c) *The applicant has the burden of proof that a proposal complies with the standards set forth in this chapter.*

The applicant met the burden of proof that the proposal complies with the standards set forth in the Critical Areas Ordinance (DMC 25.105). Supporting documents include the following documents provided through the permit and/or EIS process: Critical Areas Report[iv]; Wetland Mitigation Plan[v]; Plants & Animals Report[vi]; and Earth and Water Resources Report[vii].

DMC 25.105.080(4)(d) *Completion of the Critical Area Review. The city's issuance of a critical areas permit pursuant to this chapter shall be final, concurrent with the final decision to approve, condition, or deny the development proposal or other activity involved. (Ord. 18-1054 § 2 (Exh. A))*

The city's issuance of a Critical Areas Alteration Permit pursuant to Chapter 25.105 will occur concurrently with the Type 3 Site Plan Approval pursuant to DMC 25.60.060.

---

[i] Hruby, T. 2012. Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington, Final Report, March 2012. Washington State Department of Ecology publication #10-06-11.

[ii] Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. March 2006. Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1). Washington State Department of Ecology Publication #06-06-011b. Olympia, WA.

[iii] Hruby, T., K. Harper, and S. Stanley (2009). Selecting Wetland Mitigation Sites Using a Watershed Approach. Washington State Department of Ecology Publication #09-06-032.

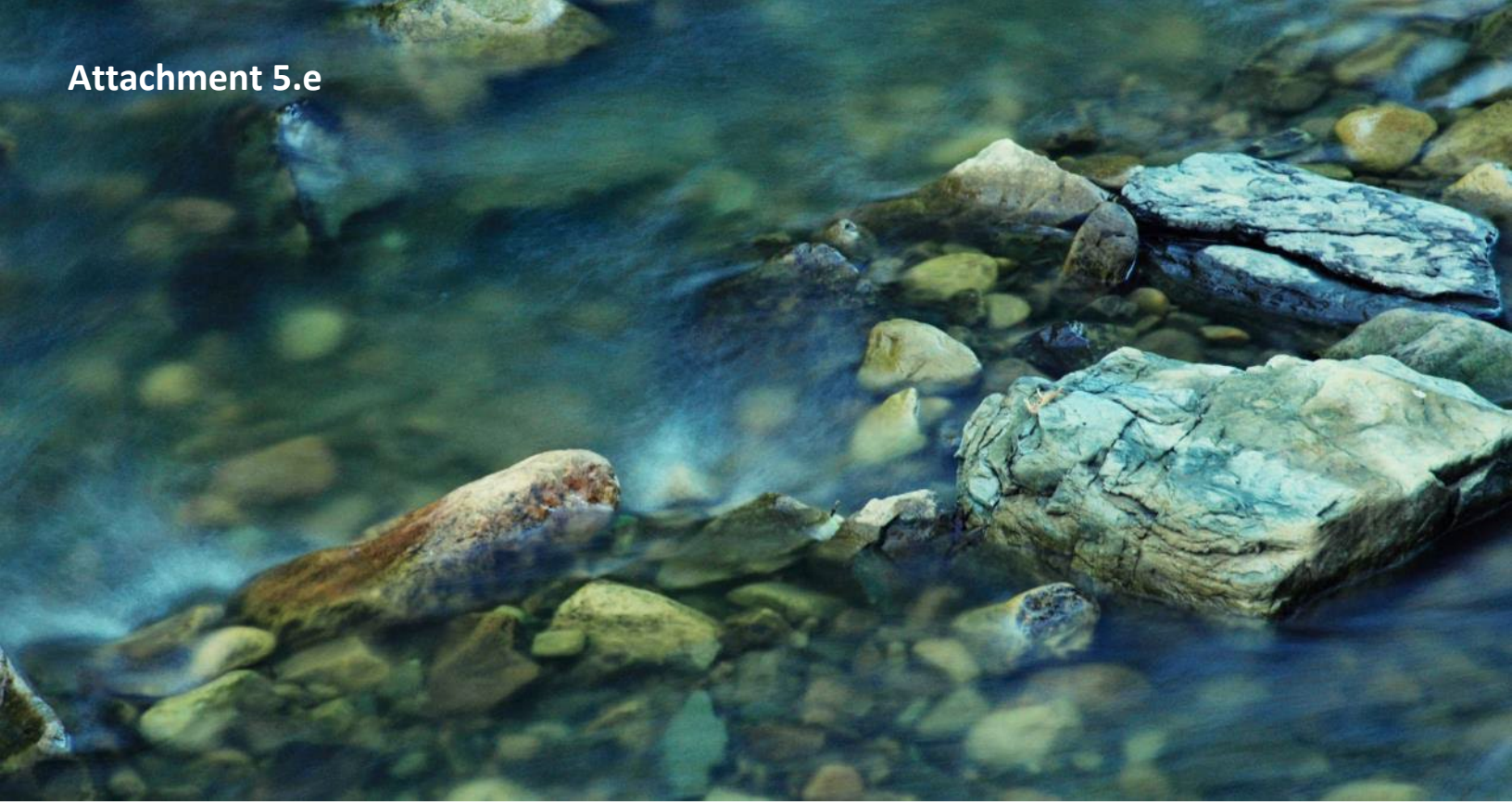
[iv] Anchor QEA. Pioneer Aggregates South Parcel Project Critical Areas Report, February 2021, revised May 2025.

[v] Anchor QEA. Pioneer Aggregates South Parcel Project Wetland Mitigation Plan, March 2024, revised March 2025

[vi] Anchor QEA. Pioneer Aggregates South Parcel Project Plants and Animals Technical Report, June 2023, revised March 2025.

[vii] Aspect Consulting. Pioneer Aggregates South Parcel Project Earth and Water Resources Report, November 2022.

Attachment 5.e



February 2021 Revised May 2025
Pioneer Aggregates Mine Expansion (South Parcel) Project

ANCHOR QEA

Critical Areas Report

Prepared for CalPortland

February 2021 Revised May 2025
Pioneer Aggregates Mine Expansion (South Parcel) Project

Critical Areas Report

Prepared for
CalPortland
P.O. Box 1730
Seattle, Washington 98111

Prepared by
Anchor QEA, LLC
1201 3rd Avenue, Suite 2600
Seattle, Washington 98101

Aspect Consulting
710 2nd Avenue, Suite 550
Seattle, Washington 98104

This revised version of the document corrects a typographical error concerning the rating of the Kettle Wetland in Section 4.1.4. The Kettle Wetland is a Category III wetland according to the Washington State Department of Ecology wetland rating system, as set forth in the Washington State Wetland Rating System for Western Washington: 2014 Update (Ecology Publication No. 04-06-029, or as revised and approved by Ecology), which contains the definitions, methods and criteria for determining a wetland's categorization as Category I, II, III or IV in accordance with the DuPont Municipal Code (25.105.050§(1)(a)(ii). Corrections to the chapter on Fish and Wildlife Habitat Conservation Areas (FHWCA) clarify that after consultation with the Washington Department of Fish and Wildlife no Priority Habitats or Priority Species are recorded in or around the project area other than the Kettle Wetland.

Project Number: 190217-01.01
I:\Projects\Cal Portland\Dupont Aggregate\Permitting\Critical Area Report\Deliverables\May25\2025-05-08_Pioneer Aggs_CAR and Hab Mgmt Plan_Clean.docx

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Figure 5 Geologic Hazards Map – Proposed Conditions

APPENDICES

Appendix A Kettle Wetland Delineation Report, 2021

ABBREVIATIONS

Aspect	Aspect Consulting, LLC
DMC	City of DuPont Municipal Code
DNR	Washington Department of Natural Resources
Ecology	Washington State Department of Ecology
GHA	Geologically Hazardous Area
H:V	horizontal to vertical
I-5	Interstate 5
JBLM	Joint Base Lewis-McChord
LOS	level of service
MSL	mean sea level
NRCS	Natural Resource Conservation Service
PHS	Priority Habitat and Species
Project	Pioneer Aggregates Mine Expansion (South Parcel) Project
RCW	Revised Code of Washington
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife

1 Introduction

Glacier Northwest, Inc., dba CalPortland, is seeking regulatory approvals for the Pioneer Aggregates South Parcel Project (Project). The Project would expand the footprint of the existing mine on to 188 acres (Figure 1) comprised of the 168-acre South Parcel that is located south east of the existing mine, 9.2 acres of buffer between the existing mine and the South Parcel and 10.8 acres surrounding the kettle wetland. Groundwater would need to be lowered under the 188-acre Expansion Area to facilitate extraction. Groundwater levels would be lowered in a 125 acre portion of the existing mine south east of the Olympia Beds (Qob) Truncation allowing additional mining to occur in that area. For the purpose of this document, this approximate 125 acre area is being called the Re-mine area.

The Project Area is located just southeast of the existing mine in the City of DuPont, southwestern Pierce County, Sections 22, 23, 26, and 27, Township 19 North, Range 1 East of the Willamette Meridian (see Figure 1). The Project Area is bordered to the northwest by the existing mine; to the east by Joint Base Lewis-McChord (JBLM), an Intel facility, Westblock Pacific, and other industrial/distribution facilities; and to the south by Sequalitchew Creek. The Project Area is on several parcels owned by Weyerhaeuser and leased to CalPortland. The site is located in the Chambers-Clover sub-basin of Water Resources Inventory Area 12. The Project Area is entirely within the boundaries of the City of DuPont's designated Mineral Resources Overlay area.

1.1 Content and Organization

This Critical Areas Report supports the proposed Project permitting and land use approvals by providing information regarding the presence of critical areas within the Project Area, evaluating potential impacts to existing critical areas and associated regulated buffers, as defined in the City of DuPont Municipal Code (DMC) Chapter 25.105, Critical Areas, and providing a mitigation summary to address these impacts. The following critical areas were initially identified as potentially occurring within the Expansion Area subject to site-specific field surveys:

- Wetlands: DMC 25.105.050(1)
- Fish and Wildlife Conservation Areas: DMC 25.105.050(2)
- Geologically Hazardous Areas: DMC 25.105.050(3)

Anchor QEA ecologists conducted a review of the Critical Areas chapter of the DMC, gathered and reviewed existing information, and performed field multiple biological surveys of the Project Area between 2007 and 2020 to identify and assess existing critical areas. As part of the analysis to identify natural resources and critical areas in the Expansion Area, the ecologists reviewed the following sources of information to support field observations and subsequent analysis necessary to prepare this report:

- City of DuPont Municipal Code, including DMC 25.105

- U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper for National Wetlands Inventory Map Information (USFWS 2007)
- Soil Survey of Pierce County, Washington (USDA 1979)
- Natural Resource Conservation Service Soil Series Mapping (USDA 2007)
- Hydric Soil List for Pierce County, Washington (USDA 2001)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) maps (WDFW 2020)
- *Final Supplemental Environmental Impact Statement, CalPortland Northwest DuPont Mining Area Expansion and North Sequalitchew Creek Project* (City of DuPont 2007)
- *Final Environmental Impact Statement for CalPortland North Parcel Mining Expansion* (City of Dupont [2013])

The following sections of this report describe the methods used in the field investigation and findings:

- Section 1 – Introduction
- Section 2 – Project Description
- Section 3 – Project Setting
- Section 4 – Critical Areas Assessment
- Section 5 – References

In addition to this study, several documents associated with the proposed Project have been prepared that address and describe critical areas within the Expansion Area. Information from these documents is summarized and/or included by reference in this report.

2 Project Description

The proposed Project includes clearing, topsoil removal and stockpiling and mining within the 188-acre Expansion Area. Additional extraction would also occur in the 125-acre Re-mine Area within the existing mine area. The Project would extend mining at the current rate for approximately 14 additional years and increase the available sand and gravel resources by 30 to 40 million tons. The Project Area is located within a Mineral Resource Overlay applied by the City of DuPont's Comprehensive Plan (Figure 2). The purpose of a Mineral Resource Overlay designation is to implement the Growth Management Act, the Surface Mining Act, and the DuPont Comprehensive Plan by designating an overlay area where mineral extraction is allowed (DMC 25.60.010). The mitigation approach for critical area impacts would be finalized during the State Environmental Policy Act review and permit process

Sand and gravel mine operations in the Expansion Area would involve six primary activities: logging, clearing and topsoil removal, groundwater management, extraction, processing and transport, and reclamation. These activities would overlap, with multiple activities occurring at any one time.

2.1 Logging

Timber was logged from the Expansion Area several years ago, but logging would still be needed prior to clearing and mining. A substantial portion of sand and gravel mine operations in the Project Area would occur within previously reclaimed areas of the existing mine (the Re-Mine Area) in addition to the previously unmined areas (the Expansion Area), where second-growth forest[1] and Scot's broom shrub dominates the landscape. The Expansion Area would be logged at a single time prior to segmental clearing, mining, and reclamation.

2.2 Clearing and Topsoil Removal

Prior to mining, dozers and excavators would be used to remove stumps and vegetation. This material would then be processed with a portable tub grinder and used to amend topsoil for use in reclamation. Over the life of the Project, clearing and topsoil removal would occur in the mine area in segments as mining advances into the South Parcel. Mass clearing of the site would not occur.

The Expansion Area is located downwind of the former Asarco copper smelter and refinery in Ruston, Washington. Airborne pollution emitted from the former smelter has resulted in a 1,000-square-mile, area-wide plume of arsenic- and lead-contaminated soil known as the Tacoma Smelter Plume. Surficial soils at the Expansion Area may contain arsenic and lead at concentrations above cleanup levels. These soils would be cleaned up under an approved plan developed in consultation with the Washington State Department of Ecology (Ecology) through the Voluntary Cleanup Program.

[1] "Second growth" here refers to a forest that has regenerated after harvest and has not yet reached maturity.

2.3 Groundwater Management

There is an existing aquifer in the sands and gravels to be mined in the Project Area. Wells would be installed and pumped in advance of mining, to intercept groundwater and dry out the gravels for mining. Mining using a trough method would be employed to minimize the duration that active dewatering by pumping wells is required. Once mining of each section of trough is completed, the adjacent wells can be turned off, allowing groundwater to passively seep from the stable engineered slope along the southeastern perimeter of the mine area and flow by gravity to an infiltration facility on the floor of the existing mine. After mining the trough along the perimeter, gravel would be extracted from the interior area.

2.4 Mining

Mining of the Project Area would proceed slowly from the north to the south over a period of 5 to 8 years, extracting gravel to create a broad trough along the southeastern perimeter of the mine (Figure 3). The method of mining would be identical to that currently used in the permitted mine area. A dozer would push excavated material from the top of the mine face to two front-end loaders working on the mine floor. The front-end loaders would scoop up the sand and gravel and dump it into portable hoppers used to feed conveyors leading to the processing plant.

The mine face of each sequence area would be a maximum of approximately 80 feet. During reclamation, the graded side slopes and mine areas would be revegetated and stabilized, in accordance with the mine reclamation plan.

A conveyor would begin near the location where mining will begin and then be extended to the other areas as mining progresses. The conveyor comprises a 48-inch-wide rubberized belt that is supported by a series of rollers, called idlers, mounted on steel framed segments that support the conveyor about 5 feet off the ground.

A 20-foot-high noise berm would be constructed along the southern boundary of the South Parcel. The berm would be located behind retained vegetation, and would prevent noise generated on the Project area from reaching adjacent properties.

2.5 Processing and Transport

Material mined from the Project Area would be conveyed to the existing processing facility and would be processed in the same general manner presently used. The material extracted from the Project Area is anticipated to have a higher moisture content and fines content than the aggregate currently being extracted. As a result, there may be minor adjustments to some of the equipment used in the processing area, but the overall process and equipment used would remain the same.

To remove silt and clay, water is used to wash the raw material conveyed from the mine. Sand and gravel smaller than 1.5 inches pass through a screening and classifying process that separates and conveys the material to a series of stockpiles sorted by size and stacked on the south side of the processing plant. Stones larger than 1.5 inches are crushed, sorted by size, and conveyed to a series of crushed-rock stockpiles, sorted by size, north of the processing plant. Screening equipment, rock crushers, and other processing equipment are located between the stockpiles of sorted rock products. Custom-blended rock products are also made to customer specifications.

More than 95% of the water used to process the mined material is recycled through a treatment system, where silt and clay are removed so that the water can be reused to process more raw material.

The mode and extent of transporting aggregate products from the site would not change, relative to existing operations. Approximately 80% of the product would be loaded onto barges at the existing dock at Tatsolo Point and transported to the Puget Sound regional market by barges. Approximately 20% of the product would be transported to the local market by truck. Some material would continue to be incorporated into concrete at the existing on-site concrete batch plant serving the local market.

2.6 Reclamation

As mining progresses, completed mine segments would be reclaimed. The reclamation plan would be reviewed, approved, and periodically inspected for compliance by the Washington Department of Natural Resources (DNR) for consistency with the Surface Mining Act (Revised Code of Washington [RCW] 78.44). In general, reclamation would consist of regrading, replacement of topsoil, and re-vegetation. CalPortland is currently preparing an application to revise the existing reclamation plan incorporated into the surface mining permit. DNR's approval would occur after the City's permits are issued. The proposed reclamation plan would be similar to the plan approved by DNR for the existing mine.

3 Project Setting

3.1 Topography

The Project Area consists of a gently rolling to level area at approximately 200 feet above mean sea level and slopes down to the floor of the existing mine (western boundary of the expansion) and Sequalitchew Creek (southern boundary of the expansion). Small glacial kettles (topographic closed depressions associated with melting of glacial ice remnants during the most recent glacial retreat) are present near the site, including a kettle wetland within the Expansion Area, discussed in Section 3.1, Wetlands Assessment.

The slope grades west of the Project Area vary between 10% and 70%. The ravine that includes Sequalitchew Creek is located south and southwest of the Project Area; this ravine forms most of the southern boundary of the existing mine and the western portion of the Expansion Area. The ravine deepens as it approaches Puget Sound, to a maximum depth of 175 feet below the plateau elevation. Slopes along the northern side of the Sequalitchew Creek ravine range from approximately 30% to 75%. A narrow-gauge railroad, associated with the former E.I. DuPont de Nemours Company Munitions facility, was constructed on a bench cut in the northern slope of the ravine; it has since been converted to a public trail. The BNSF Railway right-of-way extends along the shoreline berm between the property and Puget Sound.

3.2 Soils

The surficial geology in the Project Area consist of various geologic units deposited before, during, and after the Vashon glaciation of the Puget Sound Lowland. The youngest deposits include the Steilacoom Gravel, sometimes locally referred to as the DuPont Delta. These gravels occur primarily to the west of the proposed Project, in the area of the current mining operation, where they are hundreds of feet thick and unsaturated to near sea level. In the Project Area , these outwash deposits occur as a veneer over a sequence of Vashon Drift, which primarily comprises sand and gravel, but which has been regionally characterized as a sequence of recessional outwash, till, and advance outwash. The Vashon Drift includes the shallow-most aquifer in the Project study area.

The Vashon Drift is underlain by pre-Vashon, non-glacial deposits, referred to as Olympia Beds. These deposits are dense, glacially overridden, and predominantly fine-grained, silty sands and sandy silts. These non-glacial sediments (as evidenced by organics and wood fragments) were deposited in lowland river, floodplain, lake, and bog environments similar to those found in the larger river valleys in the modern Puget Lowland. These deposits mark the bottom of the Vashon aquifer and the bottom of the sand and gravel being considered for mining.

The soils in the project area are typically a well-drained, sandy, gravelly loam. The NRCS has mapped three soil series in the Project Area (Figure 3). These are: Alderwood which is derived from glacial till,

Spanaway which is derived from glacial outwash deposits and Pits. Pits signifies mining of some sort and is associated sand and gravel extraction that occurred before the Pioneer Aggregates Mine was established.

3.3 Vegetation

The site currently comprises primarily second-growth coniferous forest (Douglas fir [*Pseudotsuga menziesii]*, dominant), with areas of shrublands (Scot's broom [*Cytisus scoparius*], dominant). Vegetation in the Kettle Wetland contains Palustrine emergent and Palustrine scrub-shrub systems, described in more detail in Section 4.1, Wetlands Assessment.

3.4 Zoning

The Project Area is within the City Comprehensive Plan's designated Mineral Resources Overlay. The City of Dupont Comprehensive Plan Land Use Goals and Policies (LU-3.5) state that "the Mineral Resource Overlay designation shall be enforced and recognized for a length of time corresponding to the completion of excavation and reclamation within the designated area" (City of DuPont 2015). Mining within the Mineral Resource Overlay is a permitted use (DMC 25.60.020(1)).

Following the completion of mining and excavation, The Project Area would be developed in a manner consistent with underlying City zoning designations in accordance with DuPont Comprehensive Plan (2015), Land Use Policy LU-10.4. The southern portion (approximately 164 acres) is designated for Manufacturing and Research use; and the northern portion (approximately 36 acres), located within the future Sequalitchew Village, is designated R-4 Residential (approximately 14 acres) and Residential Reserve (approximately 22 acres). The northern portion of the city is zoned primarily for Industrial and Manufacturing/Research Park, with some Residential and Residential Reserve in and adjacent to Sequalitchew Village, and Military in the northeast corner of the city.

3.5 Currently Permitted Mining Activity

CalPortland's original sand and gravel mine was permitted in 1997 (355 acres), and the North Parcel Expansion (142 acres) was permitted in 2014.

4 Critical Areas Assessment

This section describes critical areas as defined under the City's critical areas regulations (Chapter 25.105 DMC), including Wetlands, Fish and Wildlife Conservation Areas, and Geologically Hazardous Areas, and assesses whether such Areas are present within the Project Area..

4.1 Wetlands Assessment

Wetlands are protected under DMC 25.105.050.1. One kettle wetland, located within the Project Area, is expected to be directly impacted by the proposed sand and gravel mine operations. The Kettle Wetland Delineation Report (Appendix A includes a summary of data collected at each sampling plot during the wetland delineation, wetland delineation field data forms, and the 2014 Ecology Wetland Rating Forms. This section also provides an assessment of wetland functions and impacts.

4.1.1 Wetland Delineation

The wetland delineation was initially conducted on July 31 and August 9, 2007, by Anchor Environmental, L.L.C. staff, and the Kettle Wetland delineation was confirmed on December 6, 2017, due to the length of time that transpired since the original delineation occurred. During this later delineation, the Kettle Wetland was rated under Ecology's Washington State Wetland Rating System – Western Washington: 2014 Update (Hruby 2014) and the 2018 DMC Sensitive Areas Regulations (City of DuPont 2018). On April 17, 2019, the U.S. Army Corps of Engineers issued a determination that the Kettle Wetland is not a water of the United States (USACE 2024), and therefore is not subject to federal regulations.

The Kettle Wetland is a 1.78-acre isolated wetland located southwest of the existing processing plant and within the Expansion Area. This wetland is classified as a Category III wetland using the Ecology rating system (Hruby 2014 and Hruby and Yahnke 2023). Water levels within the wetland are determined by the seasonal fluctuation in the elevation of the Vashon aquifer, which is the dominant source of hydrology for the wetland. The Kettle Wetland is more than 1/2 mile from a Water of the United states and sits in a closed depression, with no surface water connection to the larger watershed, substantially limiting the wetland's opportunity to provide hydrologic or water quality function.

The Kettle Wetland has unique soils due to its formation process during glacial retreat, in which the stagnant melting ice sheet left large blocks of stranded glacial ice, called "dead ice." Glacial meltwater would often flow around these stagnant ice blocks, depositing its river-borne sediment. When the ice blocks later melted, kettles were formed where sediment had been deposited adjacent to the ice blocks. The ice-contact sediment is typically an unstratified silt, sand, and gravel, with much lower permeability than the adjacent outwash. An ablation till can also be formed in kettles when stagnant ice evaporates, leaving the glacial fines once contained in the ice as a low permeability

deposit. In the Kettle Wetland, peat is present above silty clay ranging from 14 to greater than 20 inches in thickness (Anchor Environmental 2007). Finer-grained ablation till "dead ice" deposits were encountered beneath peat in nearby marshes and are present in the peat (Walsh et al. 2003), which appear to be similar to the lower permeability silty clay layer.

The Kettle Wetland contains persistent and non-persistent emergent and scrub-shrub vegetation communities. The depth of water in the Kettle Wetland fluctuates seasonally, from 0 to 2 feet during the summer to 4 to 6 feet during the winter (CH2M Hill 2001). In the central portion of the wetland, emergent plants are present where the water is deepest. Common emergent species include common mare's tail (*Hippuris vulgaris*), creeping spike rush (*Eleocharis palustris*), giant bur-reed (*Sparganium eurycarpum*), water parsnip (*Sium suave*), reed canarygrass (*Phalaris arundinacea*), water ladysthumb (*Polygonum amphibium*), mild waterpepper (*Polygonum hydropiperoides*), skunk cabbage (*Lysichiton americanus*), inflated sedge (*Carex vesicaria*), and northern bugleweed (*Lycopus uniflorus*). Less frequent aquatic species identified include pondweed (*Potamogeton* sp.) and lesser duckweed (*Lemna minor*).

Ground elevations rise near the wetland boundary, which contains scrub-shrub species, including several species of willow (*Salix lucida, S. scouleriana, S. sitchensis*), red-osier dogwood (*Cornus sericea*), and Douglas spirea (*Spiraea douglasii*). Other vegetation along the wetland boundary consists of stinging nettle (*Urtica dioica*), blue elderberry (*Sambucus caerulea*), beaked hazelnut (*Corylus cornuta*), and Henderson sedge (*Carex hendersonii*).

The buffer of the Kettle Wetland is second-growth coniferous forest, with a canopy dominated by Douglas fir that evenly slopes up from the wetland boundary. Other dominant tree species in the wetland buffer include big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), western red cedar (*Thuja plicata*), and Pacific madrone (*Arbutus menziesii*). Dominant shrub species around the Kettle Wetland include trailing blackberry (*Rubus ursinus*), salal (*Gaultheria shallon*), snowberry (*Symphoricarpos albus*), Scot's broom, Oregon grape (*Mahonia nervosa*), bald-hip rose (*Rosa gymnocarpa*), oceanspray (*Holodiscus discolor*), sword fern (*Polystichum munitum*), saskatoon (*Amelanchier alnifolia*), red huckleberry (*Vaccinium parvifolium*), and bracken fern (*Pteridium aquilinum*). Herbaceous species include velvet-grass (*Holcus lanatus*), western wild-rye (*Elymus glaucus*), and colonial bent-grass (*Agrostis capillaris*). Vine species include manroot (*Marah oreganus*). The vegetated area around the Kettle Wetland ranges from 215 to more than 300 feet wide.

4.1.2 Wetland Classification and Rating

Under Ecology's 2014 wetland rating system, the Kettle Wetland meets the criteria of Category III wetland, compared to a Category II wetland under Ecology's 2004 wetland rating system (Hruby 2014; Ecology 2004). This rating difference between the 2004 and the 2014 wetland rating systems is

due to the 2014 rating method placing more emphasis on potential pollutants discharging into a wetland, the characteristics of aquatic resources downstream of a wetland, and the presence of aquatic resources with flooding problems downstream of the wetland. The Kettle Wetland received lower scores for these attributes, which contributed to the Category III wetland rating. The 2014 Washington State Wetland Rating System was updated in 2023 (Hruby and Yahnke 2023). This update did not change the rating of the Kettle Wetland (Appendix B to the 2021 Kettle Wetland Delineation Report, which is Appendix A of this report, contains the 2023 rating forms for the Kettle wetland).

Under the City's updated critical areas regulations adopted in 2018 the Ecology's 2014 rating system is used as amended. Under the regulations adopted in 2018, the Kettle Wetland meets the criteria of a Class III wetland.

4.1.3 Wetland Functional Assessment

Water quality and hydrologic function potential for the Kettle Wetland are rated high for removal of sediments, nutrients, and toxics, and reduction in peak flows and downstream erosion. Potential for the wetland to provide these functions is moderate because of the small drainage area and minimal upgradient disturbance. Water quality and hydrologic improvement functions are rated low because the wetland does not have surface water connections to downstream aquatic resources. The wetland has moderate potential habitat functions, based on the plant communities and species variation, the variety of hydroperiods provided, and the habitat features present. The wetland has a low landscape potential due to the land use activities in the vicinity. The 2023 Ecology wetland rating forms are included in Appendix A.

4.1.4 Wetland Impact Assessment

Under the proposed Project, mining within the Mineral Resource Overlay would result in permanent impacts to the isolated Kettle Wetland and its buffer as a result of earthwork mining activities: the entire wetland would be excavated. The area of wetland disturbance is 1.78 acres, and the total buffer area of disturbance is 3.4 acres. Alteration of a Class III wetland, such as the Kettle Wetland, is allowed if requirements for wetland mitigation can be met (DMC 25.105.050(1)(c)(vi)).

4.1.5 Wetland Mitigation

Alternatives to mitigate wetland impacts would be evaluated as part of a Supplemental Environmental Impact Statement for the Project. All impacts would be mitigated in accordance with the standards set forth in DMC 25.105.050(1)(d) as follows

DMC 25.105.050(1)(d)(i)(A)(i) Avoidance of impacts is impracticable and inconsistent with the mineral resource designation of the site.

DMC 25.105.050(1)(d)(i)(A)(ii) The wetland mitigation plan establishes that the proposed mitigation will result in no net loss of wetland function using the Washington Department of Ecology Credit/ Debit method

DMC 25.105.050(1)(d)(i)(B) The wetland mitigation plan was prepared in accordance with the guidance found in, Wetland Mitigation in Washington State Part 2: Developing Mitigation Plans and Selecting Wetland Mitigation Sites Using a Watershed Approach (Western Washington)

DMC 25.105.050(1)(d)(i)(C) Financial surety is provided under state law (Surface Mining Reclamation Act 78.44 RCW) for financial surety).

DMC 25.105.050,(1)(d)(i)(D) The wetland mitigation plan proposes mitigation at a ratio of 2:1 consistent with DMC 25.105.050(1)(d)(vii)

4.2 Fish and Wildlife Habitat Conservation Areas

The potential presence of Fish and Wildlife Habitat Conservation Areas (FWHCAs) in the Project Area was reviewed based on the following definitions in DMC 25.105.030.140:

> *(a) Areas with which state or federally designated endangered, threatened, and sensitive species have a primary association. Federally designated endangered and threatened species are those fish and wildlife species identified by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service that are in danger of extinction or threatened to become endangered. State designated endangered, threatened, and sensitive species are those fish and wildlife species native to the state of Washington identified by the Department of Fish and Wildlife;*
>
> *(b) Lands and waters containing documented habitats for plant and animal species listed in the Washington Department of Fish and Wildlife's Priority Habitats and Species Program List. Habitats and species of local significance may be added by action of the city council where the value and significance of such species locally can be established and sound scientific evidence can be presented to establish that the species' existence is determined to be locally significant;*
>
> *(c) Public and private tidelands or bedlands are regulated under the City of DuPont 2013 Shoreline Master Program (SMP), as amended;*
>
> *(d) Streams and waters of the state (see WAC 190-080(5)(a)(vi)) that provide habitat to endangered or threatened species, or certain species that have been identified as being sensitive to habitat manipulation, as defined in WAC 222-16-030, Forest Practices Rules and Regulations; lakes, ponds and streams planted with game fish, including those planted under the auspices of a federal, state, local or tribal*

program; and waters which support priority fish species as identified by the Department of Fish and Wildlife.

The evaluation used the following data to determine whether FWHCAs are present in the Expansion Area:

- StreamNet fish distribution data
- WDFW's Salmon Recovery maps and the PHS database
- USFWS's Listed and Proposed Endangered and Threatened Species and Critical Habitat, Candidate Species, and Species of Concern in Pierce County
- USFWS's Information for Planning and Consultation

4.2.1 Conservation Areas Assessment

The project has been designed to avoid impacts to fish and wildlife areas and in the case of the Kettle wetland mitigate for any unavoidable impacts. The following assessment is organized using the definition of FWHCAs in DMC 25.105.030.140, and concludes that the Expansion Area does not contain any FWHCAs.

(a) No evidence of any federally designated endangered, threatened, and sensitive species has been identified in or near the Expansion Area. The habitat is not well suited to any of the federally designated endangered, threatened, and sensitive species that are potentially present in the area.

(b) PHS mapping of the site identifies the Expansion Area along with the entire City of DuPont as containing habitat suitable for big brown bats (Eptesicus fuscus), and little brown bats (Myotis lucifugus), and Yuma myotis bats (Myotis yumanensis), which may breed in the area. Roosting concentrations of these bat species are listed by the state as priority habitats; however, there are no documented roosting concentrations in the project area. Therefore, the site does not contain "Priority Habitats and Species," as listed by WDFW. See [add Reference to Anchor Memo.]

(c) The expansion area is wholly outside of Shoreline Management Act Jurisdiction

(d) The Kettle wetland is the only water of the state within the Expansion Area. It is a wetland subject to the City's wetland regulations, and impacts to habitat, hydrology and water quality will be fully mitigated as discussed in the wetland mitigation plan prepared for the project. (see section 4.1). However, there is no evidence that the kettle wetland provides habitat for the species listed in DMC 25.105.030.140(d), and therefore it is not an FWHCA.

Approximately 160 acres of the 188-acre Expansion Area have second-growth conifer forestlands, with Douglas fir dominating. A 13-acre prairie-like habitat was described in the 1992 Draft Environmental Impact Statement, but Scot's broom has since colonized this area. In 2019 and 2020, a landmark tree survey was conducted by qualified biologists from Anchor QEA. No threatened or endangered plant species were encountered during the 5 days of field survey. Fish and Wildlife Habitat

4.2.2 Conservation Areas Impact

The Expansion Area does not contain any FWHCAs, and the Project will therefore have no impacts to FWHCAs.

4.2.3 Mitigation Measures

Although the Expansion Area does not contain any FWHCAs, overall impacts to wildlife and wildlife habitat (including bat habitat) are described in Section 3.6 of the EIS for the Project and would be mitigated by on-site reclamation activities also described in Section 3.6 of the EIS. All wetland functions and values will be mitigated for with the construction of an on-site mitigation wetland as discussed in Section 4.1 above.

4.3 Geologically Hazardous Areas Assessment

This section assesses the potential effects of the Project on geologically hazardous areas completed by Aspect Consulting, LLC (Aspect). Definitions of the geologically hazardous areas are provided below, followed by an assessment of the existing site conditions, conditions anticipated as a result of the Project, and recommendations for hazard mitigation.

4.3.1 DuPont Municipal Code Geologically Hazardous Areas Definitions

The Project Area and surrounding areas contain Geologically Hazardous Areas (GHAs) as regulated under DMC 25.105.050(3)(a). Geologically Hazardous Areas are defined in DMC 25.105.030 as including the following:

- Landslide Hazard Areas
- Steep Slopes
- Erosion Hazard Areas
- Seismic Hazard Areas

The DMC defines Landslide Hazard Areas, Steep Slopes, Erosion Hazard Areas, and Seismic Hazard Areas with several criteria:

> ***Landslide Hazard Areas –*** *Landslide hazard areas shall include areas potentially susceptible to landslides based on a combination of geologic, topographic, and hydrologic factors. They include any areas susceptible to mass movement due to any combination of bedrock, soil, slope (gradient), slope aspect, slope form (concave, convex, planar), geological structure, surface and*

subsurface hydrology, or other factors. Landslide hazard areas shall also include areas along which landslide material may be routed or which may be subject to deposition of landslide delivered material. Landslide hazard areas include but are not limited to the following areas:

(A) Areas designated as quaternary slumps, earth-flows, mudflows, or landslides on maps published by the U.S. Geological Survey, Washington State Department of Natural Resources, or other reputable sources;

(B) Areas with all three of the following characteristics:

(I) Slopes steeper than 15 percent;

(II) Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and

(III) Springs or ground water seepage.

(C) Areas that have shown movement and/or are underlain or covered by mass wastage debris;

(D) Potentially unstable slopes resulting from river or stream erosion or undercutting by wave erosion;

(E) Areas that show past sloughing or calving of sediment or rocks resulting in a steep slope that is poorly vegetated;

(F) Slopes that are parallel or sub-parallel to planes of weakness (which may include but not be limited to bedding planes, soft clay layers, joint systems, and fault planes) in subsurface materials;

(G) Any area with a slope of 40 percent or steeper and with a vertical relief of 10 or more feet except areas composed of competent bedrock or a properly engineered slope designed and approved by a geotechnical engineer licensed in the state of Washington and experienced with the site;

(H) Areas within which land use activities could affect the slope stability, including but not limited to areas with subsurface hydrologic flow, ground water recharge areas and surface water flow; and

(I) Areas of historical landslide movement including coastal shoreline areas mapped by the Department of Ecology Coastal Zone Atlas or the Department of Natural Resources slope stability mapping as unstable ("U" or class 3), unstable old slides ("UOS" or class 4), or unstable recent slides ("URS" or class 5).

***Steep Slope –** As used in this chapter means a geologically hazardous area exhibiting all three of the following characteristics:*

(A) Slopes steeper than 15 percent;

(B) Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and

(C) Springs or ground water seepage.

Erosion Hazard Areas – *Erosion hazard areas shall include:*

(A) Channel migration zones, also known as riverine erosion areas, are defined as the areas along a river or stream within which the channel(s) can be reasonably predicted to migrate over time. This is a result of natural and normally occurring geomorphic, hydrological, and related processes when considered with the characteristics of the river or stream and its surroundings, and in consideration of river and stream management plans. Channel migration hazard areas shall include: potential channel migration, channel avulsion, bank erosion, and stability of slopes along the river or stream;

(B) Coastal erosion areas that are subject to shoreline retreat from wind, wave, and tidal erosion.

Seismic Hazard Areas – *Includes areas subject to severe risk of damage because of seismic induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting. Ground shaking is a primary risk, followed by slope failure. Soils on slopes greater than 40 percent that are expected to be seasonally or perpetually saturated pose a specific risk of settlement, movement, or liquefaction. When saturated, these soils tend to be cohesionless and are unsuitable for foundations.*

This assessment will evaluate the Project with respect to the criteria defined above.

4.3.2 Evaluation of Existing Conditions

This section assesses existing conditions in and around the Project Area. Mapping of GHAs was completed using publicly available Light Detection and Ranging (LiDAR) data and from a reconnaissance.

Existing conditions were reviewed within the South Parcel and in two adjacent areas with slopes greater than 15%: the existing mine west of the South Parcel, and Sequalitchew Creek ravine. These additional areas were reviewed to gain information regarding the stability of native soils and slopes. Descriptions are provided in the preceding Topography (3.1) and Soils (3.2) sections. These adjacent areas will not be modified or impacted by the Project, but were evaluated because their soils, geology, and other conditions are identical to those in the Project Area, and as such are a good predictor of the performance of the proposed conditions in the Project Area.

4.3.2.1 Expansion Area

Existing conditions within the Expansion Area do not meet the definition of GHAs. Topography within the Expansion Area is generally characterized by level ground or gentle slopes, typically inclined at gradients less than 15%. Aspect observed areas interpreted as old rail grade cut and fill slopes steeper than 40% that locally exceed more the 10 feet of vertical relief in the southeast portion of the South Parcel (Figure 4). However, these areas do not meet the City's definition of steep slopes because they do not intersect a geologic contact with relatively impermeable sediment or bedrock and do not have spring or groundwater seepage (DMC 25.105.030.345 and they should not

be considered Landslide Hazard Areas as they are stable constructed slopes that have historically performed well.

4.3.2.2 Existing Mine

The areas north and west of the Expansion Area make up the active mine pit and processing area. On the west slope of the active pit, mining activity is substantially complete, and the slope has been graded to its final configuration. The west slope is about 175 feet high and is smoothly graded at about 30% up to 50%, as shown in Figure 4. The subsurface soil[2] under the topsoil of the west slope is sand and gravel with a trace of fines. The slope has been planted with grasses and conifer trees.

The west slope of the Existing Mine is an engineered slope and thus is exempted from being a GHA (DMC 25.105.050 (3)(a)(i)(G)).

During the reconnaissance of the west slope on November 1, 2019, Aspect observed no indication of past or imminent slope failure, landsliding, or erosion. There are no concave or convex topographic features that would suggest slumping or calving, and there are no areas of exposed soil. The vegetation shows no evidence of disturbance from slope instability or erosion.

Aspect also observed a localized area of an older oversteepened mined slope west of the mining site on west-facing slopes upslope of the railroad corridor and Puget Sound. This area is outside of the mining limits and pre-dates CalPortland's activities by more than 100 years (Figure 4). The localized area includes slopes that are largely vegetated with conifer and deciduous trees with some back-tilted trees and locally exposed soils on slopes typically steeper than 65%.

4.3.2.3 Sequalitchew Creek Ravine

The Sequalitchew Creek ravine lies along the southern boundary of the active mine and the Expansion Area and runs westward for about 1.5 miles down to the creek confluence with Puget Sound. A small portion of the Sequalitchew Creek ravine is located within the South Parcel property boundary, but outside the proposed Expansion Area. The majority of the Sequalitchew Creek ravine is outside of the South Parcel. The slopes on the northern side of the ravine range from approximately 30% to 75%.

4.3.2.4 Summary of Existing Conditions

Existing conditions within the Expansion Area do not meet criteria for any of the four types of Geologically Hazardous Areas identified in the City's critical area regulations (landslide hazard areas, steep slopes, erosion hazard areas, and seismic hazard areas). There are no indications of landsliding,

[2] No subsurface explorations were completed for this report. Descriptions of the subsurface in this section are based on logs of subsurface explorations from previous reports.

slope movement, erosion or with regard to seismic hazards, areas of settlement, movement, or liquefaction.

4.3.3 Geologically Hazardous Areas Mitigation Measures

GHAs are not present within the Expansion Project Area, but are present nearby in the Sequalitchew Creek ravine. The hazard mitigation recommendations listed below are intended to protect GHAs located outside of, but nearby, the Project Area.

- Maintain the 100-foot setback from the top of slopes greater than 40% within the Sequalitchew Creek ravine, consistent with the conditions for the existing mine and the 1994 and 2012 settlement agreements.
- Erosion control measures and setbacks from GHAs, and other critical areas should comply with the City of DuPont's Comprehensive Plan and applicable development regulations.

5 References

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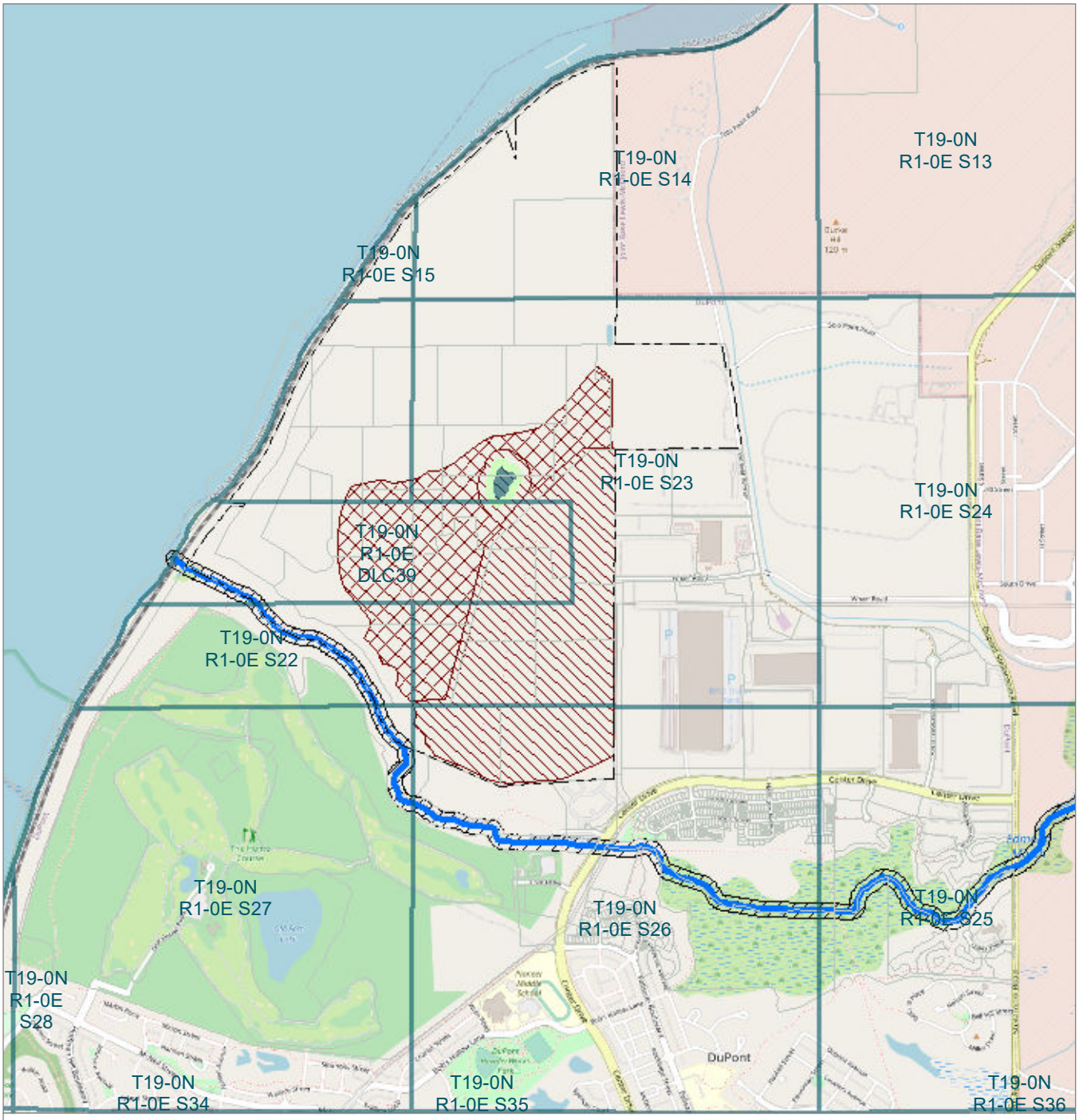
Figures



LEGEND:

- Kettle Wetland
- 100-ft Wetland Buffer
- Sequalitchew Creek
- 100-ft Stream Buffer
- Pioneer Aggregates Property (791 ac)
- WA Township Range Section
- Tax Parcels

South Parcel Project

- Expansion Area (188 ac)
- Re-mine Area (125 ac)

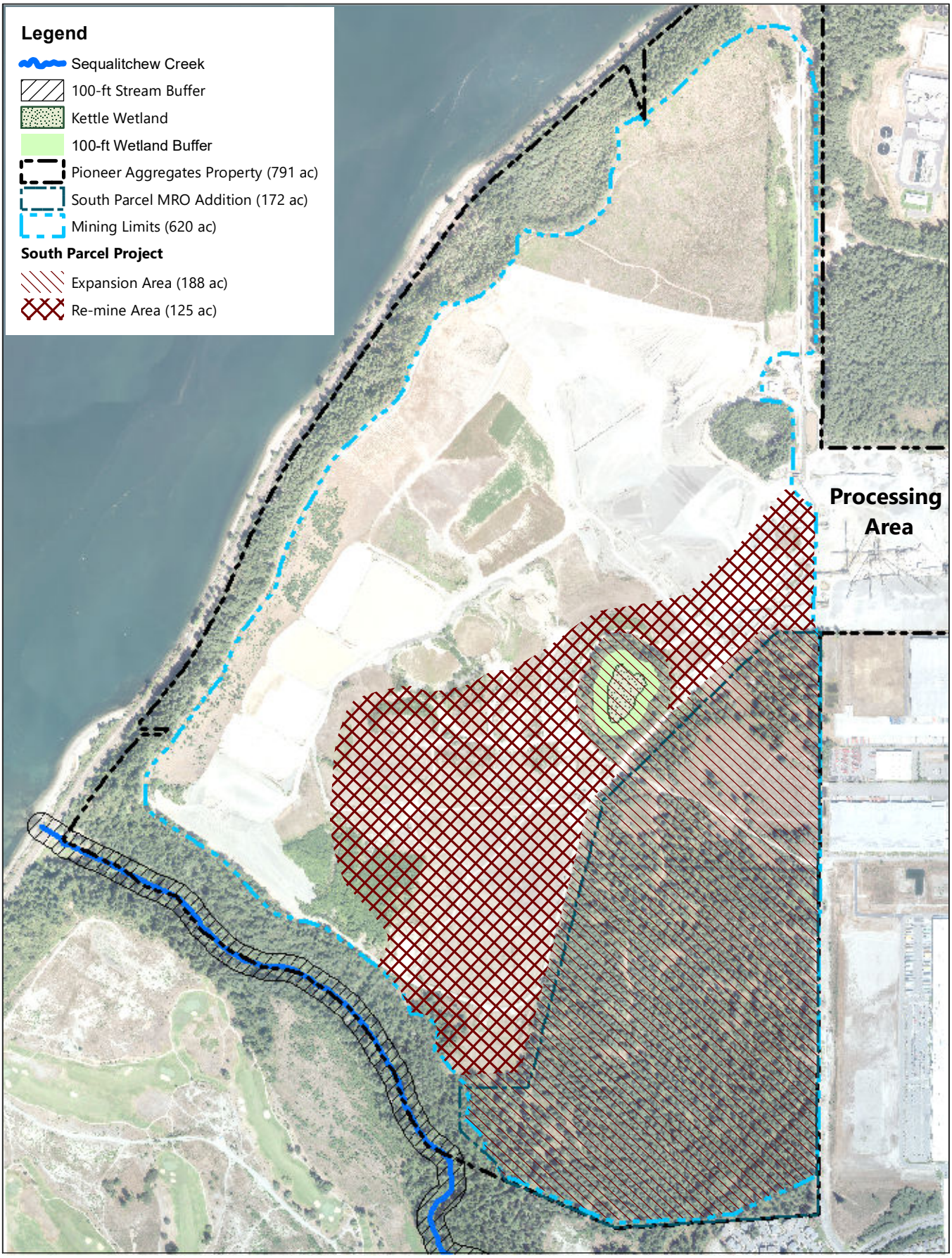
0 2,000
Feet

Publish Date: 2021/01/29, 11:19 AM | User: jfox
Filepath: \\orcas\GIS\Jobs\CalPortland_0217\DupontAggregate_SouthParcel\Map\2021_01_UpdatedFigs\CAR_Fig_1v2.mxd

ANCHOR QEA

Figure 1
Vicinity Map

Critical Areas Report
Pioneer Aggregates South Parcel Project



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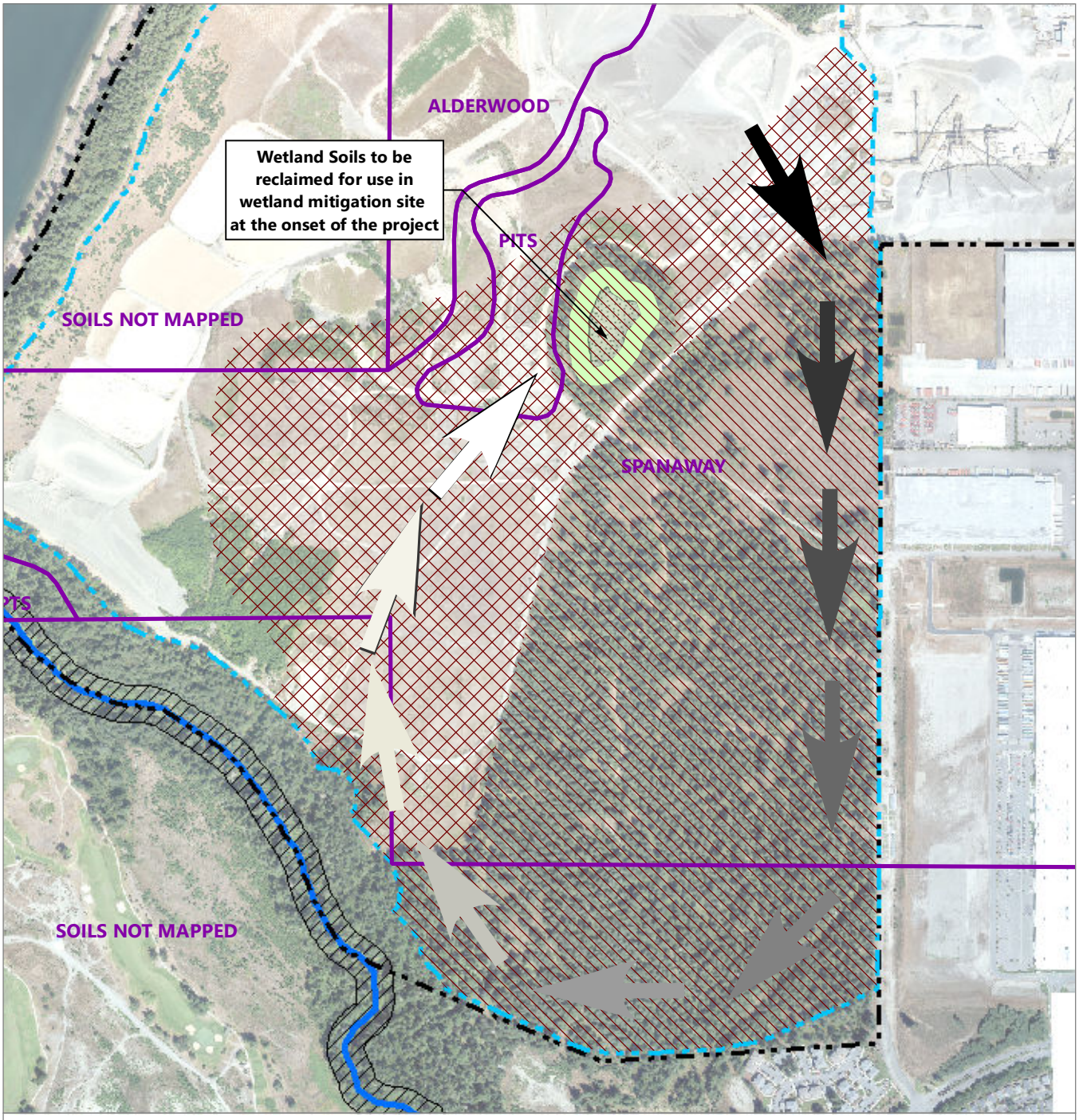
ANCHOR QEA

0 1,000
Feet

Figure 2
Critical Areas Site Plan
Critical Areas Report
Pioneer Aggregates South Parcel Project



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ANCHOR QEA

Figure 3
Generalized Mining Sequence
Critical Areas Report
Pioneer Aggregates South Parcel Project

GIS Path: T:\projects_8\DuPont\DuPontSouthParcel_040001\Delivered\Geologic Hazards Map - Existing Conditions.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 12/18/2019 || User: bgrimm || Print Date: 12/18/2019

Puget Sound

Older oversteepened mined slope

Active Railroad Corridor

Active Mining Slope

West Slope

East Slope

Reclaimed Slopes

Approximate contact with a permeable sediment over an impermeable sediment

Old Rail Grade/ Sequalitchew Creek Trail

Localized Cut and Fill Slopes for Old Rail Grade

Sequalitchew Creek

South Parcel

Mapped Geologically Hazardous Area

Area of Observed Seepage

Existing Slope 40% or Greater

Existing Slope Between 15% and 40%

40-ft. Contour (Pierce County LiDAR, 2011)

Pierce County Tax Parcel

N

0 500 1,000

Feet

Aerial imagery from Esri, 2017.

Geologic Hazards Map
Existing Conditions

Critical Areas Report and Habitat Management Plan
Pioneer Aggregates Mine Expansion (South Parcel)
Pierce County, Washington

DRAFT

Aspect Consulting	DEC-2019	BY: ETB / MAV / WEG	FIGURE NO. 4
	PROJECT NO. 040001-18	REVISED BY: ---	

Basemap Layer Credits || Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

GIS Path: T:\projects_8\DuPont\DuPontSouthParcel_040001\Delivered\Geologic Hazards Map - Proposed Conditions.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 12/18/2019 || User: bgrimm || Print Date: 12/18/2019

Puget Sound

Active Railroad Corridor

Reclaimed West Slope

East Slope

Constructed Mitigation Wetland

Potential Geologically Hazardous Area

Reclaimed Slope

Sequalitchew Creek

Proposed Mine Slopes (Graded into Pit)

Old Rail Grade/ Sequalitchew Creek Trail

50-ft. Setback from Top of Sequalitchew Creek Ravine Slopes

Temporary Berm

South Parcel

Mapped Geologically Hazardous Area

Slope 40% or Greater

Slope Between 15% and 40%

Pierce County Tax Parcel

0 500 1,000

Feet

Aerial imagery from Esri, 2017.

Geologic Hazards Map
Proposed Conditions

Critical Areas Report and Habitat Management Plan
Pioneer Aggregates Mine Expansion (South Parcel)
Pierce County, Washington

DRAFT

Aspect Consulting	DEC-2019	BY: ETB / MAV / WEG	FIGURE NO. 5
	PROJECT NO. 040001-18	REVISED BY: ---	

Basemap Layer Credits || Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Attachment 6.a

CITY OF DUPONT
Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

August 25, 2021

Sent via email only to:

Pete Stoltz
CalPortland
P O Box 1730
Seattle, WA 98111

Subject: Pioneer Aggregates South Parcel Project - Applications for PLNG2021-006 (Site Plan Review), PLNG2021-009 (Tree Modification), PLNG2021-010 (Critical Areas Permit), SEPA 2021-002 (SEPA)
Notice of Complete Application

Dear Mr. Stoltz:

On August 11, 2021, we received the following additional information to supplement your application for the above referenced applications for the proposed expansion of the project to the South Parcel:

- CalPortland cover letter dated August 11, 2021
- Completed Owner's Affidavit signed by Weyerhaeuser dated August 29, 2018
- Owner's Authorization Letter signed by Weyerhaeuser dated July 28, 2021
- Property Ownership Labels
- Copy of the current Surface Mine Reclamation permit issued by Washington DNR dated Sept. 4, 2013
- GeoDesign Reclamation Plan Application for Reclamation permit dated June 18, 2013
- Revised Tree Inventory Report prepared by Anchor QEA dated July 13, 2021
- Revised Narrative for Tree Modification, author and date unknown but received on August 11, 2021

In accordance with DMC 25.175.010(3)(c), your application is now complete for processing as the submission materials are sufficiently complete for review. As described in our letter dated June 28, 2021, we will proceed processing your application with the understanding that the screening of incompatible uses will be evaluated as part of the SEPA process and may eventually require that a landscape plan for the perimeter buffers be provided.

The City will be issuing a Notice of Application on August 30, 2021. The site will need to be posted with three public notice boards by that date. The notice boards can be picked up at City Hall. Please contact me or Janet Howald (jhowald@cityofdupontwa.gov) at the City to arrange for the pickup.

The notice boards should be installed five feet from your property line at the following three locations:

Figure 1 - Sign Location #1

Figure 2 - Sign Location #2

Figure 3 - Sign Location #3

We are working with the SEPA Consultant on the preparation of a master schedule and will provide a copy to you as soon as it's ready. In the meantime, if you have any questions, please call me at 253-912-5393, or email me at bkincaid@dupontwa.gov.

Sincerely,

Barb Kincaid, AICP
Director of Community Development

Cc: PLNG2021-006, -009, -010, SEPA2021-002
Sherri Ingles, Building Department
Mike Turner, City of DuPont Fire Marshal
Fred Foreman, City of DuPont Public Works
Scott Hein, City of DuPont Public Works
Dominic Miller, Gray & Osborne, Inc. (representing the City of DuPont)
Lisa Klein, AHBL, Inc. (representing the City of DuPont)

Attachment 6.b

CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

Notice of Application

Pioneer Aggregates South Parcel Project

The City of DuPont has received permit applications for the Pioneer Aggregates South Parcel Project that may be of interest to you and you are invited to comment on the proposal.

City File Nos.: PLNG2021-006 (Site Plan Review), PLNG2021-009 (Tree Modification), PLNG2021-010 (Critical Areas Permit) and SEPA2021-002 (SEPA)

Project Description: The proposal is to expand the mining operations currently occurring on the North Parcel to the South Parcel for an area of approximately 188 acres. The expansion to the South Parcel would extend mining at the current rate for approximately 14 additional years.

SEPA Environmental Review: The City has determined that the proposal may have probable significant environmental impacts and will be issuing a SEPA Determination of Significance (DS) / Scoping Notice in accordance with DMC Chapter 23.01, WAC 197-11-360 and WAC 197-11-420. The environmental review process will include a scoping of the range of environmental issues to be evaluated that will also include an extended scoping 30-day comment review period. Therefore, the City is leaving the public comment period on this Notice of Application open until conclusion of the EIS scoping comment period (estimated to occur early September and complete by mid-October 2021). The City will be publishing separately a Scoping Notice with comment due dates.

Date of Complete Application: August 25, 2021
Date of Notice of Application: August 30, 2021
Comment Due Date: This Notice of Application comment period is open until conclusion of the EIS scoping comment period (estimated to occur early September and complete by mid-October 2021). The City will be publishing separately a Scoping Notice with comment due dates.

Project Location: Sections 22, 23 and 26, Township 19N, Range 1E of the Willamette Meridian. The project location is bordered to the north and west by the existing Pioneer Aggregates mine; to the east by industrial/distribution facilities; and to the south by Sequalitchew Creek and the Creekside Village residential development.

Project Applicant: Pete Stoltz for Glacier Northwest, Inc. dba CalPortland

City Permits and Approvals: SEPA Environmental Determination (SEPA2021-002), Site Plan Review Approval (PLNG2021-006), Tree Modification Approval (PLNG2021-009), Critical Areas Review (PLNG2021-010), Site Development Permit, Building Permit, Determination of Transportation Concurrency. **A Type III land use process is required, including a public hearing and final decision by the City's Hearing Examiner.** Notice of the public hearing will be provided at least 15 days prior to the hearing.

Other Potential Permits and Approvals: NPDES Permit by Department of Ecology, Forest Practices Permit and Reclamation Permit by Department of Natural Resources, Potential Air Quality Permit by Puget Sound Clean Air Agency.

Consistency Review: The project will be evaluated for consistency with the City development regulations, including Title 12, Buildings & Construction; Title 14, Streets, Sidewalks, Curbs, Driveways and Parking Strips; Title 21, Water & Sewer Utilities; Title 22, Stormwater Utility; Title 23, Environment; and Title 25 Land Use Code.

Plans and Document Submitted for Review Include: South Parcel Project Plans, Stormwater Management Report, Conditions Matrix, Description of Proposal, Tree Inventory Report, Tree Modification Narrative, Parking Memorandum, VCP Application to Ecology, Cleanup Action Plan, Dept. of Ecology Opinion Letter on Proposed Cleanup, Critical Areas Report, Wetland Mitigation Plan, Geotechnical Engineering Report, Groundwater Model Update Report, Traffic Impact Assessment, Floodplain Habitat Assessment and Mitigation Report, Landscape Plan Approval Narrative, and others.

Agencies, tribes, and the public are encouraged to review and comment on the proposed projects and its probable environmental impacts. Copies of all application plans and documents may be viewed at City Hall at the location listed or at the following website location: https://www.dupontwa.gov/577/Pioneer-Aggregates-South-Parcel-Project. Comments must be submitted by the date noted above to:

Barb Kincaid, AICP
Community Development Director and City SEPA Official
City of DuPont
1700 Civic Drive
DuPont, WA 98327
(253) 912-5393 / bkincaid@dupontwa.gov

Attachment 6.c

AFFIDAVIT OF POSTING

1700 Civic Drive
DuPont, WA 98327
www.dupontwa.gov

Phone (253) 964-8121
Fax (253) 964-1455

Application # PLNG2021-006, PLNG2021-009 PLNG2021-010, SEPA2021-002 and/or Case # _____

I, Peter Stoltz for Glacier Northwest, Inc. dba CalPortland applicant/applicant's agent for the above referenced project number, being duly sworn on oath, deposes and says: That on the 27th day of August, 2021 I posted a notice, prominently displayed, at the site.

Site/Project Description: Entrance to Pioneer Aggregates on Pioneer Way. The Southeast corner of Parcel No. 0119262016 within the South Parcel Lease Area near Powerline Road, and on the North side of the Sequalitchew Creek Trail near the Southwest corner of parcel 0119224004.

Signed By

Notarization/Certification

State of Washington, County of KING

Signed or attested before me this 30 day of AUGUST, 2021.

(Seal or Stamp)

HOLLY MCELROY NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 11-22-21

X _____
Signature of notary public

HOLLY MCELROY
Printed or stamped name of notary public

THANK YOU for your legal submission!

Your legal has been submitted for publication. Below is a confirmation of your legal placement. You will also receive an email confirmation.

ORDER DETAILS

Order Number:
IPL0038649
Order Status:
Submitted
Classification:
Legals & Public Notices
Package:
TAC - Legal Ads
Final Cost:
744.39
Payment Type:
Account Billed
User ID:
IPL0024894

ACCOUNT INFORMATION

CITY OF DUPONT *LEGALS IP
1700 CIVIC DR
DUPONT, WA 98327-9603
253-964-8121
noemail@noemail.com
CITY OF DUPONT *LEGALS

TRANSACTION REPORT

Date
August 25, 2021 3:13:10 PM EDT
Amount:
744.39

SCHEDULE FOR AD NUMBER IPL00386490

August 30, 2021
The News Tribune (Tacoma)

PREVIEW FOR AD NUMBER IPL00386490

Notice of Application
Pioneer Aggregates South Parcel Project

The City of DuPont has received permit applications for the Pioneer Aggregates South Parcel Project that may be of interest to you and you are invited to comment on the proposal.
City File Nos.: PLNG2021-006 (Site Plan Review), PLNG2021-009 (Tree Modification), PLNG2021-010 (Critical Areas Permit) and SEPA2021-002 (SEPA)
Project Description: The proposal is to expand the mining operations currently occurring on the North Parcel to the South Parcel for an area of approximately 188 acres. The expansion to the South Parcel would extend mining at the current rate for approximately 14 additional years.
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Project Applicant: Pete Stoltz for Glacier Northwest, Inc. dba CalPortland
City Permits and Approvals: SEPA Environmental Determination (SEPA2021-002), Site Plan Review Approval (PLNG2021-006), Tree Modification Approval (PLNG2021-009), Critical Areas Review (PLNG2021-010), Site Development Permit, Building Permit, Determination of Transportation Concurrency.
A Type III land use process is required, including a public hearing and final decision by the City's Hearing Examiner. Notice of the public hearing will be provided at least 15 days prior to the hearing.
Other Potential Permits and Approvals: NPDES Permit by Department of Ecology, Forest Practices Permit and Reclamation Permit by Department of Natural Resources, Potential Air Quality Permit by Puget Sound Clean Air Agency.
Consistency Review: The project will be evaluated for consistency with the City development regulations, including Title 12, Buildings & Construction; Title 14, Streets, Sidewalks, Curbs, Driveways and Parking Strips; Title 21, Water & Sewer Utilities; Title 22, Stormwater Utility; Title 23, Environment; and Title 25 Land Use Code.
Plans and Document Submitted for Review Include: South Parcel Project Plans, Stormwater Management Report, Conditions Matrix, Description of Proposal, Tree Inventory Report, Tree Modification Narrative, Parking Memorandum, VCP Application to Ecology, Cleanup Action Plan, Dept. of Ecology Opinion Letter on Proposed Cleanup, Critical Areas Report, Wetland Mitigation Plan, Geotechnical Engineering Report, Groundwater Model Update Report, Traffic Impact Assessment, Floodplain Habitat Assessment and Mitigation Report, Landscape Plan Approval Narrative, and others.
Agencies, tribes, and the public are encouraged to review and comment on the proposed projects and its probable environmental impacts. Copies of all application plans and documents may be viewed at City Hall at the location listed or at the following website location: https://www.dupontwa.gov/577/Pioneer-Aggregates-South-Parcel-Project. Comments must be submitted by the date noted above to: Barb Kincaid, AICP, Community Development Director and City SEPA Official , City of DuPont, 1700 Civic Drive, DuPont, WA 98327, (253) 912-5393 / bkincaid@dupontwa.gov
W00000000
Publication Dates

<< Click here to print a printer friendly version >>

FILE NO.:PLNG2021-006, 009,010
SEPA2021-002
APPLICANT: Pete Stoltz
Glacier Northwest, Inc. dba CalPortland

DECLARATION OF POSTING
CITY HALL NOTICE BOARD

On the 30th day of August, 2021, the attached a Notice of Application to City of DuPont File No. PLNG2021-006, 009, 010, SEPA2021-002 was posted on the City of DuPont public notice board.

I, Janet Howald, hereby declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct this of 30th of August, 2021 at DuPont, Washington.

Signed: Janet Howald

Attachment 6.d

CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

STATE ENVIRONMENTAL POLICY ACT (SEPA)
DETERMINATION OF SIGNIFICANCE (DS)

And Request for Comments on the Scope of the Environmental Impact Statement (EIS) for

Pioneer Aggregates South Parcel Project

Proponent: Glacier Northwest Inc. dba CalPortland, 4301 Pioneer Avel, DuPont, WA 98327 and 3450 S. 344th Way Suite #201, Federal Way, WA 98001

Location of Proposal: The proposed South Parcel Project site is located to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont in southwestern Pierce County. The site is located within the City's designated Mineral Resource Overlay and is bordered to the north and west by the existing Pioneer Aggregates mine; to the east by industrial/distribution facilities including Amazon, Dania, Pier 1 Imports, and FedEx; and to the south by Sequalitchew Creek and the Creekside Village residential development. The South Parcel Project would occur on lands owned by Weyerhaeuser Company and leased to CalPortland.

Background Information: CalPortland's original sand and gravel mine ("Existing Mine") was permitted in 1997 (355 acres). An EIS and Supplemental EIS were prepared for that proposal, which included construction of a dock at Tatsolo Point for shipment of mined material by barge. In 2006, the City amended its Comprehensive Plan to revise its overall land use plan to expand the City's Mineral Resource Overlay. The expanded Mineral Resource Overlay includes an approximately 200-acre area leased by CalPortland southeast of the Existing Mine ("South Parcel") and an approximately 201-acre area located north of the existing mine ("North Parcel'). After the City issued a Supplemental EIS (SEIS) for the South Parcel in 2007, CalPortland submitted permit applications to mine the South Parcel. In 2009, a group of environmental and conservation organizations formally disputed the South Parcel activities and mitigation measures proposed at the time. This dispute process resulted in the *2011 Settlement Agreement for DuPont Mine, Restoration of Sequalitchew Creek Watershed, and Preservation of Puget Sound Shorelands and Adjacent Open Space* (2011 Settlement Agreement) that set forth a process for the submittal and review of permit applications (including SEPA review) for the North Parcel first and then the South Parcel. The Settlement Agreement was signed by a contingent of stakeholders, referred to as the environmental caucus, which consists of CalPortland, City of DuPont, Washington State Department of Ecology, Nisqually Delta Association, Washington Environmental Council, People for Puget Sound, Black Hills Audubon Society, Tahoma Audubon Society, Seattle Audubon Society, and the Anderson Island Quality of Life Committee. The Settlement Agreement also prescribed the process for the development, funding, and implementation of a Sequalitchew Creek Restoration Plan to help restore and enhance the Sequalitchew Creek watershed, including flows along the length of the Sequalitchew Creek. As provided for in the 2011 Settlement Agreement, in 2013 CalPortland applied for permits to allow mining within the North Parcel. Following publication of a Final EIS ("North Parcel EIS") in 2013, the North Parcel mining expansion was permitted in 2014. The North Parcel EIS contemplated mining the South Parcel as an

independent but related proposal and evaluated the cumulative impacts of mining both the North and South Parcels. In May 2021, CalPortland applied for permits to allow mining within the South Parcel, as described below.

Description of the Proposal: The proposed South Parcel mining project includes horizontal expansion of mining into approximately 188 acres previously undisturbed by mining, and vertical expansion of approximately 125 acres where re-mining will deepen a portion of the existing Pioneer Aggregates mine. In advance of the mining, the project proposes to install wells to intercept and pump groundwater to dry out gravels for mining. The intercepted groundwater would be reinfiltrated on the floor of the existing mine. The South Parcel Project is anticipated to extend mining at the current rate for approximately 14 additional years.

Lead Agency: City of DuPont

EIS Required: The City of DuPont, as SEPA lead agency, has determined that this project may have a significant adverse impacts on the environment, and that an Environmental Impact Statement (EIS) should be prepared, consistent with RCW 43.21C.030 (2)(c). The EIS will address probable significant adverse environmental impacts of the proposed South Parcel Project and will build upon the information and analysis in other environmental review for the mines, including the 1992 *Pioneer Aggregates Mining Facility and Reclamation Plan EIS,* 2006/2007 *Glacier Northwest Dupont Mining Area Expansion and North Sequalichew Resoration Project SEIS*, and the 2013 *CalPortland DuPont North Parcel Mining EIS*.

EIS Issues: The City has *preliminarily* determined that the following elements of the environment will be included in the *Pioneer Aggregates South Parcel Project EIS*:

- **Earth**
- **Air Quality**
- **Surface Water and Groundwater**
- **Fisheries**
- **Plants and Animals**
- **Noise**
- **Land and Shoreline Use**
- **Aesthetics**
- **Cultural Resources**
- **Transportation**

EIS Alternatives: The Alternatives that have *preliminarily* been identified for analysis in the *Pioneer Aggregates South Parcel Project EIS* include:

- **Alternative 1 – No Action Alternative** – Assumes no mining on the South Parcel within the context of existing conditions.
- **Alternative 2 – Proposed South Parcel Project** (With Restored Sequalitchew Creek) – Implementation of proposed South Parcel Project within the context of creek restoration.

Scoping: Agencies, affected tribes, and members of the public are invited to comment on the scope of the EIS, including alternatives, probable significant adverse impacts, mitigation measures, and licenses or other approvals that may be required.

30-day public comment period: The EIS scoping will provide opportunities for the agencies/tribes/public to provide input to the environmental review process. **All comments are due no later than 5:00 PM, October 20, 2021.**

Scoping comments from the general public may be submitted in writing at a public scoping open house or at any time during the 30-day scoping comment period through the following ways:

Online Comment Portal: https://www.dupontwa.gov/619/Pioneer-Aggregates-Project-Portal

- Email: Barbara Kincaid at *bkincaid@dupontwa.gov*
- Delivery: Drop off at City Hall
- Mail: Barbara Kincaid
  City of DuPont
  1700 Civic Drive
  DuPont, WA 98327

One public scoping open house will be held. The scoping open house will be held on Thursday, September 30, 2021, from 6:00 PM to 8:00 PM at the City of DuPont Council Chambers, 1700 Civic Dr., DuPont, WA. This event will provide an in-person opportunity to view materials on the project and learn about applicable review procedures. All staff and members of the public will be required to wear a mask and maintain six-feet distance. Public safety measures and policies are subject to change.

The City of DuPont is committed to making all City-sponsored public meetings and events accessible to people with disabilities. If you need assistance in participating in this meeting due to a disability, please contact Janet Howald at 253.912.5232 or by emailing jhowald@dupontwa.gov at least three (3) business days prior to the scheduled meeting to request an accomodation.

Dated: Sept. 17, 2021

Signed: Barbara Kincaid

Barbara Kincaid, Community Development Director
SEPA Responsible Official

Attachment 6.e

CITY OF DUPONT
1700 Civic Drive, DuPont, WA 98327
Telephone: 253.964.8121
www.dupontwa.gov

June 14, 2024

NOTICE OF AVAILABILITY OF THE DRAFT EIS AND REVISED PUBLIC COMMENT PERIOD

Notice is provided of the availability of the Draft Environmental Impact Statement (DEIS) for the proposed ***Pioneer Aggregates South Parcel Project*, City File No. SEPA 2021-002**

The proposed *Pioneer Aggregates South Parcel Project* would occur on an approximately 313-acre site located on and to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont, southwestern Pierce County, sections 22, 23, and 26, Township 19 North, Range 1 East of the Willamette Meridian. The site includes areas previously undisturbed by mining (termed the "Expansion Area") and mining deeper within a portion of existing mine, referred to as the "Re- Mine Area". The Expansion Area is approximately 188 acres and is comprised of three subareas as follows: The Kettle Area is a 10.8-acre previously undisturbed area; the 9.2-acre Buffer Strip is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the South Parcel; and, the South Parcel Area is 168 acres located southeast of the original mine. The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where current mining activities are permitted above current groundwater levels.

This DEIS analyzes the probable significant adverse environmental impacts associated with one alternative and one no action alternative, including:

- **Alternative 1 (Proposed Action)** – Horizontal expansion of mining into approximately 188 acres previously undisturbed by mining (Expansion Area) and vertical deepening of approximately 125 acres of the existing mine; and,

- **Alternative 2** – **No Action Alternative**.

The 30-day public comment period associated with this Draft EIS is: **June 14, 2024 through ~~July 15, 2024~~ July 22, 2024**

Comments may be made via the City of DuPont website at:
https://www.dupontwa.gov/719/Pioneer-Aggregates-South-Parcel-Project-

Or by providing hard copies via US mail or hand delivery to The City of DuPont at 1700 Civic Drive, DuPont, WA 98327 care of Barb Kincaid.

This Draft EIS can be reviewed at the City of DuPont website at:
https://www.dupontwa.gov/719/Pioneer-Aggregates-South-Parcel-Project-
A copy of the DEIS can also be reviewed at the City of DuPont at 1700 Civic Drive, DuPont, WA 98327

Thank you for your interest in the ***Pioneer Aggregates South Parcel Project*** Draft EIS.

Attachment 6.f

CITY OF DUPONT
1700 Civic Drive, DuPont, WA 98327
Telephone: 253.964.8121
www.dupontwa.gov

NOTICE OF AVAILABILITY OF FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

Notice is hereby given under WAC 197-11-460 and 197-11-510 that the City of DuPont is issuing the Final Environmental Impact Statement (Final EIS) for the proposed ***Pioneer Aggregates South Parcel Project*.**

Project Name: Pioneer Aggregates South Parcel Project
Proponent: CalPortland
Lead Agency: City of DuPont Public Services Department
File Number: SEPA 2021-002
Final EIS Issuance Date: May 22, 2025

Description of the Proposal: The proposed *Pioneer Aggregates South Parcel Project* would occur on an approximately 313-acre site located on and to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont, southwestern Pierce County, sections 22, 23, and 26, Township 19 North, Range 1 East of the Willamette Meridian. The site includes areas previously undisturbed by mining (termed the "Expansion Area") and mining deeper within a portion of existing mine, referred to as the "Re- Mine Area". The Expansion Area is approximately 188 acres and is comprised of three subareas as follows: The Kettle Area is a 10.8-acre previously undisturbed area; the 9.2-acre Buffer Strip is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the South Parcel; and, the South Parcel Area is 168 acres located southeast of the original mine. The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where current mining activities are permitted above current groundwater levels.

A Draft Environmental Impact Statement (DEIS) was prepared and issued on June 14, 2024 with a 30-day comment period. Agencies, affected tribes, and members of the public were invited to comment on the DEIS through July 14, 2024. The DEIS process was provided pursuant to the Washington Administrative Code (WAC) 197-11-455. Information regarding the EIS process can be reviewed on the city's website at: https://www.dupontwa.gov/577/Pioneer-Aggregates-South-Parcel-Project

The DEIS analyzed the probable significant adverse environmental impacts associated with one alternative and one no action alternative, including:

- **Alternative 1 (Proposed Action)** – Horizontal expansion of mining into approximately 188 acres previously undisturbed by mining (Expansion Area) and vertical deepening of approximately 125 acres of the existing mine; and,

- **Alternative 2** – **No Action Alternative**.

Mitigation: The Final EIS has identified impacts and mitigation measures for Alternative 1 (Proposed Action).

Availability of the FEIS and Background Materials: The Draft EIS and Final EIS may be viewed on the city's website at https://www.dupontwa.gov/719/Pioneer-Aggregates-South-Parcel-Project-

Appeal and Noticing: This notice of availability is provided in accordance with WAC 197-11-460. The City will not take action on the proposal for 7 days following the issuance date of this notice. The adequacy of this Final EIS may be appealed to the DuPont Hearing Examiner in accordance with the DuPont Municipal Code (DMC) 23.01.210. Timely appeals shall be delivered, with the appropriate appeal fee, to the SEPA Lead Agency by mail or by personal delivery before 5pm within 14-days of the issuance of this Final EIS, on or before June 5, 2025. Information for filing an appeal may be found on the city's website at this location: https://www.codepublishing.com/WA/DuPont/#!/DuPont23/DuPont2301.html#23.01.210 or by contacting the SEPA Lead Agency Contact.

SEPA Lead Agency Contact: Barb Kincaid, Public Services Director and SEPA Responsible Official, bkincaid@dupontwa.gov

Attachment 6.h

CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

Notice of Public Hearing
Pioneer Aggregates South Parcel Mine Expansion Project

City File Nos: PLNG2021-006 (Site Plan Review), PLNG2021-009 (Tree Modification), PLNG2021-010 (Critical Areas Permit), PLNG2021-002 (SEPA)

Project Description: The proposed *Pioneer Aggregates South Parcel Project* is on an approximately 313-acre site located on and to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont. The site includes areas previously undisturbed by mining (termed the "Expansion Area") and mining deeper within a portion of existing mine, referred to as the "Re- Mine Area". The Expansion Area is approximately 188 acres and is comprised of three subareas as follows: The Kettle Area is a 10.8-acre previously undisturbed area; the 9.2-acre Buffer Strip is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the South Parcel; and the South Parcel Area, which is 168 acres located southeast of the original mine. The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where current mining activities are permitted above current groundwater levels. The Project includes horizontal expansion of mining into the Expansion Area, and vertical expansion of mining (deepening) in the Re-Mine Area.

Project Location: The proposed South Parcel Project activities will be focused southeast of the existing Pioneer Aggregates Mine in the City of DuPont, southwestern Pierce County, sections 22, 23, and 26,
Township 19 North, Range 1 East of the Willamette Meridian. The South Parcel Mine site is made up of 7 tax parcels: 011926-2015, -2016, 011923-3011, -3014, -3015, -3016, -3017. The existing mine (re-mine) area is comprised of 23 tax parcels: 011922-1007, -1008, -1009, -1010, -1011, -1012, -1013, 1014, -1015, 4004, -4005, -4006, -4007, -4008, -4009; 011923-2008, -2009, -2010, -2011, -2012, -3010, -3012 - 3013.

Public Hearing Date and Time:	June 20, 2025 at 10:00 a.m.
Public Hearing Location:	DuPont City Hall / Council Chambers 1700 Civic Drive Dupont, WA 98327
Project Applicant & Representative:	Pete Stoltz Glacier Northwest, Inc. dba CalPortland 3450 S 344th Way, Suite 201 Federal Way, WA 98001

A public hearing will be held with the City of DuPont Hearing Examiner on June 20, 2025 at 10:00 a.m. in accordance with the procedures provided in DMC 25.175.010 and DMC 25.60.060. If the SEPA Final Environmental Impact Statement (FEIS) is appealed, the appeal will be heard by the Hearing Examiner at the same hearing, per the requirements of DMC 23.01.210.

Public Comments: This is a hybrid meeting. Anyone who wishes to testify/comment on the proposal may do so in person or via the following ZOOM link:

https://us02web.zoom.us/j/88549971128?pwd=0FSM566rQkcbZ0PGQOJGACNh5K8fI3.1
Meeting ID: 885 4997 1128
Passcode: 861875

Anyone wishing to comment on the proposal may do so in writing by submitting written comments up to the date of the hearing (submit by 2:00 pm on June 19, 2025). The comments should be submitted either by email to Barb Kincaid at bkincaid@dupontwa.gov or by dropping off at DuPont City Hall at the address above. For questions, contact Barb Kincaid at her email address or at (253) 912-5393.

Staff Report & Recommendations: A determination of consistency with DMC 25.150 Site Plan, DMC 25.105 Critical Areas, and DMC 25.120 Tree Retention will be completed per DMC 25.175.040(1). The evaluation will be summarized in a staff report available for review approximately seven (7) days prior to the public hearing. The application materials and staff report may be viewed on the City's website as follows:
Pioneer Aggregates South Parcel Project | DuPont, WA - Official Website (dupontwa.gov)

Notice of Hearing issued on June 4, 2025

Attachment 6.i

AFFIDAVIT OF POSTING

CITY OF DUPONT
1700 Civic Drive, DuPont, WA 98327
Telephone 253.964.8121
www.dupontwa.gov

Application #_____ and City File No. PLNG2021-006, PLNG2021-009, PLNG2021-010, PLNG2021-002

I, Pete Stoltz applicant/applicant's agent for the above referenced project number, being duly sworn on oath, deposes and says: That on the 4th day of June, 2025 posted a notice, prominently displayed, at the site.

Site/Project Description: Pioneer Aggregates South Parcel Project Hearing Notice signs were posted along the Sequalitchew Creek Trail, on the fence along Power Line Road and at the entrance to the gravel/concrete plant on Pioneer Way.

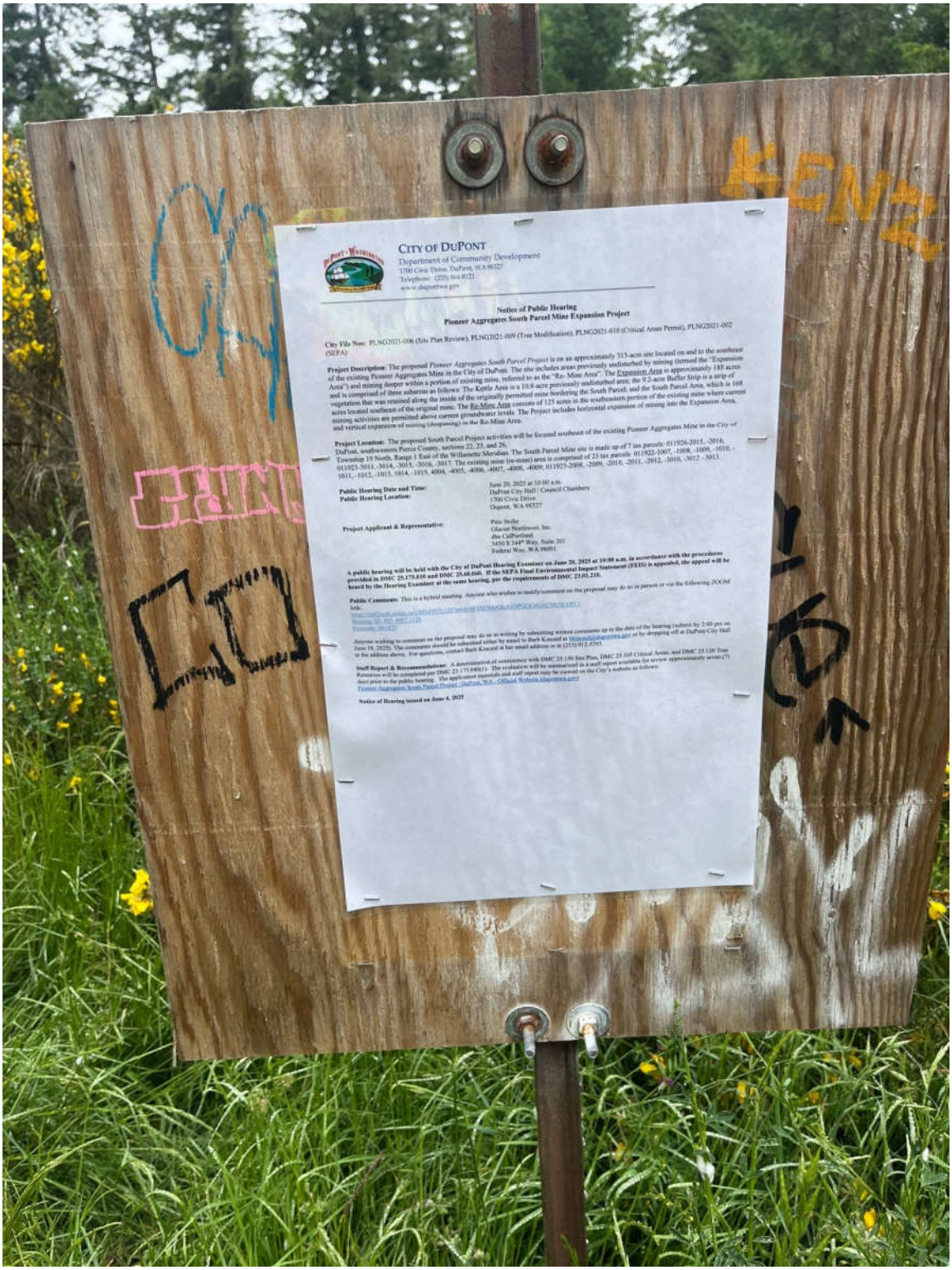
Signed BY

Pete Stoltz
Print Name

Glacier Northwest, Inc. dba CalPortland
Company Name

Submit Form and Photos of Posting to: Permits@dupontwa.gov

Rev.2021



Noticed Posted Along Sequalitchew Creek Trail.

Notice Posted on Fence Near Powerline Road.

Notice Posted at Entrance to Glacier's Pioneer Aggregates Plant.

Attachment 8.a

Final Agreement
John Darling
7-22-03

SETTLEMENT AGREEMENT
FOR
LONE STAR NORTHWEST DUPONT PROJECT

December 25, 1994

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SETTLEMENT AGREEMENT
FOR
LONE STAR NORTHWEST DUPONT PROJECT

THIS SETTLEMENT AGREEMENT is dated this 25th day of December, 1994, and executed by and among the WASHINGTON STATE DEPARTMENT OF ECOLOGY ("Ecology"); the CITY OF DUPONT ("City"); LONE STAR NORTHWEST, INC. ("Lone Star"); WEYERHAEUSER REAL ESTATE COMPANY ("WRECO"); the NISQUALLY DELTA ASSOCIATION ("NDA"); the BLACK HILLS AUDUBON SOCIETY; the WASHINGTON ENVIRONMENTAL COUNCIL ("WEC"); the NATIONAL AUDUBON SOCIETY; PEOPLE FOR PUGET SOUND; the TAHOMA AUDUBON SOCIETY; the SEATTLE AUDUBON SOCIETY; and ANDERSON ISLAND QUALITY OF LIFE COMMITTEE ("Anderson Island QOLC").

Recitals

A. Lone Star and WRECO are the proponents of the Pioneer Aggregates Project, which is described in an Environmental Impact Statement issued by the City of DuPont and the State Department of Ecology on February 4, 1993. The originally proposed project involves a sand and gravel mining operation and improvements to an existing dock to accommodate a sand and gravel barge transshipment facility for transport of related construction materials. The project is proposed on lands within the City of DuPont limits, most of which are owned by WRECO and leased by Lone Star. The Nisqually Delta area contains important wetlands, shoreline, and upland habitat and wildlife, and is rich in natural resources including gravel resources.

B. The City approved a Site Plan Approval, Shoreline Substantial Development Permit, and a Shoreline Conditional Use Permit for the Pioneer Aggregates Project on September 2, 1993.

C. On October 15, 1993, Ecology denied the Conditional Use Permit pursuant to RCW 90.58.140(12) and appealed issuance of the Substantial Development Permit to the Shorelines Hearings Board (SHB No. 93-65).

D. On October 15, 1993, the NDA and the Black Hills Audubon Society appealed the City's decision to issue a Shoreline Substantial Development Permit and Shoreline Conditional Use Permit to the Shorelines Hearings Board (SHB No. 93-64).

E. In addition, the NDA and Judith Krill and Karl Krill appealed the Site Plan Approval to Pierce County Superior Court (Pierce County Cause No. 93-2-09515-1). Judith Krill and Karl Krill have dismissed their appeal.

F. On October 26, 1993, WRECO and Lone Star appealed Ecology's denial of the Shoreline Conditional Use Permit to the Shoreline Hearings Board (SHB No. 93-69). All of the respective shoreline appeals were consolidated by order of the Shorelines Hearings Board in its Pre-Hearing Order dated December 14, 1993.

G. Long-standing disputes have surrounded the appropriate shoreline designation and permitted uses of the subject shoreline area in the City of DuPont as detailed in the Requests for Review of the various parties. In 1975, the subject portion of the Dupont Shoreline of Statewide Significance surrounding the dock was designated "Urban" under a Master Program approved by the City and Ecology. The use of the shoreline for an industrial-related dock has been disputed in prior court proceedings because of the proximity of the existing dock to the Nisqually National Wildlife Refuge and its location on a shoreline of statewide significance. In 1990, Lone Star submitted permit applications for the Pioneer Aggregates Project which proposed use and rehabilitation of the DuPont dock for a sand and gravel barge transshipment facility. The Lone Star proposal renewed opposition to the Urban shoreline designation, and the subject appeals eventually ensued.

H. In January 1994, the parties retained a professional mediator to facilitate settlement discussions to determine whether a settlement agreement that meets the needs and interests of the various parties could be reached.

I. Through the mediation sessions, a new vision for the DuPont shoreline has emerged which, if implemented, will end the long-standing disputes between various parties to this Agreement and establish a framework for cooperative efforts among the various interest groups. This framework would ensure that the shoreline of statewide significance is preserved and protected in a manner that allows enhanced public access for the citizens of DuPont, while allowing valuable gravel resources to be available to the Puget Sound region. It is the desire of the parties to reach a lasting settlement.

J. In order to avoid protracted litigation and its associated costs, all parties desire to resolve fully all of their disputes regarding the Pioneer Aggregates Project. It is understood that the parties undertake this compromise and settlement of disputed issues of law and fact without admitting any error or liability with respect to their previous actions or legal positions.

K. For purposes of this Agreement, certain terms shall have the following meanings: the term "parties" shall mean the undersigned parties to this Settlement Agreement; the term "non-governmental parties" shall mean all parties, except Ecology and the City.

In consideration of the promises and covenants contained herein, the parties agree as follows:

AGREEMENTS

I. PROGRAMMATIC AND PROJECT REVISIONS

A. Overview.

1. The non-governmental parties agree to propose programmatic and permit actions to implement a new vision for the DuPont shoreline. That vision would serve both public and private interests by protecting the environment and providing a location for water shipment of the aggregate resource found in DuPont. The location of the sand and gravel barge

transshipment facility would be moved northward near Tatsolo Point, approximately 1.5 miles farther away from the Nisqually National Wildlife Refuge than is the existing dock. WRECO and Lone Star would abandon all plans to use the existing DuPont dock as a commercial shipping facility, and the area would be available to the public for shoreline access and passive recreational uses consistent with a Conservancy designation. In addition to these mitigation measures, additional mitigation would be provided as set forth in Section II below.

2. The parties recognize that a number of programmatic and permit-specific actions will be required to implement the new vision for the DuPont shoreline. Those actions include: the programmatic actions of a Shoreline Master Program amendment and a DuPont Comprehensive Plan Update; revised project applications; and for all actions compliance with the State Environmental Policy Act ("SEPA"). This Agreement sets forth a process by which each of these programmatic and project-specific components will be undertaken.

a. The specific agreements regarding amendments to the Shoreline Master Program are set forth in Section I.B.

b. The specific agreements regarding the City Comprehensive Plan Update are set forth in Section I.C.

c. The specific agreements regarding revisions to project permits are set forth in Section I.D.

d. SEPA compliance provisions are contained in Section I.E.

e. A critical path containing milestones by which certain key actions are to occur is set forth in Attachment A.

3. The non-governmental parties to this Agreement agree to use their best efforts to obtain all programmatic and project-specific approvals necessary to implement this Settlement Agreement, including but not limited to, providing testimony and letters of support on environmental documents and at public hearings on the proposed Comprehensive Plan Update,

proposed Shoreline Master Program amendments, and project-specific revisions as set forth in this Agreement. The non-governmental parties agree not to challenge any of the programmatic or project-specific approvals granted by private, local, state or federal entities, or any of the environmental documents or decisions issued consistent with this Agreement.

4. The governmental entities agree to consider the programmatic and project-specific proposals in good faith and in accordance with the agreed upon process and schedules set forth in this Agreement, and as set forth in Attachment A.

B. DuPont Shoreline Master Program Amendment.

1. The non-governmental parties agree to actively support an amendment to the DuPont Shoreline Master Program which would accomplish the objectives of this Settlement Agreement. The amendment to the DuPont Shoreline Master Program that will be proposed to accomplish these objectives shall be substantially in the form contained in Attachment B attached hereto and incorporated herein by reference ("Proposed DSMP Amendment"). The Proposed DSMP Amendment will be processed strictly in accordance with the provisions of WAC ch. 173-19. The Proposed DSMP Amendment provides for:

a. A map and text amendment to allow location of a sand and gravel barge transshipment facility in the Tatsolo Point area, by establishing a Special Management Unit or other appropriate shoreline designation that permits those uses described in Section II.B.4 below (hereinafter referred to as the "Special Management Unit"). The sand and gravel barge transshipment facility will be used solely for those uses described in Section II.B.4 below.

b. A map amendment to eliminate the existing Urban shoreline designation near the mouth of Sequalitchew Creek and to redesignate this area as a Conservancy environment. Elimination of the Urban shoreline designation will occur concurrently with the final approval of the Proposed DSMP Amendment as set forth in Attachment B and immediately

prior to the approval of the state and local permits necessary for construction of the sand and gravel barge transshipment facility.

2. The non-governmental parties to this Agreement agree to support the Proposed DSMP Amendment and to work cooperatively towards its adoption by the governmental entities by actions that will include, but are not limited to, letters and testimony in support of the amendment.

3. The City agrees to consider the Proposed DSMP Amendment in good faith, and will submit a final decision to Ecology according to the agreed upon public process and schedules set forth herein and in Attachment A. Ecology and the City will fully comply with the public comment and participation requirements of RCW 34.05 and WAC 173-19.

4. Ecology agrees to consider the City's submittal on the Proposed DSMP Amendment in good faith and according to the agreed upon process and schedules set forth herein and in Attachment A. Ecology will determine whether the City's submittal is consistent with the Shoreline Management Act under Ecology's powers granted to it under the Act.

5. The non-governmental parties agree not to appeal the approval of the Proposed DSMP Amendment if it is approved, provided it is adopted in substantially the form attached hereto as Attachment B.

C. Proposed DuPont Comprehensive Plan Update.

1. The City is currently in the process of updating its Comprehensive Plan pursuant to the requirements of Washington's Growth Management Act.

2. Ecology and the non-governmental parties agree not to oppose the following components of a Comprehensive Plan Update:

a. Shoreline provisions which show an intent to eliminate the existing Urban shoreline designation and establish a Special Management Unit in the Tatsolo Point area

and which would provide for any other details necessary for the Comprehensive Plan to be consistent with the Proposed DSMP Amendment as set forth in Attachment B.

b. Public Access provisions which include a new public access trail down the north side of Sequalitchew Creek that extends ten feet on either side of the center line of the narrow gauge railway (rather than the south side of the Creek as presently shown in the 1985 Comprehensive Plan) to the mouth of Sequalitchew Creek on the Puget Sound shoreline as set forth in Attachment H. The public access area will be available for passive recreational uses consistent with the Conservancy designation.

c. Land Use provisions consistent with the plan for Hoffman Hill prepared by Peter Calthorpe as set forth in Attachment D attached hereto and incorporated herein by reference, which accommodate WRECO's plans for residential development of Hoffman Hill in the future.

d. Mineral Resource Lands provisions including a mineral resource lands designation, which applies to the lands north of Sequalitchew Creek, as designated as the Pioneer Aggregates' Lease Area, as depicted in Attachment C, and policies which meet the requirements of the Growth Management Act and make these lands available for resource extraction under industrial zoning.

3. The City agrees to consider the proposed Comprehensive Plan Update set forth above in good faith and according to the schedules set forth in Attachment A.

D. Revised Project Applications.

1. WRECO and Lone Star agree to seek permits and approvals for a Revised Project, which shall be defined to mean the Pioneer Aggregates Project as approved by City of DuPont Ordinance Nos. 485 and 486, except as modified to relocate the sand and gravel barge transshipment facility in the Tatsolo Point area, together with related relocation of the access road and conveyor system, and as modified to add or remove conditions. The permits and

Section I.D.1 (cont'd.)

approvals sought by WRECO and Lone Star pursuant to this paragraph, shall specifically not include an asphalt plant or concrete plant consistent with the specific deletion of such facilities by the City Council in their approval of Ordinance Nos. 485 and 486. A recordable declaration in the form annexed hereto as Attachment K shall be executed, which shall prohibit use of the Pioneer Aggregates Lease Area for an asphalt or concrete plant for a period of 99 years from the date of execution of this Agreement. An illustrative depiction of the Revised Project is contained in Attachment E. The parties agree that the final location of the Revised Project will be within the City of DuPont and further agree that the dock location will be within the range shown in Attachment B as the location for the Special Management Unit, which the parties agree is outside of the Nisqually Delta shoreline of statewide significance. WRECO and Lone Star are agreeing to no other permit modifications, except those specifically referenced herein. The proposed conceptual drawing set forth in Attachment E shows the maximum physical and visual impact to the bluff contemplated by the parties, and Lone Star will develop alternative plans that minimize visual and physical impacts to the bluff, taking into account concerns regarding noise, safety and cost. The parties recognize that project changes may occur through the engineering, survey, SEPA, and permitting process. The non-governmental parties agree to support any reasonable modifications to the proposal which do not: increase environmental impacts of the Revised Project, substantially change the location and size of the Revised Project, substantially change the feasibility of the Revised Project, or substantially increase the costs of the Revised Project. Measures that minimize environmental impacts and costs may be brought to the attention of the Environmental Review Committee created pursuant to Section I.E below, and the parties will, in good faith, consider inclusion of such measures into the Revised Project.

2. The non-governmental parties agree to support Lone Star's and WRECO's efforts to obtain all necessary permits and approvals for the Revised Project and to solicit support for the Revised Project from various interest groups and governmental entities, including but not

Section I.D.2 (cont'd.)

limited to Fort Lewis, the Corps of Engineers and the Nisqually Tribe. The non-governmental parties agree to use their best efforts to obtain all necessary permits for the Revised Project by the milestones set forth in Attachment A. The non-governmental parties also agree that they will not appeal any programmatic approval or permit approval necessary to implement the Revised Project. This agreement not to appeal any approvals shall include and shall apply to any local, state, or federal environmental document or threshold determination.

3. The City agrees to consider any necessary permits for the Revised Project in good faith and according to the agreed upon public process and schedules set forth in Attachment B. If the City approves any permit for the Revised Project, the City agrees not to challenge any permit or approval granted by another governmental agency which is consistent with their approval.

4. Ecology agrees to consider the proposed permits for the Revised Project in good faith and according to the agreed upon public process and schedules set forth in Attachment A. In the event that the City does not approve any necessary permits for the Revised Project, Ecology will review the decision and determine whether an appeal is appropriate under the powers granted to Ecology by the Shoreline Management Act or other authority. If Ecology approves a permit for the Revised Project, Ecology agrees not to challenge any permit or approval granted by another governmental agency for the Revised Project provided those approvals are consistent with this Agreement.

5. The parties agree that limited surface mining and the processing plant construction can commence at Lone Star's option after execution of this Agreement, pursuant to Ordinance No. 485 independent of any shoreline permit or the pending appeals, provided, no material is removed from the site by barge and further provided that the amount of aggregates removed annually does not exceed the volume equivalent to 20% of the total material which was estimated in the Pioneer Aggregates Final EIS to be mined annually (i.e., the amount of material

Section I.D.5 (cont'd.)

that was to be removed by truck). Ecology has determined that for purposes of this Agreement only, such limited mining activity is not dependent upon any use or development occurring in the shoreline, and is an economically independent activity; provided, however, that this determination shall not be used against any party in the event that litigation of the Underlying Actions (defined at III.A.5) is resumed pursuant to Section I.F(2). The limited mining and truck transport is permitted under City Ordinance Nos. 485 and 486, which include the mitigation measures applicable to this activity. If Lone Star exercises this option, they agree to limit the interim truck traffic to essentially the same hours of operation as the facility located in Steilacoom, which is between the hours of 7:00 a.m. and 7:00 p.m. For this limited surface mining, Lone Star shall provide a semi-annual report to the City and Ecology documenting where and how much aggregate has been removed and any progress in the construction of the processing plant.

6. Proposed mitigation measures for the Revised Project are set forth in Section II, below. The non-governmental parties agree to seek no further mitigation measures beyond those provided therein, unless a measure is agreed to by Lone Star through the process set forth in Section I.E(3)(e) and Section I.D(1).

7. In the event that any governmental agency denies or conditions the Revised Project in a manner inconsistent with Section II of this Agreement, Lone Star and WRECO will have the options set forth in Section I.F below.

E. State Environmental Policy Act Compliance.

1. The Comprehensive Plan Update SEPA process will proceed independently through the EIS process presently under way in an effort to adopt the Comprehensive Plan Update according to the Growth Management Act deadline. The EIS for the Comprehensive Plan Update will include environmental analysis of the proposed amendments for the Comprehensive Plan Update set forth in Section I.C above.

2. The Proposed DSMP Amendment set forth in Section I.B shall be evaluated in a Supplemental Environmental Impact Statement (SEIS). The SEIS shall discuss the environmental impacts of the proposed Special Management Unit and the elimination of the current Urban shoreline designation. Ecology will investigate the availability of grant monies that may be available to assist the City in programmatic planning and environmental review.

3. The SEIS for the Proposed DSMP Amendment will also consider the environmental impacts of the Revised Project proposal. With regard to the SEIS, the parties agree to the following:

a. Lead Agencies: Ecology will act as a lead agency responsible for the preparation of the environmental review document. The City shall, at its option, be a co-lead agency.

b. Funding and Scope of Work: Lone Star will be responsible for funding the necessary environmental studies, except to the extent grant money is available to the City for analyzing the Proposed DSMP Amendment. Ecology will use best efforts to complete the environmental review for the Revised Project within reasonable cost limits. The Environmental Review Committee will prepare a proposed scope of work and budgetary goals for the SEIS and submit them to Ecology for its approval within 45 days from the effective date of this Agreement. The SEIS will analyze (1) the Proposed DSMP Amendment and reasonable alternatives to accomplish its objectives, and (2) the elements of the Revised Project not previously analyzed in the Pioneer Aggregates Final EIS, and reasonable alternatives that would accommodate the sand and gravel barge transshipment facility, conveyor, and access road elements on property owned or controlled by WRECO or Lone Star.

c. Milestones: The parties agree to use best efforts and act in good faith to meet the milestones set forth in Attachment A. Remedies for missing certain Key Milestones are set forth in Section III.A.2 below.

d. Staff: Ecology agrees to assign one staff person to facilitate all necessary permits, approvals, and environmental review documents. The staff person should be a full-time employee with Ecology and shall have experience in managing large projects in the south Puget Sound region. The Ecology staff person shall also work on the Master Program amendment, and any other activities, including meeting with other agencies as necessary.

e. Environmental Review Committee: To coordinate the efforts of the parties during the SEPA process, an Environmental Review Committee is established with the following representatives of the parties: Ron Summers (Lone Star), Phil White (WRECO), Janet Dawes (NDA), as well as a representative to be named from Ecology, the City, acting through the City Council, and the Anderson Island QOLC. In the event any named designee cannot serve, the affected party shall name a new representative. The Environmental Review Committee will convene upon request of Ecology when Ecology desires input on an aspect of the SEPA process. The Environmental Review Committee may also consider measures to reduce environmental impacts or costs as set forth in Section I.D(1). The parties will in good faith consider measures recommended by the Committee for changes to the project and Ecology will consider whether the suggested measures warrant inclusion in the SEIS according to the SEPA Rules.

f. Consultants: Ecology shall use best efforts to provide environmental analysis in-house. Where necessary, outside consultants will be selected by Ecology, after consultation with the City and the Environmental Review Committee. Where possible, consultants with previous experience on the Pioneer Aggregates Final EIS will be used, with the exception of a new noise study conducted in accordance with Section I.E.3.g below.

g. Cooperative Noise Compliance:

(i) The existing measured Ldn at the eastern shore of Anderson Island, as measured at the water-side lawn of the Robert Moore residence at Cole Point, as representative of the homes in the area, shall not increase by more than 5 dBA as a

result of the Revised Project. This standard shall be referred to as the Noise Standard. In addition, even if the Noise Standard is met, Lone Star will undertake reasonable mitigation measures, excluding modifying operating hours, to reduce noise impacts further below the Noise Standard.

(ii) The parties agree that moving the sand and gravel barge transshipment facility north near Tatsolo Point constitutes mitigation for potential noise impacts of the Revised Project upon the Nisqually NWR and the City of DuPont.

(iii) The parties agree upon the following method as the most efficient, fair and enforceable manner by which to ensure that the Revised Project does not have a significant noise impact: 1) The parties agree to the Noise Standard set forth in subparagraph (i) above as the appropriate noise limit for the Revised Project with regard to Anderson Island; 2) The parties agree that the only additional study necessary to implement this standard is to establish a baseline Ldn at the eastern shore of Anderson Island to serve as a basis for monitoring; 3) The parties agree to use an independent noise consultant to measure the existing Ldn at Cole Point on Anderson Island for use as the baseline; 4) A "Cooperative Noise Compliance Committee" (CNCC) shall be formed to adopt the baseline and develop a Monitoring Program, to be implemented by an entity selected and managed by the CNCC; and 5) Following start up of operations of the Revised Project and implementation of monitoring, the CNCC will reconvene to develop a Mitigation Plan only if monitoring under the Monitoring Program establishes that the Noise Standard has been violated.

(iv) The CNCC shall be comprised of one representative from Lone Star, WRECO, Ecology, the City, NDA, and the Anderson Island QOLC. Any party, at its option, may be represented by a person with experience in noise issues. The CNCC shall work on a consensus basis. The responsibilities of the CNCC shall include overseeing and reviewing the noise consultant's work; adopting the Anderson Island baseline against which the Noise

Standard will apply; identifying mitigation measures, excluding modification of operating hours, to reduce noise impacts further below the Noise Standard; developing a Monitoring Program, using as a basis the draft monitoring plan attached to City of DuPont Ordinance No. 486; reviewing monitoring reports; and, only if the Monitoring Program establishes that violations of the Noise Standard have occurred, developing a Mitigation Plan for the Revised Project, which may include modification of operating hours, to meet the Noise Standard.

(v) The Greenbush Group is accepted by all parties as the Noise Consultant.

(vi) The Monitoring Program to be developed shall provide for independent monitoring and reporting to the CNCC, to be provided on a timeline agreed upon by the CNCC.

(vii) The CNCC may, at its option, commence efforts prior to final acceptance of this Agreement by all parties.

(viii) Ecology shall appoint a contract administrator who shall be responsible for entering into the contract with the consultant selected by the CNCC.

(ix) Funding for the noise consultant contract will be provided for in the SEIS. Lone Star will be responsible for funding noise monitoring under the Monitoring Program.

(x) In the event that the parties cannot agree to any element of the noise program developed herein or by the CNCC, or in the event that the parties cannot agree to a Mitigation Plan following any violation of the Noise Standard established under the Monitoring Program, the parties shall employ the dispute resolution process established in Section III.B.1 of this Agreement.

h. Fiscal Study. Lone Star is committed to contribute its fair share to needed City services that may increase as a result of the Pioneer Aggregates Project

Section I. E.3.h (cont'd.)

being situated in the City of DuPont. The fiscal analysis provided in the Final Environmental Impact Statement dated February 4, 1993 is being reviewed, and a revised report will be included in the project-specific SEPA review for the Revised Project as necessary.

4. The parties agree that preparation of the SEIS is being done because of a proposed Shoreline Master Program Amendment and a proposed Revised Project, and therefore its preparation shall in no way be used to attack the adequacy of the original EIS documents for the Pioneer Aggregates Project.

F. Process Facilitation and Remedies.

1. To facilitate implementation of this Settlement Agreement, including the processing of all necessary permits and approvals, the State will create an Inter-Agency Task Force. The Inter-Agency Task Force will include members from Ecology, Department of Natural Resources, the Washington Department of Wildlife and Fisheries, and any other agency deemed appropriate by Ecology. The Task Force shall use its best efforts to minimize delays, and provide coordination and technical assistance as necessary to facilitate the programmatic and permit review processes.

2. The parties agree not to appeal any programmatic or project-specific approvals granted which are consistent with this Agreement. If all permits and approvals are obtained and no permit appeals are filed, the Revised Project will be built and the Underlying Actions will be dismissed pursuant to Section III.A. If, however, any necessary programmatic or permit-specific approval is not obtained, or any permit is appealed by anyone, then Lone Star and WRECO may opt to continue to pursue the approvals for the Revised Project through the appeals process, but if this is not a satisfactory option to Lone Star and WRECO, they may, at their sole discretion, opt to defend the original permit approvals obtained by Ordinance No. 485 and Ordinance No. 486; provided that WRECO and Lone Star need not abandon one appeal option to

Section I.F.2 (cont'd.)

pursue the other. These litigation options remain open to WRECO and Lone Star until the consolidated shorelines appeals are dismissed pursuant to Section III.A.3 of this Agreement, and the Pierce County appeal is dismissed pursuant to Section III.A.4. In the event Lone Star and WRECO opt to pursue the Revised Project through the appeals process, the non-governmental parties agree to support WRECO and Lone Star in any appeals brought to obtain such permits. In the event Lone Star and WRECO opt to defend and pursue the original City approvals obtained, then the other parties reserve all rights to pursue their opposition to those original approvals.

II. MITIGATION

A. Overview.

1. Lone Star and WRECO agree to undertake the mitigation measures expressly set forth in this section, provided, however, that all mitigation measures are expressly contingent upon Lone Star's receipt of all necessary permits and approvals to implement all aspects of the Revised Project on acceptable terms and upon the expiration of all appeal periods with no appeals being filed. If a permit appeal is filed in connection with the Revised Project by anyone, then WRECO and Lone Star will have the options set forth in Section I.F(2). If Lone Star and WRECO successfully defend the permits and opt to proceed with the Revised Project, then they will undertake the additional mitigation set forth below, except that contributions to the mitigation fund may be reduced as set forth below.

2. The parties agree that the mitigation measures herein are adequate to mitigate all direct and indirect impacts of the Revised Project. The parties recognize further mitigation measures may be suggested and implemented through the processes set forth in Section I.D(1), I.E(3)(e) and II.B(4).

B. Additional Mitigation Measures.

1. Public Access Plan. WRECO and Lone Star agree to the following public access provisions:

a. WRECO agrees to dedicate to the City an area for public trail access along the existing narrow gauge rail on the north side of Sequalitchew Creek to the Puget Sound shoreline in the vicinity of the existing dock, as shown on Attachment H.

b. Public access will not be provided by Lone Star or WRECO at the new sand and gravel barge transshipment facility; a public access route will be set aside down the north side of Sequalitchew Creek to the Puget Sound Shoreline area in the vicinity of the existing dock. WRECO agrees to remove the existing DuPont dock structure from the aquatic lands upon completion of the construction of the new gravel dock or, at WRECO's option, earlier. Alternatively, at the request of the State, WRECO will turn over all right, title, and interests in the dock to DNR. WRECO agrees to forego future normal maintenance and repair of the dock structure during the pendency of the permitting and new dock construction process, provided the parties agree not to use any future deterioration of the dock structure against WRECO in the event that appeal proceedings of SHB No. 93-69 are resumed.

c. Lone Star and WRECO, in cooperation with Ecology, agree to place educational signs and native vegetation adjacent to the trail in the location of the salt marsh to educate the public and discourage physical intrusions into the marsh area.

2. Hoffman Hill.

a. WRECO agrees to establish a buffer on Hoffman Hill as shown by the green area on the map in Attachment D, subject to a record survey. The buffer shall be established through the imposition of an easement. At the time development occurs adjacent to the buffer, WRECO will dedicate the buffer to the City. The parties acknowledge that the agreed upon setback and buffer set forth in Attachment D is sufficient to protect bluff stability, as well as to mitigate impacts from Hoffman Hill residential development on bluff habitat and its wildlife, and the resources associated with the viewshed from the Nisqually National Wildlife

Refuge. Ecology agrees to consider this mitigation as part of any mitigation package which may be required for the residential development of Hoffman Hill after environmental review.

b. The easement, known as a Native Growth Protection Easement (NGPE), will convey to the public a beneficial interest in the land within the easement. This interest includes the preservation of native vegetation for all purposes that benefit the public health, safety, and welfare, including, but not limited to, control of surface water and erosion, maintenance of slope stability, visual and aural buffering, and protection of plant and animal habitat. The NGPE imposes upon all present and future owners and occupiers of land subject to the easement the obligation to leave undisturbed all trees and all other vegetation within the easement, provided, that a public access trail consistent with the Calthorpe Plan, including access to the two existing public view points, and appurtenances necessary to use the trail and viewpoints, such as handrails at the view points, may be constructed in the easement. Obligations under the easement are enforceable on behalf of the public by the City of DuPont, and, if the City is provided written notice of an alleged violation and fails to take action within 30 days of such notice, the easement is enforceable by NDA and Ecology. The easement shall provide for liquidated damages in the amount of $5,000 for each tree cut in excess of 12 inches dbh or for clearing more than 1,500 square feet of brush, and $2,500 for trimming any tree or for each tree cut smaller than 12 inches dbh or for clearing less than 1,500 square feet of brush. The easement shall also provide that if litigation is necessary to enforce the terms of the easement, the prevailing party shall be entitled to its attorney's fees and costs. Prior to the sale of lots adjacent to the buffer, WRECO shall inform in a conspicuous manner prospective purchasers of the buffer's status as an NGPE and that protection of the NGPE buffer will be enforced by the City. WRECO will obtain written acknowledgment from the purchasers that they have received such notice and that they consent to be subject to the terms of the easement including that the purchaser agrees to give the same notice on the same terms to subsequent purchasers. The notice

Section II.B.2.b (cont'd.)

shall also be filed with the Pierce County Auditor's Office prior to or at closing of the sale. Failure to provide any such notice will result in liquidated damages of $5,000 against the person required to give such notice. All liquidated and unliquidated damages shall be payable to the City for restoration and improvements to the buffer, provided that when NDA and Ecology enforce the agreement, that party's attorney's fees and costs shall be payable from the damages collected.

c. Permanent survey stakes and signs shall be set delineating the buffer prior to WRECO selling the property or receiving approval for any development or pre-development activity on Hoffman Hill. Before beginning and continuously during the course of any grading, building construction, or other development activity on a lot subject or adjacent to the NGPE, the common boundary between the easement and the area of development activity must be fenced or otherwise continuously marked in a highly visible manner, such as yellow caution tape, to the satisfaction of the City. At the time that roads are constructed on the site, one sign per lot shall be posted, or other physical notice mutually agreed upon by Ecology, NDA, WRECO, and DuPont shall be provided, at the boundary between the buffer and each adjacent private lot alerting subsequent occupiers and users of the land to the existence of the buffer and the need to protect it. The signs shall be similar to the example attached hereto as Attachment I. The message on the sign shall be modified appropriately.

d. Ecology, the City and the nongovernmental parties agree not to seek any buffer proposal for Hoffman Hill that is inconsistent with the Calthorpe Plan shown in Attachment D; provided, however, this shall not apply to environmental impacts from future development which are unrelated to the Nisqually National Wildlife Refuge and which may be disclosed in subsequent environmental review. The parties agree not to propose any plan calling for public acquisition of Hoffman Hill for expansion of the Refuge unless such plan is conditioned on WRECO being a willing seller entitled to full fair market value and upon

approval of the City. Nothing contained in this section shall be construed as limiting or prohibiting the City from exercising its rights to acquire by eminent domain, all or any portion of the Hoffman Hill area for a public purpose other than the expansion of the Refuge.

e. Additional Mitigation Provisions Regarding Hoffman Hill.

(i) The public access trail provided for herein shall be designed and constructed by WRECO, its successors or assigns, subject to approval by the City of the plans and specifications therefor;

(ii) The design for the trail shall include reasonable accommodation to meet the requirements of the Americans with Disabilities Act.

(iii) If the City so elects, it may design and construct the trail and charge WRECO the reasonable costs thereby incurred. In such event, WRECO shall have an opportunity for design input and shall be credited in such amount against the costs of any recreational improvements which it might be reasonably required to install as a part of residential platting or development in the City. Any City employee who will be working on the trail project will be required to have credentials for this type of construction project.

(iv) Removal by the City or by WRECO with the City's permission, of trees and undergrowth in conjunction with trail construction or maintenance, or the removal by either party of dangerous trees near the trail or public viewpoints, shall not be deemed a violation of any provision of this Agreement.

(v) The City may by ordinance provide that it shall be a civil offense, enforceable in Municipal Court, for any person to remove, without permission from the City, brush, trees, or other growth from the Native Growth Protection Easement except as provided in the preceding subparagraph iv.

(vi) The design for the trail shall include public access thereto from a public right-of-way.

3. New Dock. Upon receipt of all necessary permits for the Revised Project, and the expiration of all applicable permit appeal periods with no appeals being filed, Lone Star agrees to construct a new gravel transshipment facility in the Tatsolo Point area. The new gravel dock will be smaller than the existing DuPont dock and will be sized to handle barging of sand, gravel, and related construction materials originating from or for use with materials from the DuPont site in connection with Lone Star's business only, and will not be oversized to handle future uses or any other commodities. The dock structure will not contain any creosote pilings. Grated decking will be used in the near-shore environment.

4. Concurrent and Future Use. WRECO and Lone Star agree that use of the new dock shall be for barge loading of sand, gravel, and related construction materials originating from or for use with materials from the DuPont site and shall be used for no other concurrent purpose while the dock is used as a sand and gravel barge transshipment facility. At the conclusion of mining operations in the City, Lone Star and WRECO agree to limit proposed future uses, if any, of the Special Management Unit to development of no greater size or impacts than the sand and gravel barge transshipment facility built for the Revised Project. The parties recognize and agree that at the conclusion of the 25-year payment period set forth in II.D.(1) below, the parties may seek and negotiate further environmental mitigation funding for environmental impacts due to the sand and gravel barge transshipment facility. The term "related construction materials" as it is used in this paragraph is intended to refer to glass, shredded rubber, or other additives required or recommended by any agency of the State of Washington or the United States to be included in sand or gravel. It shall not be deemed to include asphalt.

5. Shoreline Uses. Lone Star and WRECO agree to limit future use, if any, of the remaining DuPont shoreline outside of the Special Management Unit to non-industrial uses consistent with the Conservancy regulations of the existing DuPont Master Program. The permits obtained by Lone Star do not provide for any mining within 200 feet of Puget Sound or

Section II.B.5 (cont'd.)

Sequalitchew Creek. WRECO and Lone Star agree to seek no permits in the future to mine within the shoreline jurisdiction as defined by RCW Chapter 90.58, or within 100 feet of the top of the bank of Sequalitchew Creek, as shown on Exhibit J, or in a manner that would significantly impact the flow of Sequalitchew Creek. This shall not prohibit excavation for construction of the sand and gravel barge transshipment facility.

C. City Fiscal Mitigation Fund.

1. Lone Star and WRECO will pay $1,000,000 to the City of DuPont to compensate for any direct or indirect impacts of the Revised Project, including potential negative fiscal impacts of the site plan approval as referenced in Condition No. 99 to Ordinance No. 485, and in Condition No. 52 of Ordinance No. 486.

2. The $1,000,000 payment to the City by Lone Star and WRECO, referred to at Section II.C.2 above, will be made in a single lump sum at such time as mitigation is due under Section II.A. This payment is not to be deemed to be in lieu of or a substitute for any other mitigation required under Ordinance Nos. 485 or 486. Such payment is not intended to fund or to reimburse the City for the costs of studies required for development approvals, nor for enforcement of the terms of any such approvals for the Revised Project.

3. Lone Star and WRECO will also reimburse the City for the following:

a. The City's reasonable expenses in arriving at this agreement, including legal fees and disbursements of the City attorney and also legal fees and disbursements incurred by the City for independent legal review and consultation;

b. The City's reasonable expenses in connection with the review process for the Revised Project, including all legal fees and disbursements;

c. The City's expenses, if any, incurred in defense of any appeal of any process or permit relating to the Revised Project where the City is a party; provided that this provision shall not apply to such expenses if incurred by the City related to an appeal filed by the

Section II.C.3.c (cont'd.)

City from an approval received by WRECO or Lone Star from another governmental agency, nor shall it apply to any action brought by Lone Star or WRECO.

d. The fees, expenses and costs referred to in the preceding subparagraphs a through c will be payable whether or not the Revised Project is ultimately approved, and if approved whether or not it is abandoned in whole or part by WRECO or Lone Star.

4. In the event the City does not approve any necessary programmatic approval or permit for the Revised Project, Lone Star and WRECO may proceed as provided in Section I.F above, and shall have no obligation to the City under this Settlement Agreement.

D. Environmental Mitigation Funding.

1. Environmental Mitigation Trust. As a further mitigation measure, Lone Star and WRECO agree to make a grant to an Environmental Mitigation Trust ("EMT"), which will undertake acquisition of real property, development rights and easements as resource protection measures for the Nisqually Delta, in the area described as the Mitigation Landscape Area as defined in Section II.D.2.b. below. The EMT shall be a public or non-profit entity such as the Trust for Public Lands, the Nature Conservancy, or the Nisqually Land Trust, which shall be selected jointly by the NDA and Ecology.

2. Funding. Lone Star and WRECO agree to contribute to the trust designated pursuant to Section II.D.1 above, a grant payable as follows:

a. A down payment will be payable within 30 days after all permits necessary for the Revised Project have been issued, and all appeal periods for those permits have expired with no appeals being filed or alternatively any permits challenged are affirmed following appeal. The down payment shall be in the amount of $375,000. An additional $125,000 shall be payable on January 31, 1996, conditioned upon all state and local permits and approvals having been obtained by that date, and further conditioned upon all non-programmatic

permit and approval appeals periods having expired by that date with no appeal being filed or all appeals filed being fully resolved in Lone Star's and WRECO's favor by January 31, 1996.

b. The balance will be payable in annual installments of $50,000 per year for 25 years; provided, however, that if for any reason the aggregate operations have been suspended totally for six months or more, annual payments will be suspended until any portion of the aggregate operation is resumed. The first annual installment will be due upon completion of construction of the sand and gravel barge transshipment facility; for years 2 through 25 of operations of the Revised Project, the annual payment shall be due on June 29 unless the due date is modified pursuant to the suspension proviso in the preceding sentence. Payments in years 6 through 25 shall be adjusted for inflation according to the Producer Price Index for sand and gravel. The base year for inflation adjustments shall be the year that operations of the Revised Project commence. At Ecology's or NDA's option, the sum total of payments for years 21 through 25 may be accelerated to the time of or anytime after the down payment, if that sum total is contributed toward purchase of real property, development rights, or easements, in the Mitigation Landscape Area. The Mitigation Landscape Area shall be defined as:

(i) The Shoreline of Statewide Significance (as defined in the Shoreline Management Act) from Tatsolo Point south to De Wolf Bight, the Nisqually National Wildlife Refuge, and all areas contiguous to these lands, excluding those lands within the City limits of DuPont, and extending no further south or east than the I-5 freeway corridor; provided that land within the current city limits of DuPont may be included to the extent that it can be purchased from a willing seller. No portion of this geographic area shall be included to the extent that it is either urbanized or a disturbed natural environment that is unsuitable for natural habitat and for which a plan and funding for restoration of the habitat has not been identified.

(ii) In the event that the trustee determines that the protection of the natural environment of the Mitigation Landscape Area by purchase of the stated property

interests in the above-stated geographic areas has been completely frustrated or cannot be achieved, the Mitigation Landscape Area may be expanded to include shorelands and adjacent property associated with any river, stream or wetland that is associated with and forms an integral part of the ecology of the Nisqually Delta, subject to the limiting provision applicable to land within the current city limits of DuPont, as set forth in subparagraph (i) above.

c. If any necessary permit is denied or appealed, then Lone Star and WRECO may exercise their options under Section I.F. If they opt to pursue the Revised Project, are successful in obtaining the permits for it through the appellate process, and elect to build the Revised Project, then Lone Star and WRECO will fund the annual payments and the down payment, but will have no obligation to make the conditional January 31, 1996 payment unless all permit appeals or challenges to permit denials are fully resolved in Lone Star and WRECO's favor by January 31, 1996.

III. GENERAL TERMS

A. Disposition of Existing Litigation and Applications.

1. Appeals Stayed. The shoreline appeals (SHB Nos. 93-64, 93-65, and 93-69) and Pierce County appeal (Pierce County Cause No. 93-2-09515-1) shall be stayed and held on inactive status pending the outcome of the programmatic and permit-specific approval processes set forth above. The parties to the appeals will execute a Stipulation and Order of Continuance for the shoreline appeal and Pierce County Superior Court appeal concurrently with the execution of this Settlement Agreement. The parties to the appeals hereby authorize and direct their respective attorneys of record to sign and file the Stipulation and Order of Continuance upon execution of this Settlement Agreement by the parties of record to the appeals.

2. Key Milestones. Certain Key Milestones contained in Attachment A are marked by an asterisk (*). If any Key Milestone in Attachment A is not completed within two weeks of the target date, or if any necessary programmatic or permit-specific approval is not

obtained consistent with this Agreement, Lone Star and WRECO may exercise their options under Section I.F.2 above.

3. Dismissal of Shoreline Appeals. The parties to this agreement who are parties of record to the shoreline appeals hereby authorize and direct their respective counsel of record to execute and file the Stipulation and Order of Dismissal for Consolidated Cases SHB Nos. 93-64, 93-65, and 93-69 substantially in the form attached hereto as Attachment F, and incorporated herein by this reference, when the following conditions are met: 1) all necessary permits and approvals are obtained for the Revised Project; and 2) the appeal period for the last necessary project-specific approval or permit to issue has run with no programmatic or project-specific appeal having been filed. Lone Star and WRECO further agree that, upon completion of construction of the new dock, they will withdraw the permit applications for use of the existing DuPont dock.

4. Dismissal of Pierce County Appeals. Parties to this agreement who are parties of record to Pierce County Superior Court Cause No. 93-2-09515-1 hereby authorize and direct their respective attorneys of record to execute and file the Stipulation and Order of Dismissal substantially in the form attached hereto as Attachment G, and incorporated herein by this reference, when the following conditions are met: 1) all necessary permits and approvals are obtained for the Revised Project; and 2) the appeal period for the last necessary project-specific approval or permit to issue has run with no programmatic or project-specific appeal having been filed; provided it is agreed that, in the event this litigation is resumed, it shall not be a basis for challenging in any way the construction of the processing plant or mining of the material moved by truck pursuant to Section I.D.5 above.

5. Mutual Release. Effective upon the date of dismissal with prejudice of the last of the following iterated actions to be dismissed, SHB No. 93-64, SHB No. 93-65, SHB No. 93-69, and Pierce County Superior Court Cause No. 93-2-09515-1 (together the "Underlying

Actions"), the parties release and forever discharge each other and their officers, directors, shareholders, employees, representatives, agents, successors, and assigns, from any and all causes of action, claims, damages, liabilities, and demands of any nature whatsoever, arising out of or relating in any way to the allegations made in the Underlying Actions or in retaliation for any activities by the parties relating to their opposition to the originally permitted project.

B. Other Terms

1. Dispute Resolution and Enforcement. This Agreement is enforceable by any party to the Agreement. Prior to raising by motion, complaint or other legal proceeding any alleged violation of this Agreement or any alleged failure to perform any obligation imposed hereby, the aggrieved party shall first consult with the other parties consistent with the procedure outlined in Rule 26(i) of the Washington Superior Court Civil Rules, and, in the event the matter cannot be resolved, confirm such consultation in written correspondence to the alleged breaching party. If no agreement can be reached within 10 days from receipt of the letter, the parties will then submit the dispute to Washington Arbitration and Mediation Services or other agreed upon mediator for mediation first, and if that does not resolve the issue, then the parties may submit the dispute to binding arbitration or pursue any other remedies available by law.

2. Authority to Sign. Each of the parties signing this Agreement is legally authorized to enter into the terms and conditions of this Agreement and Stipulation and Orders of Dismissal of proceedings, and is authorized to legally to bind such parties thereto.

3. Agreement Binding. The provisions of this Agreement and the Stipulations and Orders of Dismissal shall apply to and be binding upon the parties hereto and their respective officers, directors, employees, agents, non-governmental attorneys, affiliates, wholly-owned subsidiaries, successors, and assigns.

4. Choice of Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Washington.

5. Modification. This Agreement may be modified only by the express written agreement of all the parties.

6. Counterparts and Effective Date. This Agreement may be executed in counterparts and each executed counterpart shall have the same force and effect as an original instrument upon the effective date of the Agreement. This Agreement shall become effective as to all parties upon the date of signature of the party last in time to sign. The prior circulated agreement dated June 29, 1994 is replaced by this Agreement and shall have no force or effect.

DEPARTMENT OF ECOLOGY

By: _____ DATED: _____
Its: _____

CITY OF DUPONT

By: Gillard F Shuter DATED: 27 Dec 1994
Its: Mayor

LONE STAR NORTHWEST, INC.

By: James A Kegman DATED: Oct 27, 1994
Its: Pres.

WEYERHAEUSER REAL ESTATE COMPANY

By: Robert L Skelly DATED: Dec 27, 1994
Its: Vice President

NISQUALLY DELTA ASSOCIATION

By: _____ DATED: _____
Its: _____

BLACK HILLS AUDUBON SOCIETY

By: _____ DATED: _____
Its: _____

WASHINGTON ENVIRONMENTAL COUNCIL

By: _____ DATED: _____
Its: _____

NATIONAL AUDUBON SOCIETY

By: _____ DATED: _____
Its: _____

PEOPLE FOR PUGET SOUND

By: _____ DATED: _____
Its: _____

TAHOMA AUDUBON SOCIETY

By: _____ DATED: _____
Its: _____

SEATTLE AUDUBON SOCIETY

By: _____ DATED: _____
Its: _____

ANDERSON ISLAND
QUALITY OF LIFE COMMITTEE

By: _____ DATED: _____
Its: _____

ATTACHMENT A

CRITICAL PATH

CRITICAL PATH MILESTONES

Date	Action
July 15, 1994	Amended Applications Submitted
July 15, 1994	Noise Study circulated to CNCC
October 15, 1994	*Pre-Draft SEIS circulated to Environmental Review Committee
October 30, 1994	Comments returned to DOE on pre-draft
	Note: Critical Path will be reviewed after receipt of comments to determine if there is a need to revise the schedule.
January 1, 1995	*Draft SEIS published
February 1, 1995	*SEIS comment period ends
May 1, 1995	*Final SEIS published
May 30, 1995	Public Hearing on DSMP, Permits
June 15, 1995	City Planning Commission recommendation on joint proposal
July 15, 1995	*City Council decisions on DSMP; Permits to follow; Notice of Action published
	Note: Decision on DSMP will be sent to Ecology per WAC 173-19-062; Applicant may need to waive transmittal time frame for permits
December 1, 1995	*DOE decision on DSMP and shoreline permit
December 15, 1995	DNR decision on Aquatic Lands Lease
December 31, 1995	*Building permits for transshipment facility issued

*KEY MILESTONES

321495

ATTACHMENT A

ATTACHMENT B

PROPOSED DSMP

FOR SETTLEMENT DISCUSSION PURPOSES ONLY

July 11, 1994

Tatsolo Point Special Management Unit

I. Purpose

The purpose of the Tatsolo Point Special Management Unit is to ensure that the shoreline resources of the Special Management Unit and the shoreline of statewide significance associated with the Nisqually Delta are protected while providing the City of DuPont with a location for access to Puget Sound for appropriate water dependent uses and activities and water related passive recreational uses and activities.

II. Policy

The Special Management Unit is located outside the shoreline of statewide significance. Development within the Special Management Unit should not be visible from anywhere within the Nisqually National Wildlife Refuge.

Uses in the Special Management Unit should be limited to water dependent uses and water related passive recreational uses. Water dependent uses should be limited to those uses associated with public transportation or with sand and gravel barge transshipment. Uses directly associated with the railroad may be allowed, provided that no feasible non-shoreline location is available.

All uses and activities should be designed, developed and conducted in a manner that minimizes the impact to: the natural and human environment; the aesthetic character of the area; and the public use and enjoyment of the area. Appropriate offsetting mitigation should be required for all unavoidable adverse impacts associated with permitted development.

Passive recreational uses and an industrial use may occur concurrently within the Tatsolo Point Special Management Unit. However, only one industrial use utilizing one dock may be permitted and operating within the Tatsolo Point Special Management Unit at any time.

III. Use Regulations

A. Permitted Uses: The following uses and activities are permitted within the Special Management Unit subject to compliance with the development standards contained in Section IV below:

- Passive recreational uses.
- Facilities associated with such passive recreational use, such as parking and restrooms, that are located landward of the ordinary high water mark.
- Fish and wildlife related research activities and developments.
- Fish and wildlife related natural resource enhancement activities and developments.
- Roads and railroads when located landward of the ordinary high water mark.
- Utilities when located landward of the ordinary high water mark.

B. Conditional Uses: The following uses and activities may be allowed only upon approval of a conditional use permit subject to compliance with the conditions of Section IV below:

- Facilities associated with passive recreational use that are located waterward of the ordinary high water mark.
- Aquaculture facilities and uses except when such facilities are for fish and wildlife related research and/or enhancement as provided in the Subsection A above.
- Utilities when located waterward of the ordinary high water mark.
- Roads and railroads when located waterward of the ordinary high water mark.
- Facilities for the loading and unloading of passengers and/or vehicles carried by ferry.
- Train station provided that the facility is located landward of the ordinary high water mark.

- Facilities for the barge shipment of sand and gravel, including such uses as a pier, a dock, mooring dolphins, mooring buoys for barge staging, a barge loader, a conveyor, necessary utilities, and an access road.

- Necessary accessory or ancillary uses of a commercial or industrial nature associated with a listed permitted or conditional use where the need for a shoreline location is fully demonstrated.

- Necessary shoreline stabilization activities associated with existing or proposed uses.

- Maintenance dredging may only be authorized provided that it is fully demonstrated that there is no feasible alternative that will have less environmental impact than the proposed dredging.

- Industrial facilities that are fully demonstrated to have less adverse impact to the natural and human environment than a sand and gravel barge transshipment facility that may be permitted within the Special Management Unit.

C. Prohibited Uses: The following uses are expressly prohibited in the Tatsolo Point Special Management Unit:

- All uses and activities not specifically listed above as permitted or conditional use.

- More than one industrial use within the Special Management Unit.

- More than one industrial dock within the Special Management Unit.

IV. Development Standards

In order to ensure that all uses and activities within the Special Management Unit minimize adverse impacts to the natural and human environment; the aesthetic character of the area; and the public use and enjoyment of the area, the following regulations and development standards apply:

- The footprint, shadow and disturbed area caused by a development or associated construction shall be the minimum necessary to accomplish the authorized use, and shall not be oversized to accommodate speculative future uses.

- All structures shall be designed and constructed to blend visually with the background as viewed from the water, unless the applicant fully demonstrates a need otherwise. Development shall to the maximum extent practicable avoid visibility from the Nisqually National Wildlife Refuge and shall minimize any unavoidable impacts to visibility from the Refuge while accomplishing the intended purpose of the permitted development.

- No dock may extend waterward more than 255 feet from the ordinary high water mark.

- The height of all structures shall be the minimum necessary to accomplish the permitted activity. Height shall be measured from mean higher high water if the structure is over water and from above average grade level if over land. Unless the applicant fully demonstrates a need otherwise, the following height limitations apply:

  a. Any dock and associated structure: 35 feet

  b. Any barge loading tower: 65 feet

  c. Any conveyor structure: maximum 35 feet above the railroad tracks.

- Lighting shall be the minimum necessary for the permitted purpose. Lighting shall be designed and constructed to minimize lighting of the shoreline, upland, and water areas and to minimize visibility from shoreline, upland, and water areas. Lighting shall meet applicable safety standards.

- Alteration and disturbance of the existing bathymetry, land contours, and upland and aquatic vegetation within shoreline jurisdiction shall be minimized.

- Any industrial use or activity shall be located to minimize interference with tribal fishing.

- Obstruction and interference with recreational and commercial navigation and use of the water and shoreline areas shall be minimized.

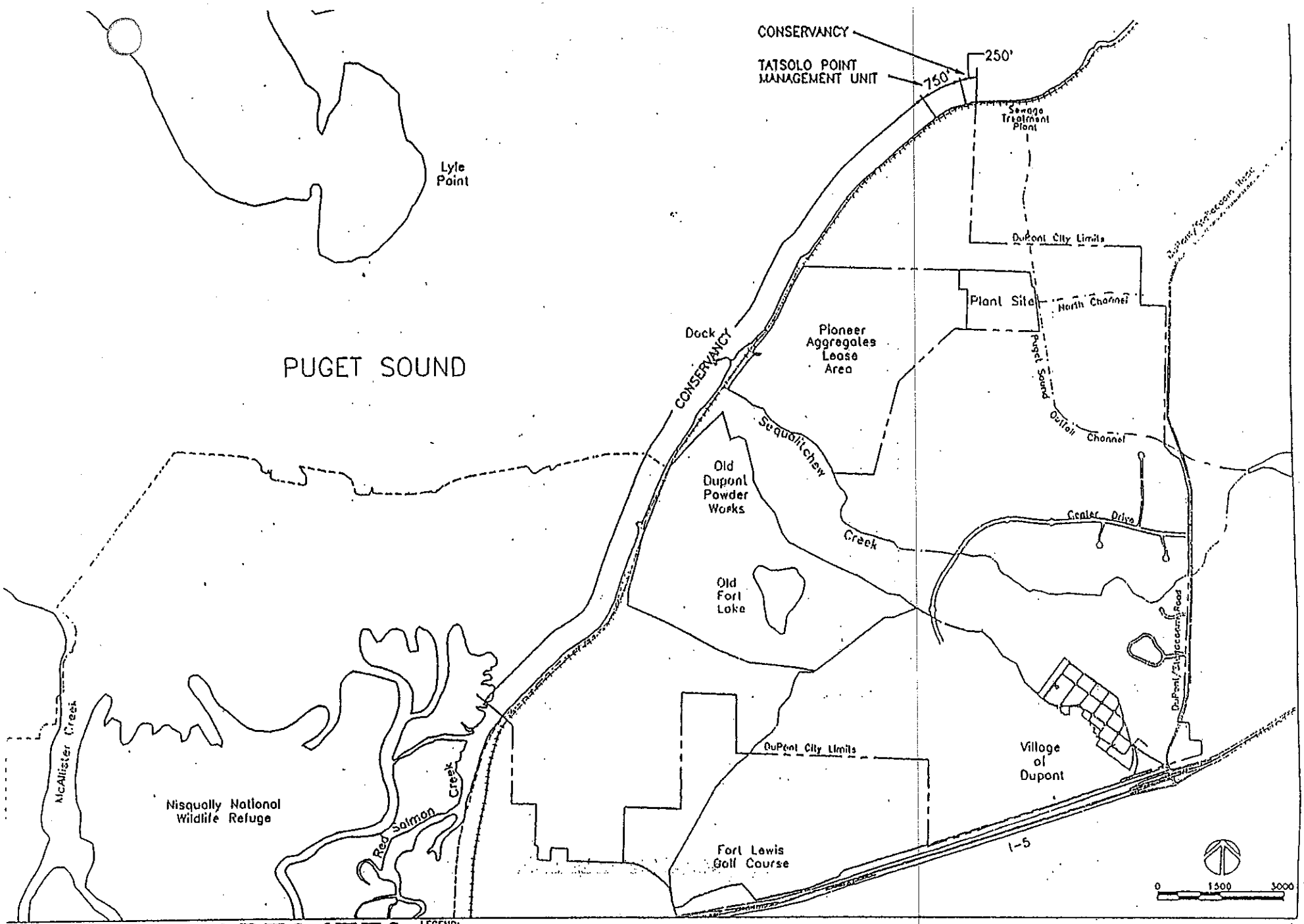
- Dredging for the creation of berthing areas is prohibited. Berths shall be located to minimize the potential for maintenance dredging. Maintenance dredging may be authorized only by conditional use permit provided that the applicant fully demonstrates that there is no feasible alternative that will have less environmental impact than the proposed dredging.

- Shoreline stabilization activities shall only be authorized when the applicant fully demonstrates that: the stabilization design and method used is compatible with and uses the natural shore processes and conditions present on the site to the greatest extent possible; and that the materials used are compatible with the natural conditions of the site.

- No aquatic or upland vegetation within shoreline jurisdiction shall be disturbed or removed nor any land form altered except as authorized by the specific terms of a shoreline permit.

- Compensatory mitigation shall be provided for all identified adverse impacts to the human and natural environment. This shall include mitigation for impacts caused by the ongoing operation of any use or activity and potential impacts caused by accidents.

221847



IONEER AGGREGATES

JPONT, WASHINGTON

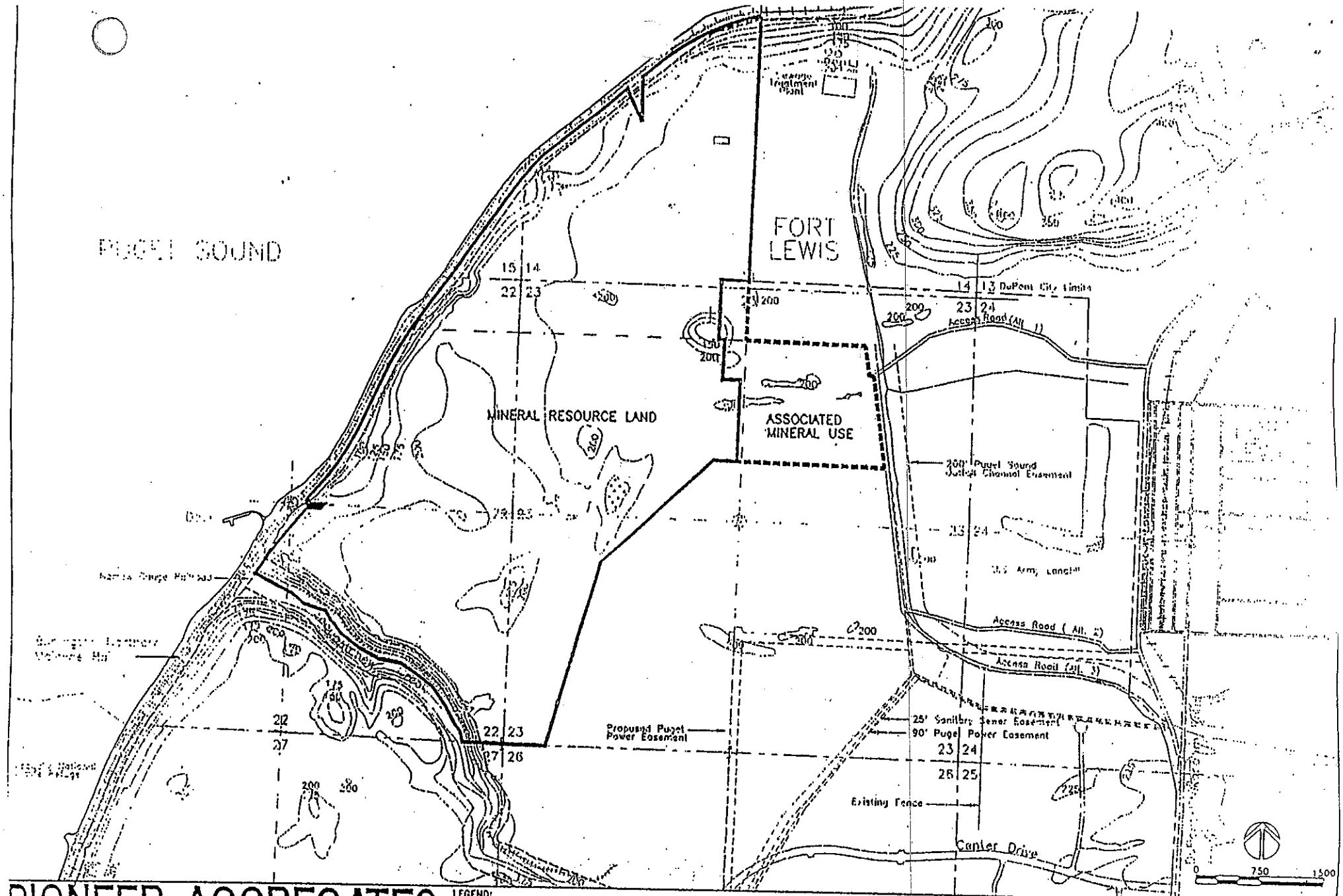
LEGEND:

- LEASE AREA
- DUPONT CITY LIMITS
- ROADS
- NISQUALLY NATIONAL WILDLIFE REFUGE BOUNDARY

Shoreline Redesignation from Urban to Conservany

ATTACHMENT C

MINERAL RESOURCE LANDS



PIONEER AGGREGATES

DUPONT, WASHINGTON

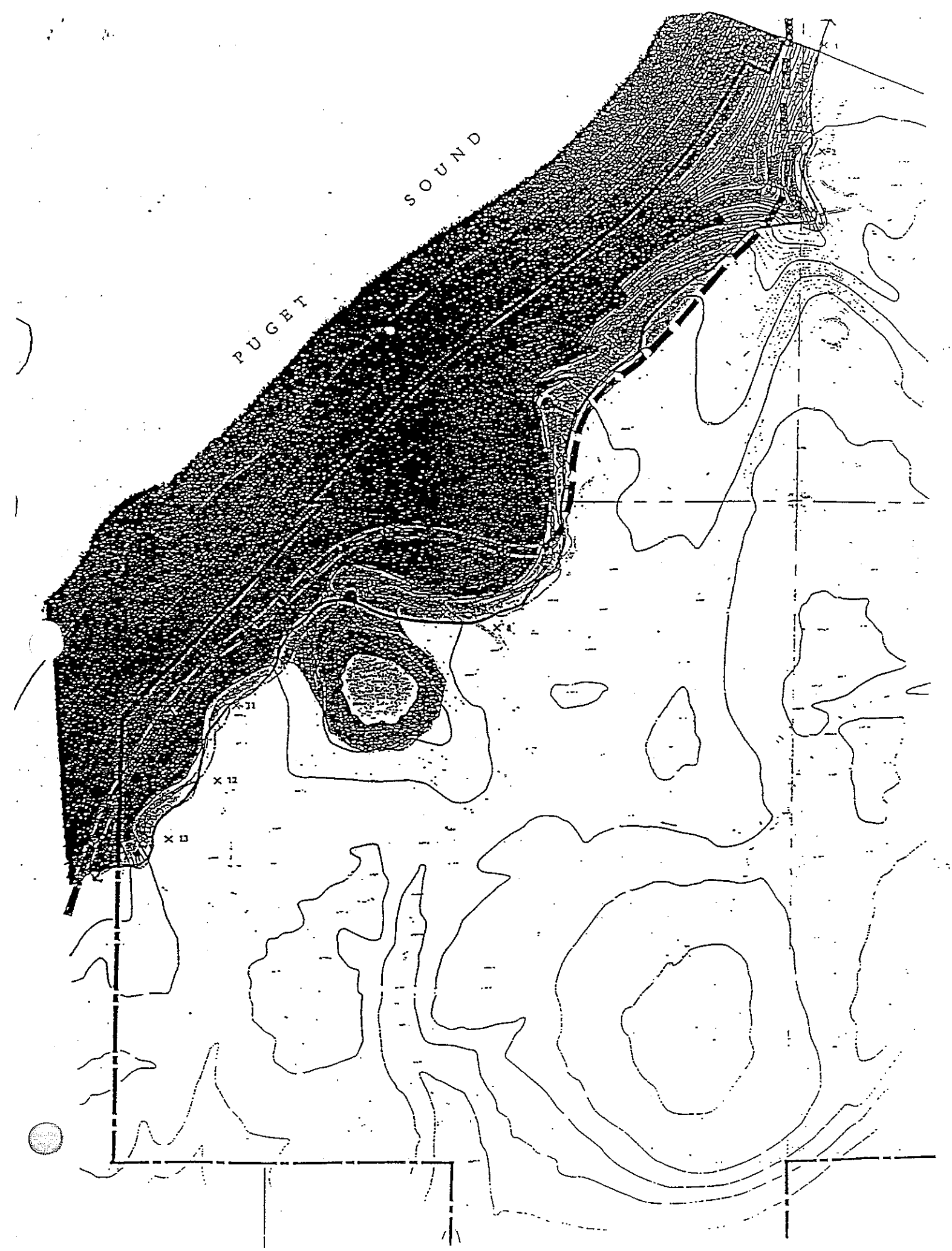
LEGEND:

- DUPONT CITY LIMITS
- ROADS
- LEASE LINE
- MINERAL RESOURCE LAND
- ASSOCIATED MINERAL USE
- 200' SETBACK FROM PUGET SOUND AND CENTER LINE OF SEQUALITCHEW CREEK

Mineral Resource Land

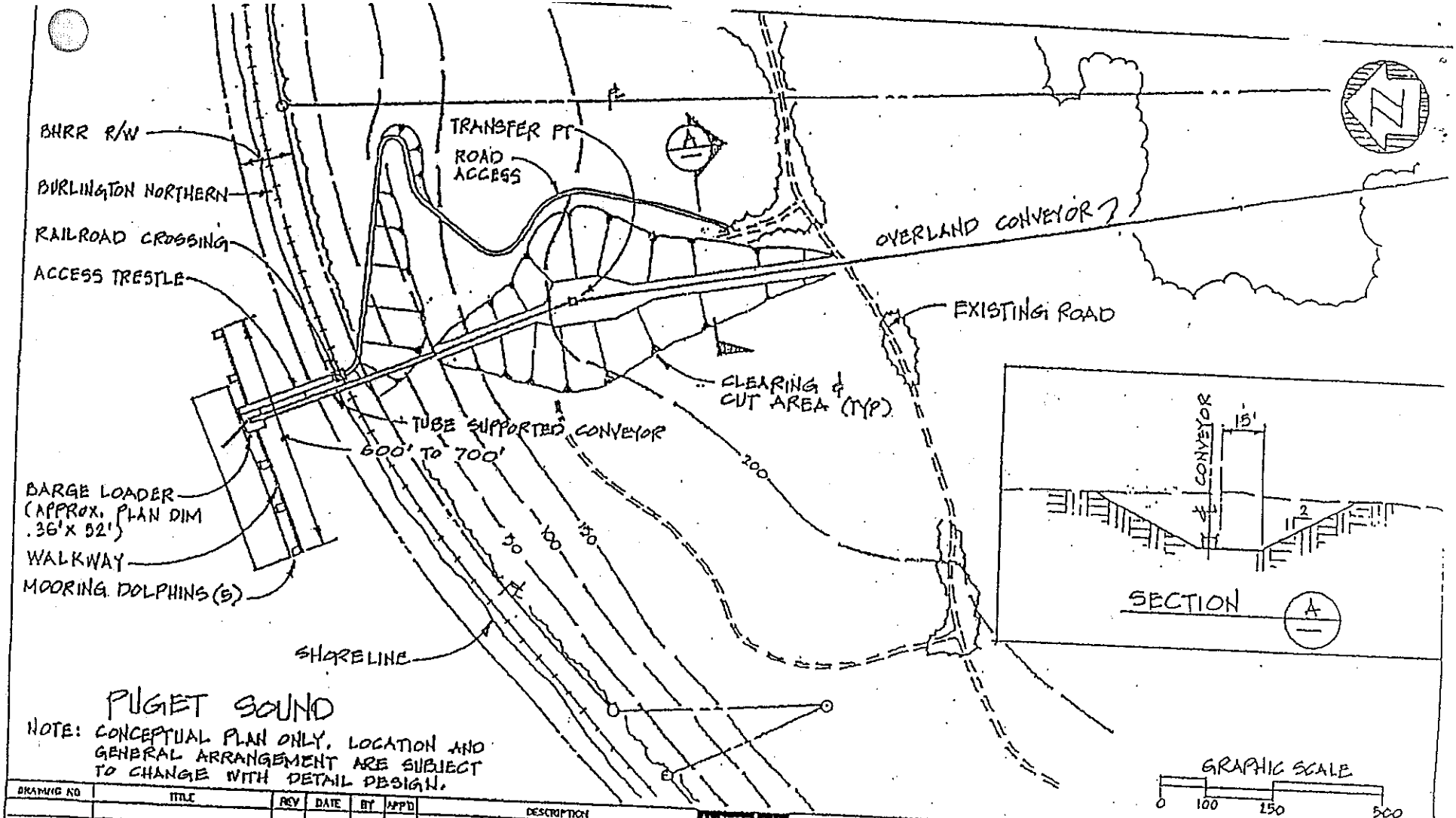
ATTACHMENT D

CALTHORPE PLAN


PUGET SOUND
X 11
X 12
X 13

ATTACHMENT E

REVISED PROJECT ILLUSTRATION



NOTE: CONCEPTUAL PLAN ONLY. LOCATION AND GENERAL ARRANGEMENT ARE SUBJECT TO CHANGE WITH DETAIL DESIGN.

DRAWING NO	TITLE	REV	DATE	BY	APP'D	DESCRIPTION

Harris Group Inc.

CONCEPTUAL DOCK LAYOUT PLAN

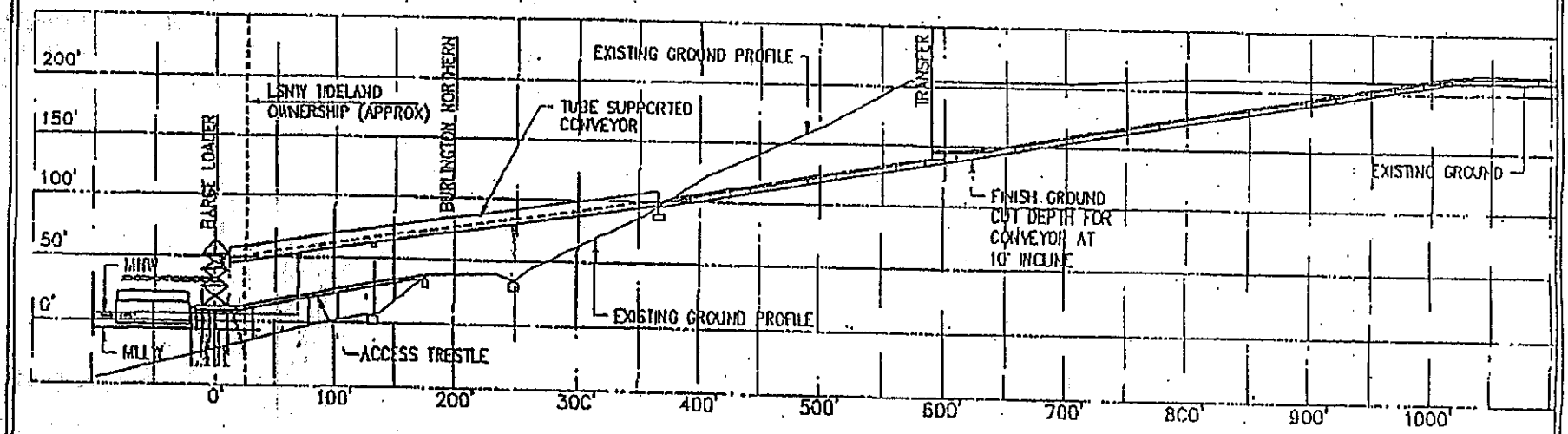
PIONEER AGGREGATES

APPROVED		SCALE	1"=200'	MO	DAY	YR
DATE		DRAWN	SFB	5	3	14
PROJECT	01-1313	CHK'D				
		APP'D				
		APP'D				

DRAWING NUMBER
SK-1313-DOCK-2

REV A

Harris Group Inc. B Size 11" X 17" FSB-14



Harris Group Inc.

CONCEPTUAL DOCK LAYOUT
VERTICAL PROFILE

PIONEER AGGREGATES

SFB 05-03-94

SK-1313-DOCKPR3

ATTACHMENT F

SHB RELEASES AND STIPULATION AND ORDER OF DISMISSAL

BEFORE THE SHORELINES HEARINGS BOARD

STATE OF WASHINGTON

NISQUALLY DELTA ASSOCIATION and BLACK HILLS AUDUBON SOCIETY, Appellants, vs. CITY OF DUPONT; LONE STAR NORTHWEST, INC.; and WEYERHAEUSER REAL ESTATE COMPANY, Respondents.	SHB NO. 93-64 STIPULATION AND AGREED ORDER OF DISMISSAL WITH PREJUDICE
STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, Appellant, vs. LONE STAR NORTHWEST, INC.; CITY OF DUPONT; and WEYERHAEUSER REAL ESTATE COMPANY, Respondents.	SHB NO. 93-65
LONE STAR NORTHWEST, INC.; and WEYERHAEUSER REAL ESTATE COMPANY, Appellants, vs. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, Respondent.	SHB. NO. 93-69

STIPULATION

The parties to this action, through their attorneys of record, stipulate as follows:

1. All claims that were asserted in this consolidated action have been settled, resolved or compromised per the terms of the Settlement Agreement attached hereto and incorporated herein by reference.

2. An order may be entered dismissing the action with prejudice and without costs or attorneys' fees to any party.

HILLIS CLARK
MARTIN & PETERSON, P.S.

By_____
T. Ryan Durkan
WSBA No. 11805
Attorneys for Defendants
Lone Star Northwest, and
Weyerhaeuser Real Estate Co.

By_____
Rebecca E. Todd
WSBA No. 20713
Asst. Attorney General
Department of Ecology

BRICKLIN & GENDLER

By_____
David A. Bricklin
WSBA No. 7583
Attorneys for Nisqually Delta Ass'n and
Black Hills Audubon Society

PRESTON, THORGRIMSON,
SHIDLER, GATES & ELLIS

By_____
James J. Mason
WSBA No. 718
Attorneys for Defendant
City of DuPont

ORDER

Having reviewed the foregoing stipulation of the parties, the pleadings filed herein, and having determined that the parties have agreed to a settlement of the claims raised in this action, It Is Ordered:

This action is dismissed with prejudice and without an award of costs or attorneys' fees to any party.

Done at _____, Washington, this ___ day of _____, 1994.

_____
HONORABLE WILLIAM A. HARRISON
Administrative Appeals Judge

SHORELINES HEARINGS BOARD

_____
ROBERT V. JENSEN, Chairman

_____
RICHARD C. KELLEY, Member

GORDON F. CRANDALL, Member

BOBBI KREBS-McMULLEN, Member

JAMES A. TUPPER, Member

Presented by:

HILLIS CLARK
MARTIN & PETERSON, P.S.

By
T. Ryan Durkan
WSBA No. 11805
Attorneys for Defendants
Lone Star Northwest, and
Weyerhaeuser Real Estate Co.

Notice of Presentation Waived:

By
Rebecca E. Todd
WSBA No. 20713
Asst. Attorney General
Department of Ecology

BRICKLIN & GENDLER

By
David A. Bricklin
WSBA No. 7583
Attorneys for Nisqually Delta Ass'n and
Black Hills Audubon Society

PRESTON, THORGRIMSON,
SHIDLER, GATES & ELLIS

By_____
James J. Mason
WSBA No. 718
Attorneys for Defendant
City of DuPont

221259

ATTACHMENT G

PIERCE COUNTY RELEASES AND STIPULATION
AND ORDER OF DISMISSAL

IN THE SUPERIOR COURT OF WASHINGTON FOR PIERCE COUNTY

NISQUALLY DELTA ASSOCIATION, JUDITH A. KRILL, and KARL E. KRILL Plaintiffs, v. CITY OF DUPONT, a Washington municipal corporation; LONE STAR NORTHWEST, INC., a Washington corporation; and, WEYERHAEUSER REAL ESTATE COMPANY, a Washington corporation; OREGON CITY LEASING COMPANY, an Oregon corporation; and, STATE OF WASHINGTON, DEPARTMENT OF NATURAL RESOURCES, Defendants.	NO. 93 2 09515 1 STIPULATION AND AGREED ORDER OF DISMISSAL WITH PREJUDICE

STIPULATION

The parties to this action, through their attorneys of record, stipulate as follows:

1. All claims asserted in this action have been fully settled, resolved or compromised.

2. An order may be entered dismissing plaintiffs' complaint with prejudice and without an award of costs or attorneys' fees to any party.

HILLIS CLARK
MARTIN & PETERSON, P.S.

By_____
T. Ryan Durkan
WSBA No. 11805
Attorneys for Defendants
Lone Star, Weyerhaeuser Real Estate Co.,
and Oregon City Leasing

Dated: _____

BRICKLIN & GENDLER

By_____
David A. Bricklin
WSBA No. 7583
Attorneys for Plaintiffs

Dated: _____

PRESTON THORGRIMSON, SHIDLER
GATES & ELLIS

By_____
James J. Mason
WSBA No. 718
Attorneys for Defendant
City of DuPont

Dated: _____

ORDER

Based on the foregoing stipulation of the parties, it is hereby:

ORDERED, ADJUDGED AND DECREED that Plaintiff's Complaint be and the same is hereby dismissed with prejudice and without an award of costs or attorneys' fees to any party.

DATED this _____ day of _____, 1994.

_____
JUDGE/COURT COMMISSIONER

Presented by:

HILLIS CLARK
MARTIN & PETERSON, P.S.

By_____
T. Ryan Durkan
WSBA No. 11805
Attorneys for Defendants
Lone Star, Weyerhaeuser, and
Oregon City Leasing

Notice of Presentation Waived:

BRICKLIN & GENDLER

By_____
David A. Bricklin
WSBA No. 7583
Attorneys for Plaintiffs

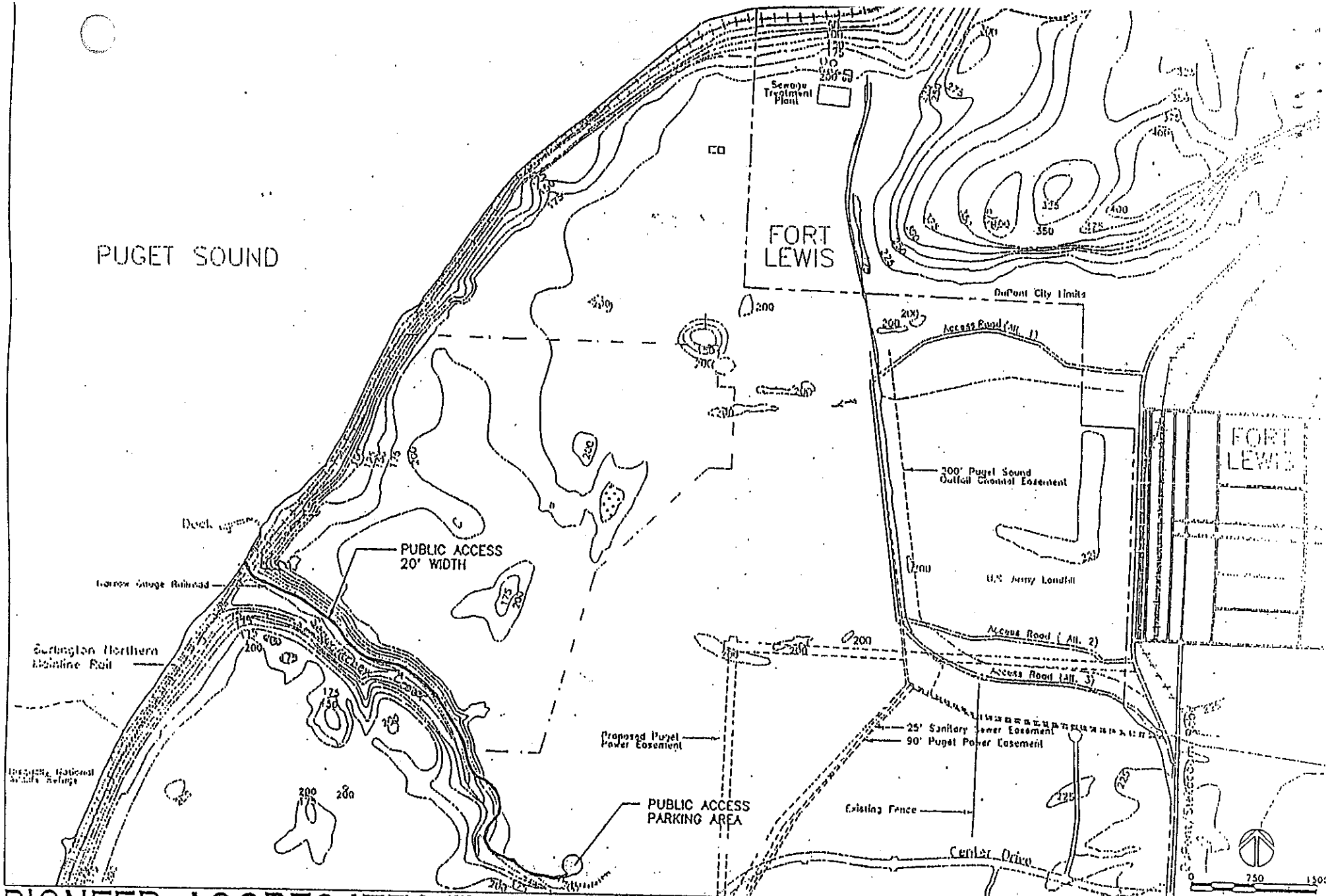
PRESTON THORGRIMSON, SHIDLER
GATES & ELLIS

By_____
James J. Mason
WSBA No. 718
Attorneys for Defendant
City of DuPont

221262

ATTACHMENT H

PUBLIC ACCESS PLAN



PIONEER AGGREGATES

DUPONT, WASHINGTON

LEGEND:

- DUPONT CITY LIMITS
- ROADS
- LEASE LINE
- SIZE AND LOCATION OF PARKING AREA MAY VARY BASED ON SITE CONDITIONS.

Public Access

ATTACHMENT I

SIGN INSTALLATION DETAIL

5' TO GRADE

ATTACH SIGN TO POST WITH TWO 5/16 GALVANIZED LAG BOLTS WITH WASHERS

PRE-PRINTED PLASTIC SIGN

8'- 4X4 CEDAR OR PRESSURE-TREATED POST SET 3' INTO HOLE

KING COUNTY
WETLAND/STREAM SIGN INSTALLATION DETAIL

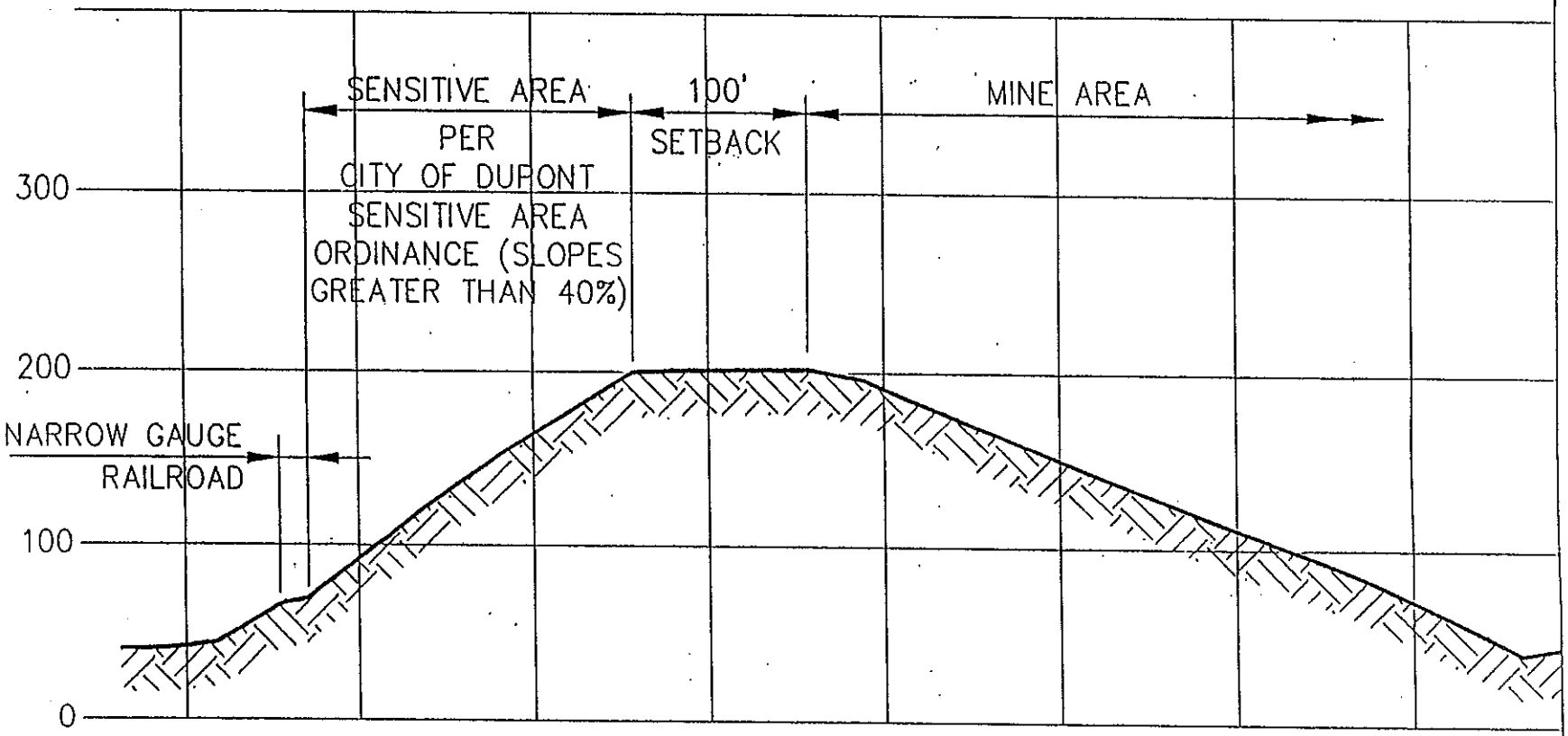
- The Wetland/Stream sign shall be posted at the boundary between the Sensitive Area Buffer, Setback Area or Setback Tract and the Building Setback Area.
- One sign shall be posted per lot for every 150-feet of Sensitive Area

ATTACHMENT J

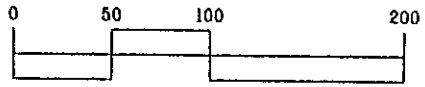
SEQUALITCHEW CREEK SETBACK

Harris Group Inc.

PIONEER AGGREGATES
SEQUALITCHEW CREEK
SENSITIVE AREAS
SHEET 5 OF 5



SECTION A



GRAPHIC SCALE
1 inch = 100 ft

ATTACHMENT K

ASPHALT AND CONCRETE PLANT COVENANT

Filed for Record at Request of:
After Recording Mail to:
HILLIS CLARK
MARTIN & PETERSON, P.S.
Attn: Ann M. Gygi
500 Galland Building
1221 Second Avenue
Seattle, Washington 98101-2925

THIS SPACE PROVIDED
FOR RECORDER'S USE:

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

DECLARATION RESTRICTING USE OF PROPERTY

THIS DECLARATION is made this ____ day of _____, 1994 by WEYERHAEUSER REAL ESTATE COMPANY, a Washington corporation ("Declarant").

RECITALS

A. Declarant is the owner of certain real property located in the City of DuPont, in Pierce County, Washington, more particularly described on the attached Exhibit A which is referred to herein as the "Property."

DECLARATION

1. Declaration of Restriction. Declarant hereby declares and impresses a covenant on the Property for a period of ninety-nine years from December 25, 1994, prohibiting construction of an asphalt plant or concrete plant anywhere on the Property.

2. Duration. For ninety-nine years, this Declaration shall run with and bind the Property, and shall inure to the benefit of and shall be enforceable by the City of DuPont to the extent provided by law. This Declaration is binding upon the Declarant's legal representatives, heirs, successors, and assigns. Every purchaser or grantee of any interest (including, without limitation, a security interest) in the Property, by acceptance of a deed or other conveyance therefor, thereby agrees that this Declaration is binding upon their use of the Property for the duration of the ninety-nine year period described above.

EXECUTED the day and year first above written.

WEYERHAEUSER REAL ESTATE COMPANY

By_____
Its_____

By_____
Its_____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this ____ day of _____, 1994, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____, to me known to be the _____ and _____, respectively, of WEYERHAEUSER REAL ESTATE COMPANY, a Washington corporation, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute the said instrument.

WITNESS MY HAND AND OFFICIAL SEAL hereto affixed the day and year first above written.

_____
Name _____
NOTARY PUBLIC in and for the
State of Washington, residing
at _____.
My commission expires _____.

EXHIBIT A TO DECLARATION RESTRICTING PROPERTY
LEGAL DESCRIPTION OF DECLARANT'S PROPERTY

THAT portion of Sections 22 and 23, Township 19 North, Range 1 East, W.M., Pierce County, Washington, more particularly described as follows:

BEGINNING at the Southeast corner of said Section 22;

THENCE along the South line of said Section 22,
N 87°49'38" W, 457.99 feet to the centerline of Sequalitchew Creek;

THENCE along said centerline, the following bearings and distances:

N 13°28'38" W, 129.14 feet;
N 41°18'14" W, 71.97 feet;
N 29°10'44" W, 239.19 feet;
N 34°50'25" W, 282.11 feet;
N 51°48'54" W, 221.02 feet;
N 55°46'05" W, 226.00 feet;
N 79°32'49" W, 267.29 feet;
N 62°09'45" W, 257.03 feet;
N 52°28'56" W, 257.90 feet;
N 36°30'27" W, 150.34 feet;
N 45°47'01" W, 43.05 feet;
N 29°18'46" W, 131.07 feet;
N 74°09'12" W, 73.54 feet;
N 70°33'10" W, 201.30 feet;
N 42°11'19" W, 83.69 feet;
N 52°39'53" W, 105.03 feet;

N 62°16'24" W, 483.82 feet to the Southeasterly Right-of-Way margin of the Burlington Northern Railroad;

THENCE Northeasterly along said Southeasterly Right-of-Way margin, the following bearings and distances:

N 35°15'30" E, 259.82 feet to a point of curvature;

Northeasterly 489.60 feet along the arc of a tangent curve to the right, having a radius of 4197.28 feet, through a central angle of 06°41'00" to a point of tangency;

N 41°56'30" E, 227.65 feet;
S 87°57'48" E, 156.43 feet;
N 41°56'30" E, 59.37 feet;
N 87°57'48" W, 215.01 feet;
N 02°02'12" E, 34.39 feet;
N 41°56'30" E, 188.14 feet to a point of spiral curvature;

N 41°22'48" E, along the spiral chord, 168.96 feet to a point of curvature;

Northeasterly 654.07 feet along the arc of said curve to the left, having a radius of 2897.93 feet, the radius point of which bears N 49°44'18" W, through a central angle of 12°55'55" to a point of spiral curvature;

N 26°12'42" E, along the spiral chord, 168.96 feet to a tangency;

N 25°39'00" E, 484.70 feet to a point of curvature;

Northeasterly 650.18 feet along the arc of a tangent curve to the right, having a radius of 4264.28 feet, through a central angle of 08°44'09" to a point lying 600 feet South (when measured at right angles from) the North line of said Section 22;

THENCE along a line parallel with and 600 feet South of said North line, S 88°53'04" E, 1253.64 feet to the East line of said Section 22;

THENCE along a line parallel with and 600 feet South of the North line of said Section 23, S 88°53'04" E, 2388.86 feet;

THENCE S 02°06'11" W, 450.07 feet;

THENCE S 88°53'04" E, 200.03 feet;

THENCE S 02°06'11" W, 921.50 feet;

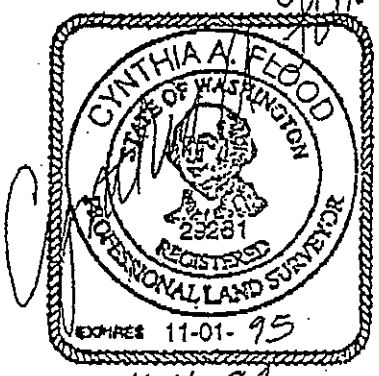
THENCE N 88°24'40" W, 272.74 feet;

THENCE S 47°45'56" W, 1770.31 feet;

THENCE S 16°28'48" W, 2207.74 feet;

THENCE N 88°47'45" W, 500.26 feet to the POINT OF BEGINNING.

See attached Exhibit "X".



5-16-94

Before Hearing Examiner
Gary N. McLean

BEFORE THE HEARING EXAMINER
FOR THE CITY OF DUPONT

In the Matter of the Site Plan and Steep Slope Buffer Reduction Applications filed on behalf of **CalPortland Company** **Project Name:** **Pioneer Aggregates –** **North Parcel Mine** ***(Proposal to expand mining of a 142 acre portion of an approximately 201 acre area located in the northwestern portion of the City of DuPont, adjacent to Puget Sound and CalPortland's existing Pioneer Aggregates mining operation)***	**City File No. LU 12-02** **FINDINGS OF FACT, CONCLUSIONS OF LAW AND DECISION**

I. SUMMARY OF DECISION.

The Site Plan and Buffer Reduction Applications for CalPortland's North Parcel Mine are approved, subject to conditions included in this Decision.

II. RECORD AND EXHIBITS.

Exhibits entered into evidence as part of the record, and a digital recording of the public hearing, are maintained by the City of DuPont, and may be examined or reviewed by contacting the City Clerk's Office.

Hearing Testimony: The following individuals presented testimony under oath at the duly noticed open record public hearing held on July 25, 2013:

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1. Don Russell, Lakewood resident, provided verbal testimony and written comments, focusing primarily on impacts to the American Lake/Sequalitchew Creek watershed that might result from future mining operations on CalPortland's South Parcel;

2. Bill Kingman, Planning Manager for the City of DuPont, provided verbal testimony summarizing the applications, Staff Report and proposed conditions of approval;

3. Richard Weinman, attorney and land use/environmental consultant for the City of DuPont, prepared the environmental documentation detailing the City's review of the applications, responded to questions and addressed matters raised during the public hearing;

4. Stephen H. Roos, the applicant's attorney, provided testimony and documentation regarding limited edits to the Staff Report and proposed modifications to certain conditions;

5. Pete Stoltz, CalPortland Manager of Permitting and Governmental Affairs, addressed specific questions raised in public comments, addressed proposed modifications to certain conditions, and provided a summary of operations at the site; and

6. Owen Rees, PE, Water Resources Engineer with Aspect Consulting LLC, on behalf of the applicant, CalPortland, addressed issues raised in public comments, including groundwater conditions at the site; proposed modifications to certain conditions; and authored Appendix "A" included in the EIS.

Exhibits:

In addition to the City's Staff Report, as corrected by staff during the public hearing, a total of fourteen (14) exhibits were accepted into the record as numbered, identified and described as follows:

1. CalPortland North Parcel Mining Project Proposal, Draft Environmental Impact Statement, issued by the City of DuPont on March 20, 2013;

2. CalPortland North Parcel Mining Project Proposal, Final Environmental Impact Statement, issued by the City of DuPont on June 24, 2013, two bound volumes;

3. CalPortland North Parcel Mining Project Site Plan illustration;

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4. Map, depicting site location and surrounding area, prepared by Aspect Consulting, dated January of 2013;

5. Zoning Map for the City of DuPont, dated May 14, 2010;

6. City of DuPont Ordinance No. 95-521, adopted on September 26, 1995, approving application for shoreline permits, master program amendment, site plan approval, and sensitive area ordinance exception for the Pioneer Aggregates Tatsolo Point Barge Transshipment Proposal;

7. 2011/2012 *Settlement Agreement for DuPont Mine, Restoration of Sequalitchew Creek Watershed, and Preservation of Puget Sound Shorelines and Adjacent Open Space,* made by and among the Washington State Department of Ecology, the City of DuPont, CalPortland, the Nisqually Delta Association, the Black Hills Audubon Society, the Washington Environmental Council, People for Puget Sound, the Tahoma Audubon Society, the Seattle Audubon Society, and Anderson Island Quality of Life Committee[1];

8. Summary of Conditions of Approval, identifying issues/conditions found in Ordinance No. 95-521, and where such topics are addressed in the Staff Report for the North Parcel Project Proposal;

9. Copy of written comments, read into the record by Mr. Russell during the public hearing;

10. "Citizen Comment on the Final Environmental Impact Statement for the proposed CalPortland North Parcel mining project in the City of DuPont," one bound volume of materials stamped 'received' by the City on July 22, 2013, submitted into the hearing record as an exhibit by Mr. Russell during his testimony at the public hearing;

11. City of DuPont Land Use Application materials, File No. LU 12-02, submitted by CalPortland on March 20, 2012;

12. Applicant CalPortland's suggested edits and modifications to the City's Staff Report and proposed conditions of approval;

[1] Throughout portions of the Record, comments and other exhibits, this exhibit is sometimes referenced as the 2011 Settlement Agreement or the 2012 Settlement Agreement, but mean the same document. The Department of Ecology and the non-governmental parties known as the Environmental Caucus approved and executed copies of the Settlement Agreement in or about June of 2011. Following months of public process, including written comments, public testimony, public meetings and discussions through the last half of 2011 and early 2012, the DuPont City Council approved the Agreement on January 24, 2012. See Ex. 1, at page 3.

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13. Email correspondence between Pete Stoltz, CalPortland Manager, and Elizabeth Weldin, a Technical Assistance Coordinator for the Washington State Department of Ecology's Toxic Cleanup Program, dated July 15th and 24th, 2013, confirming that the Department of Ecology has reviewed and agrees with CalPortland's proposed changed to City-recommended Conditions 10(b) and (d), discussed in the Staff Report at Page 20; and

14. Aspect Consulting illustrations (3 pages) showing the North Parcel Cross Section, Groundwater Elevation Contours, and Long-Term Monitoring Hydrograph, submitted by Mr. Rees during his testimony at the public hearing.

III. APPLICABLE LAW AND AUTHORITY.

DuPont Municipal Code Sec. 25.60.040 mandates that site plan approval is required for all mineral extraction proposals and that such applications shall be processed with a Type III review procedure as set forth in DMC 25.175.010. The site plan review criteria are found at DMC 25.150.030[2]. Under DMC 25.175.010 and .050, the Hearing Examiner is authorized to conduct an open record public hearing to consider evidence and testimony regarding a site plan application, and to issue a decision following such hearing to approve, conditionally approve, or deny the application, which decision is appealable to Pierce County Superior Court. The burden of proof is on the applicant/proponent, and an application must be supported by convincing proof establishing that the proposal conforms to the applicable elements of the city's development regulations and comprehensive plan. DMC 25.175.050(5). The applicant/proponent must also prove that any significant adverse environmental impacts have been adequately mitigated. *Id.*

Although a steep slope buffer-reduction application is normally handled as a Type I administrative approval process, it is being reviewed using the more rigorous Type III permit process required for the connected-action, the underlying site plan application for the North Parcel Mine site. See DMC 25.105.070(2)(c) and 25.175.010(2)(b) and (c). Buffer reduction applications must satisfy the following criteria set forth in DMC 25.105.070(2)(c) and (d):

> (c) Buffer Reduction. The city may allow reduction of a buffer to not less than 25 feet if the city approves a geotechnical report which demonstrates that:
>
> (i) The proposed development will not create a hazard to the subject property, surrounding properties, erosion, or

[2] DMC 25.150.030 Review criteria. In order to obtain site plan approval, all of the development regulations and criteria specified in the district applicable to the property must be satisfied in addition to any general development requirements in Chapters 25.75 through 25.95 and 25.105 through 25.125 DMC.

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sedimentation to off-site properties or bodies of water; and

(ii) The proposal addresses the existing geological constraints of the site, including an assessment of soils and hydrology; and

(iii) The proposed methods of construction will minimize erosion and landslide potential and will improve or not adversely affect the stability of the ravine sidewall, bluff, or slope; and

(iv) The proposal uses construction techniques which minimize disruption of existing topography and natural vegetation.

(d) Development Conditions. As part of any approval of development near an area of steep slopes the city may require:

(i) All impacts identified in the geotechnical report be mitigated; and

(ii) All utilities and roadways to and within the site be located so as to require the minimum amount of modification to the slope; and

(iii) The city may retain consultants at the applicant's expense to ensure that the mitigation measures are implemented.

Given the size of the record and environmental documentation, by agreement of the parties during the public hearing, this Decision is issued more than 10 days after close of the record. DMC 25.175.050(7)(b).

The City of DuPont has adopted the state's SEPA Rules, found at WAC 197-11, by reference. DMC 21.01.030. Under WAC 197-11-680(4)(c), if there is a time limit established by statute or ordinance for appealing the underlying governmental action, then appeals (or portions thereof) raising SEPA issues must be filed within such time period. Type III decisions issued by the Hearing Examiner (such as the Site Plan and Buffer Reduction approvals issued in this Decision) are appealable to the Pierce County Superior Court by a party of record with standing to file a land use petition. Such petition must be filed within 21 days after issuance of the decision, as provided in Chapter 36.70C RCW. See DMC 25.175.010(4) and .060(6); and RCW 36.70C.040(3).

IV. FINDINGS OF FACT.

With the exception of background information, and a summary of reviews that have occurred to date, the Findings included in this Decision are limited in scope to address potential impacts and proposed mitigation for mining operations to occur on CalPortland's North Parcel. Operations on the South Parcel, and any Restoration Plan associated with

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CalPortland's mining operations, will require subsequent environmental review and approvals, based on the law and regulations in effect at the time applications for such projects might come forward. This Decision is not intended to rule upon the adequacy of any mitigation measure or condition(s) that might be imposed under SEPA for mining operations on the South Parcel, or in conjunction with any Restoration Plan.

Based on the record established for this matter, the Examiner issues the following findings of fact:

Proposed Action.

1. In this matter, CalPortland, is requesting approval of a site plan under DMC Chapter 25.150. Site plan review is a Type III procedure requiring approval by the City Hearing Examiner. DMC 25.150.020. The applicant submitted a site plan review application on March 20, 2012, and the application was determined to be complete on April 3, 2012. A Notice of Application was published on April 4, 2012. No comments were received within the 30-day comment period. A State Environmental Policy Act (SEPA) Determination of Significance (DS)/Scoping Notice was published on April 9, 2012. A Draft EIS was published on March 20, 2013 (Exhibit 1). A Final EIS was published on June 24, 2013 (Exhibit 2). A notice of the public hearing on the site plan application was published on June 24, 2013. *See* Staff Report.

2. The Proposed Action involves a surface mining operation to extract deposits of sand and gravel from approximately 142 acres of a 201-acre site (Exhibit 3). The property, commonly known as the "North Parcel", is located in the northern portion of the City (Exhibit 4). The property is zoned Residential Reserve (RR) with a Mineral Resource Overlay (Exhibit 5). The site would be reclaimed pursuant to a revised reclamation plan that has been submitted to the Washington Department of Natural Resources (DNR). The site would be logged prior to mining pursuant to a Forest Practice permit from DNR. Clearing, mining and reclamation would then proceed on approximate 40-acre segments of the property. Several existing state permits applicable to the existing Pioneer Aggregates mining operation would be revised to address mining of the North Parcel. The Proposed Action also includes reducing the environmentally sensitive steep slope buffer at the top of a manmade slope that is 40 percent grade from 50 to 25 feet, per DMC 25.105.070(2)(c). *See* Staff Report.

3. The Staff Report erroneously referenced the buffer reduction as a request to reduce the buffer at the "toe" instead of the "top" of the slope. To avoid any potential confusion, all references to the buffer reduction request, and the approval granted herein, only apply to a buffer reduction for the top, i.e. the upper area of the steep slope, not the toe, tow, or bottom area. This Decision has attempted to correct the typo, but any omissions are unintentional and should be read to mean the TOP not the TOE of the slope.

History, Prior Planning, Environmental Reviews, Settlement Agreements.

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4. A detailed history of the prior applications, operations, environmental reviews and previous actions associated with the CalPortland and its predecessors' mining operations in the DuPont vicinity is included in Section 2.4 of the FEIS, Exhibit No. 2.

5. *Pioneer Aggregates Mine:* Applications for site plan approval and shoreline permits for the existing Pioneer Aggregates Mine were submitted to the City of DuPont in 1991. Major elements of the proposal included segmental clearing, mining and reclamation; construction of a processing facility; rehabilitating and using a then-existing dock in Puget Sound (subsequently removed) to ship the majority of mined aggregates by barge; and constructing of an above-ground conveyor system to move material to the processing plant and to the dock.

In September 1993, following public hearings, and a recommendation by the Planning Agency, the DuPont City Council approved the site plan application, shoreline substantial development permit, and shoreline conditional use permit subject to extensive conditions of approval and mitigation measures. Approval of the site plan included numerous conditions involving operations, monitoring and reporting, and construction techniques (Ordinance 95-521, Exhibit A, Section B.9) (Exhibit 6).

6. *Barge Shipment Facility, Shoreline Master Program Amendment, 1994 Settlement Agreement:* The Department of Ecology (DOE) denied the shoreline conditional use permit for the project and several appeals were filed. The various appellants and interested parties entered into a mediation process which resulted in the execution of a Settlement Agreement in December, 1994, hereinafter known as the "1994 Settlement Agreement". Parties to the agreement included Ecology, the City of DuPont, Lone Star Northwest (now CalPortland), Weyerhaeuser Real Estate Company (WRECO), Nisqually Delta Association, Black Hills Audubon Society, Washington Environmental Council, National Audubon Society, and the Anderson Island Quality of Life Committee.

Pursuant to the 1994 Settlement Agreement, CalPortland abandoned plans to use the old DuPont wharf for commercial shipping of aggregates, and agreed to pursue programmatic and permit actions necessary to locate an aggregate transshipment facility in the area of Tatsolo Point. These actions were addressed in the *Pioneer Aggregates Barge Loading Facility and DuPont Shoreline Master Program Amendment SEIS (1995)*.

The programmatic actions included a map and text amendment of the City of DuPont Shoreline Master Program (SMP) to incorporate policies, use regulations, and development standards for the "Tatsolo Point Special Management Unit," which permitted construction and operation of a dock for barge loading and shipping of aggregates. The shoreline environment (on both sides of the old dock) was re-designated from "Urban" to "Conservancy."

The project proposal included construction of a conveyor from the processing plant,

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across the North Parcel, and down the bluff to the new dock in Puget Sound. An access road for maintenance vehicles would also be constructed from the processing plant to the dock. No changes in the mining, processing or reclamation elements of the Pioneer Aggregates project were proposed.

Following adoption of the amendment by the City Council, the revised master program was approved by Ecology in December 21, 1995. The City and Ecology also approved a shoreline conditional use permit for the barge-loading facility at Tatsolo Point. Mining operations began in 1997.

7. *DuPont Comprehensive Plan Amendments:* Two amendments to the City's Comprehensive Plan are of particular importance to the pending North Parcel application. In 2001, the City amended the Comprehensive Plan Land Use map and text to reflect changed conditions and new information, and to achieve a better balance of land uses. The amendments included modifications to the Comprehensive Plan's Mineral Resource policies (LU-39 to LU-43) to establish a two-step process for conserving commercially significant mineral resource lands. First, ongoing planning and evaluation would be used to identify lands that contain significant mineral resources. Second, the City would designate newly identified mineral resources on the Comprehensive Plan Land Use map. Designation could occur concurrent with review of a proposed mining application or separately. An addendum to the EIS for the Comprehensive Plan was prepared and published in July 2001. In 2003, CalPortland (then Glacier Northwest) submitted an amendment to the DuPont Comprehensive Plan to designate additional known mineral resource lands of long-term significance in both the North Parcel (approximately 201 acres) and the South Parcel (approximately 177 acres). That amendment was approved by DuPont on July 25, 2012 (Ordinance No. 06-816). An Addendum to the Comprehensive Plan EIS (a non-project action) was published (City of DuPont, 2005) to document the environmental impacts of the Comprehensive Plan amendment.

8. *2007 South Parcel Application:* In December 2007, CalPortland (then Glacier Northwest) submitted applications to the City of DuPont to permit mining of the 177-acre South Parcel, and additional areas within the existing mine. Mining would have involved incremental clearing, mining and reclamation of the site. The proposal also included removal of a Kettle wetland, removal of smaller seeps wetlands and creation of a new tributary to Sequalitchew Creek (sometimes called North Sequalitchew Creek). Groundwater from the mine site would have been collected in this new tributary, which would have an annual base flow of approximately 8 cfs and would provide approximately 4,000 lineal feet of riparian habitat. The objective was to provide additional fish habitat and improve habitat conditions in Sequalitchew Creek, as well as dewatering the mine. An alternative dewatering approach was also considered, which would construct a pipeline, rather than an open stream channel, to collect and convey groundwater to Sequalitchew Creek. A Final Supplemental EIS for that proposal was published in May 2007. The City issued its staff report on the South Parcel application was in January of 2009. Several

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parties to the 1994 Settlement Agreement challenged the South Parcel application. The City took no final action on the matter.

9. *2011/2012 Settlement Agreement Process:*

Several parties to the 1994 Settlement Agreement asserted that the 2007 South Parcel proposal was inconsistent with such agreement and a mediation process was begun. In November 2009, a Memorandum of Understanding (MOU) was executed which identified a process for further study to identify and evaluate alternatives to improve the Sequalitchew Creek watershed. The MOU also outlines a SEPA review process, including public input, for any plans to mine the North Parcel and/or South Parcel. The *Sequalitchew Creek Ecosystem & Watershed Restoration Alternatives Final Feasibility Study* (Anchor QEA and Aspect Consulting, June 4, 2010), which resulted from the MOU, recommends two options for mining the North and South Parcels, and six alternatives for ecosystem restoration and enhancement. Study and evaluation is ongoing at this time.

In June of 2011, various parties to the 1994 Settlement Agreement executed a *Settlement Agreement for the DuPont Mine, Restoration of Sequalitchew Creek Watershed, and Preservation of Puget Sound Shorelands and Adjacent Open Space* (Exhibit 7). The Settlement Agreement established a framework, for review and permitting of CalPortland's mining proposals along with a concurrent process for developing a mitigation program to restore and enhance the Sequalitchew Creek watershed and protect open space and the Puget Sound shoreline. Signatories included CalPortland (then Glacier NW), DOE, the City of DuPont, and a coalition of environmental groups consisting of the Nisqually Delta Association, Tahoma Audubon Society, Washington Environmental Council, People for Puget Sound, Black Hills Audubon Society, Seattle Audubon Society, and Anderson Island Quality of Life Committee. Following an extensive public review process, the City of DuPont approved and signed the Settlement Agreement in January of 2012.

The Agreement articulates a phased series of planning, review and permitting actions that would occur over a several-year period. Compliance with these actions is a condition of the Environmental Caucus's support for CalPortland's proposals to mine the North and South parcels.

Pursuant to the Settlement Agreement, CalPortland would also preserve a 45-acre open space area along Puget Sound, west of the mine area, including bluffs and an area for a pedestrian trail, and grant an easement for future public access for a pedestrian trail within the open-space area following close of the mine. No mining would occur within this open space area. The Settlement Agreement (Section 3.5) establishes procedures for finalization and recording of the conservation easement following review and agreement by the parties to the Agreement.

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North Parcel Mining Proposal.

10. In this matter, CalPortland seeks approvals needed to mine approximately 142 acres of the 201-acre North Parcel. The proposed mining plan for the North Parcel is shown in Exhibit 2. Mining would begin in the southeast portion of the site and would generally proceed from within the existing permitted mine area in a northerly direction, from east to west, then from west to east, and on up to its completion.

Concurrent clearing, mining and reclamation would occur in approximate 40-acre increments. The total area being cleared, mined and reclaimed at any one time would be limited to approximately 120 acres. Mass clearing of the site would not occur.

Pursuant to the 2011/2012 Settlement Agreement (Exhibit 7), CalPortland will preserve a 45-acre open space area along Puget Sound, west of the mine area, including bluffs and an area for a pedestrian trail, and grant an easement for future public access for a pedestrian trail within the open-space area. Based on past market demand, materials would be extracted at an average rate of approximately 2.8 million cubic yards (cy) per year. The North Parcel and the existing mine would be mined concurrently for approximately 4 years (1.4 million cy from each mining site), and mining of the North Parcel would continue for an additional 7.5 years. The actual extraction rate and life of the mine will depend on the market demand for materials. See FEIS at page 6. Mining would begin when all permits are obtained, potentially by the end of 2013.

The proposed North Parcel mining operations include the following elements:

a. *Logging*. Merchantable timber remaining on approximately 109 acres of the 142-acre portion of the North Parcel proposed for mining would be logged in one step, pursuant to a Forest Practice Application submitted to the Department of Natural Resources (DNR).

b. *Clearing and Topsoil Removal*. Prior to mining, excavators would be used to remove stumps and vegetation. This material would then be processed through a portable tub grinder and used to amend topsoil for use in reclamation. Clearing and topsoil removal would occur in segmented portions of the mine area over the life of the mine. The Department of Ecology has recommended procedures for identifying, reporting and cleaning up any on-site soils that may contain contamination from the Tacoma Smelter Plume (TSP). All procedures and requirements recommended by Ecology are incorporated into Condition of Approval No. 10.

c. *Mining and Groundwater*. All mining would occur above the seasonal groundwater table. The method of mining in the North Parcel would be the same as that used in the currently permitted mine area. The proposal is to establish the mine floor at an elevation of 25 feet (NGVD 29) and to maintain a minimum vertical separation of 10 feet.

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d. Processing. Material mined from the North Parcel would be conveyed from the mine to the existing processing facility and would be processed in the same general manner as at present, using the same type and amount of equipment that occurs currently. No changes to existing processing operations are proposed.

e. Transport. The mode and extent of transporting aggregate products from the site would not change relative to existing operations. Approximately 80 percent of the product would be loaded onto barges at the existing dock at Tatsolo Point and transported to Puget Sound regional market by barges. Approximately 20 percent of the product would be transported to the local market by truck. Some material would continue to be incorporated into concrete at the existing on-site concrete batch plant serving the local market.

f. Reclamation. CalPortland will modify its existing Reclamation Permit from DNR, pursuant to the Surface Mining Act (RCW 78.44), for the North Parcel mining project. Reclamation steps would follow the approved reclamation plan.

Operating hours would be the same as for the existing operation: during daytime hours, Monday through Friday, except for the barge loading operation (24 hours per day). Demand for materials, and operating hours, fluctuate both seasonally and with regional economic conditions.

SEPA Review for North Parcel Mining Proposal.

11. A SEPA DS/Scoping Notice for the North Parcel proposal was published on April 9, 2012, indicating that an environmental impact statement (EIS) would be prepared. Elements of the environment identified for detailed study in the EIS included: Earth, Air Quality and Greenhouse Gas Emissions, Water Resources, Plants and Animals, Noise, Land Use, Consistency with Plans, Policies and Regulations, Population, Housing and Employment, Aesthetics, Cultural Resources, and Transportation. A Draft EIS was published on March 20, 2013 (Exhibit 1), and the City provided a 45-day comment period. Comments were received, examined, and responses prepared and appended to the Final EIS. A Final EIS was published on June 24, 2013 (Exhibit 2). The Final EIS contains all analyses and information that were contained in the Draft EIS, as well as responses to comments and additional mitigation measures. Notice for each step in the SEPA process was provided in accordance with City and State requirements.

12. The EIS examines the North Parcel mining proposal and a No Action Alternative. The EIS also includes information about the adjacent South Parcel, which the City deems to be a "similar action" as that term is defined in the SEPA rules (WAC 197-11-060(3)(c)). The South Parcel is similar to the North Parcel in terms of its geography (adjacent), the technology that would be applied and operations that would occur (clearing, mining, reclamation, processing and transport), and many existing environmental conditions of the site. Lead agencies have the discretion to consider similar actions in the same

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environmental document. Considering similar actions in the same EIS can also facilitate consideration of cumulative impacts. As noted previously, no action is requested regarding the South Parcel at this time.

13. Some comments expressed concern that the Draft EIS included information regarding potential South Parcel operations, but the City committed to the combined study process following the extensive public review process associated with its consideration and approval of the 2011/2012 Settlement Agreement, which expressly provides that a single EIS will be prepared that analyzes the impacts of mining in the South and North Parcel in the City's Mineral Resource Overlay. *See* Sec. 1.9.1(B)(1)) and Sec. 3.1 of the 2011/2012 Settlement Agreement, Ex. 7, at page 3. Despite comments, the Examiner finds that the City acted within its discretion and in compliance with applicable SEPA rules in preparing a single EIS addressing the North and South Parcels. Whether the current EIS is adequate for purposes of reaching a decision on any future application for approvals needed to commence mining operations on the South Parcel is an issue that must be addressed under the laws in effect at such time, and shall be based on the specifics of any proposal that might come forward. Again, this Decision applies only to the applications regarding North Parcel mining operations.

14. Existing environmental documents that have been published by the City of DuPont and that provide information that is relevant to the North Parcel mining proposal include the following: Pioneer Aggregates Mining Facility and Reclamation Plan EIS (1992-1993); Pioneer Aggregates Barge Loading Facility and DuPont Shoreline Master Program Amendment SEIS, (1995); 2001 Comprehensive Plan Amendment and EIS Addendum (2001); 2006 Comprehensive Plan Amendment and EIS Addendum (2006); and Mining Expansion (South Parcel) & North Sequalitchew Creek Supplemental EIS, 2007.

Findings Regarding Applicable City Policies and Regulations.

15. ***Comprehensive Plan Provisions / Mineral Resource Overlay:*** The GMA requires that cities and counties identify, designate and adopt regulations to conserve resource lands of long-term commercial significance, including lands containing valuable mineral resources. The intent is to ensure that designated resources remain available for commercial production. WAC 365-195-815(1)(a)-(b). The DuPont Comprehensive Plan identifies a two-step process that should be used to conserve long-term commercially significant mineral resource lands (Policy LU-39). First, ongoing planning and evaluation will identify lands that contain commercially significant mineral resources, so that these resources are not inadvertently developed or foreclosed from use. Second, the City will designate mineral resource lands on the Comprehensive Plan Land Use Map.

16. The Comprehensive Plan also creates a Mineral Resource Overlay designation, which is applied to the Residential Reserve and Manufacturing/Research Park land use categories north of Center Drive and Sequalitchew Creek (LU-40), including the North Parcel.

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Commercially significant mineral resources underlie this overall area. The Plan acknowledges that phased mining and reclamation may occur in the Overlay area subject to City review of a site-specific proposal.

17. ***Land Use Code Provisions:***

Mineral Resource Overlay Zoning Designation.

The Mineral Resource Overlay designation in the Land Use Code (DMC 25.60) is intended to implement the Growth Management Act, the Surface Mining Act (RCW 78.44), and the DuPont Comprehensive Plan. Permitted uses in the Overlay include mineral extraction, along with associated structures and equipment. The regulations state that potential impacts relating to traffic, lighting, visual screening, vegetation, noise and sensitive areas shall be examined, while recognizing that impacts to other elements of the environment, including air and water quality are within the jurisdiction of federal, state or regional agencies. Site plan approval is required for all mining proposals. The Mineral Resource Overlay zoning designation applies to the North Parcel. Specific topics mentioned in the regulations are addressed individually below.

a. Traffic. Traffic conditions and impacts are evaluated in Section 3.11 of the Final EIS and are summarized herein. The City has adopted a PM peak hour Level of Service (LOS) "D" for its streets. The study area for traffic includes the following intersections: Wharf Road/Pioneer Way (stop controlled); DuPont-Steilacoom Road/Wharf Road (stop controlled); DuPont-Steilacoom Road/Center Drive (signalized); DuPont-Steilacoom Road/Barksdale Ave./Wilmington Drive (signalized); and the I-5 northbound and southbound ramps (signalized). City regulations currently limit commercial vehicle access to portions of Center Drive, including access to Wharf Road and the existing mining facility (DMC 16.05.020). Roads in the vicinity of the North Parcel and existing mining operation do not have sidewalks or shoulders and experience very little pedestrian or bicycle use.

As of 2012, signalized intersections in the study area operate at acceptable levels of service in the PM peak hour (DuPont-Steilacoom Road/Wharf Road – LOS A; DuPont-Steilacoom Road/Barksdale Ave.-Wilmington Drive – LOC C). The northbound and southbound ramps to I-5 at Barksdale Avenue, which are outside the City's jurisdiction, currently operate at LOS D, which is consistent with WSDOT's adopted level of service. There are no existing adverse traffic safety conditions based on collision data for 2007-2011. The currently adopted, 2010-2015 Transportation Improvement Program (TIP) does not identify any programmed traffic improvements at study area intersections. Joint Base Lewis-McChord (JBLM) is planning an access control point (ACP) project that would construct a new access gate to Lewis North at the DuPont-Steilacoom Road/Wharf Road intersection. The project would add an east leg to the existing intersection, a new traffic signal, a northbound right turn lane and a southbound left turn lane. JBLM prepared a traffic analysis and issued a National Environmental Policy Act (NEPA) *Finding of No*

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Significant Impact for the planned improvement.

Anticipated future growth of JBLM and the Puget Sound region is anticipated to result in substantial traffic growth by 2030 and will result in a need for improvements to the regional road system. In March 2012, the Washington State Legislature appropriate $6.9 million to conduct an Interchange Justification Report (IJR) for five I-5 intersections, including the Steilacoom-DuPont/Barksdale Ave. interchange.

b. Lighting. The DuPont Land Use Code does not contain specific standards for lighting within the Mineral Resource Overlay. Some zoning districts, including the Manufacturing/Research Park District, contain a performance standard requiring that outdoor lighting be designed to minimize light escapement beyond the site (DMC 25.45.030 (15)). Ordinance 95-521, the conditions of approval for the existing Pioneer Aggregates mining facility, contains conclusions (No. 22.g) and conditions that address lighting of the transport dock (Conditions 73 and 74) and lighting of conveyor transfer points (Condition 75).

c. Visual Screening. Existing conditions and impacts to aesthetics/views are evaluated in Section 3.9 of the Final EIS. The EIS identifies Key Viewpoints (KVP) from which homeowners, motorists, pedestrians and/or recreational boaters could potentially view the North Parcel or on-site activities. Key Viewpoints for potential visual impacts include: KVP 1 – the intersection of Center Drive and Powerline Road; KVP 2 – south of Sequalitchew Creek, near the 5th hole of the Home Course; KVP 3 – the Nisqually Reach Nature Center; and KVP 4 - Cole Point on Anderson Island. In general, due to topography and existing vegetation, there are few locations outside of the interior of the North Parcel from which the site is or will be visible.

d. Vegetation. Existing vegetation on the North Parcel is described in Section 3.4 of the Final EIS. The site contains no wetlands or streams. The North Parcel is comprised predominantly of second-growth forest dominated by Douglas fir. Other observed species include western hemlock, pacific yew, madrone, big leaf maple and Oregon ash.

Oregon white oak and white-topped aster are rare plants that occur within the City. A tree survey of the North Parcel, conducted in March of 2013, identified three small Oregon white oaks on the site (Final EIS, Appendix B). White top aster, which is a federal "species of concern" and a state sensitive species, has not been observed on the North Parcel.

WDFW data identifies the bluffs overlooking Puget Sound in the western portion of the North Parcel as a "biodiversity area and corridor." This area/corridor is generally undisturbed, valuable to wildlife, and provides a connection to other habitat, but is surrounded by urban development. Site visits and WDFW database information have not reported the presence or any recent observations of any state priority species, other than pileated woodpecker, which use the site for foraging but not for nesting. No federally

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designated threatened or endangered species of wildlife are present on the site.

Based on habitat associations, use of the North Parcel by other species designated by state or federal agencies as threatened, endangered, or species of concern – including western gray squirrel, band-tailed pigeon, Mazama pocket gopher and northern red-legged frog – is possible but is considered unlikely.

e. Noise. DMC 9.09.040 establishes limits on sounds crossing property boundaries based on the Environmental Designation for Noise Abatement (EDNA) of the sound source and the receiving property. Mining the North Parcel is considered a Class C EDNA (Industrial use) and maximum sound limits are established for surrounding properties for daytime hours and night time hours) varying with land use: 60 dBA (50 dBA nigh time) for residential uses; 65 dBA for commercial uses; and 70 dBA for industrial uses.

Existing noise conditions affecting the North Parcel are identified and evaluated in Section 3.5 of the Final EIS. Noise measurements were taken at 2 locations: Center Drive/Edmund Village (SLM1), which represents the closest residences south of the North Parcel; and Cole Point on Anderson Island (SLM2), which represents the closest residences north of the North Parcel. The measured 24-hour average noise level (Ldn) were 53 dBA for SLM1 and 49-52 dBA for SLM2. The Ldn noise descriptor includes an addition of 10 dBA to sounds occurring between 10 PM and 7 AM to account for possible sleep disturbance.

Ordinance No. 95-521 established a noise monitoring and compliance program, including a noise standard, for the existing Pioneer Aggregates mining operation. Since operations began, noise measurements have been completed on Anderson Island at least every other year. All reports have indicated that the existing operation has complied with applicable noise standards.

f. Sensitive Areas. Sensitive areas are evaluated in Sections 3.1, 3.4 and 3.7 of the Final EIS. Steep slopes are the only regulated sensitive area present on the North Parcel, and the buffer reduction request pending in this matter deals with the top of a steep slope impacted by the North Parcel proposal.

18. ***Residential Reserve Zoning District***. The underlying zoning classification for the North Parcel is Residential Reserve (RR). The purpose of the Residential Reserve district, per DMC 25.20.010(5) is to designate property that is not needed to meet the City's 20-year growth projections (currently ending in 2012). The district applies a 5-acre minimum lot size as an interim measure, so as to provide time for further planning, evaluation and eventual re-designation when additional residential land is needed. The regulations of the RR district are not applicable to the proposed mining operation and are not discussed further in this Decision.

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19. ***Sensitive Areas – Steep Slopes (DMC 25.105.)*** The Comprehensive Plan identifies features with high ecological value and regional importance, including the Puget Sound shoreline, Edmond Marsh, Sequalitchew Creek, and Oak Savannah. The Plan expresses the City's goal is to protect these features to the maximum extent possible.

Regulated sensitive areas, identified in the Land Use Code (DMC 25.105) include wetlands and their associated buffers; streams and their associated buffers; and steep slopes (ravine sidewalls, bluffs and 40 percent slopes). Neither wetlands nor streams are located on the North Parcel.

Regulations for bluffs/steep slopes require a 50-foot undisturbed buffer of native vegetation from the top, toe and sides of bluffs (as defined in the Code) and slopes of 40 percent. DMC 25.105.070(2). The City may require a larger or smaller buffer (minimum 25 feet) based on the findings of geotechnical studies. Criteria in the code for a buffer reduction include the following:

(i) The proposed development will not create a hazard to the subject property, surrounding properties, erosion, or sedimentation to off-site properties or bodies of water;
(ii) The proposal addresses existing geological constraints, including an assessment of soils and hydrology;
(iii) The proposed methods of construction will minimize erosion and landslide potential and will improve or not adversely affect the stability of ravine sidewalls, bluffs or slopes; and
(iv) The proposal uses construction techniques which minimize disruption of existing topography and natural vegetation.

The Code does not require that slopes greater than 40 percent or their buffers be placed in separate tracts and dedicated to the City or a conservation organization to ensure their permanent protection.

20. *Tree Retention – Landmark Trees (DMC 25.10.120 and 25.120).* The DuPont Municipal Code defines "landmark trees" as existing, healthy, well-formed trees that pose no risk to safety due to potential collapse (DMC 25.10.120). Landmark trees include: (1) Oregon white oak, pacific yew or madrona, at least 24 inches in diameter (single trunk) or at least 30 inches in diameter (multi-trunk), measured at breast height; or (2) Douglas fir, western red cedar, western hemlock, or big leaf maple that are at least 30 inches in diameter (single–trunk), or 45 inches in diameter (multi-trunk), measured at breast height (DMC 25.10.120).

The Code requires that all Oregon white oak trees and one-half of non-oak trees be retained (25.120.030). The Code also requires that a minimum number of trees be retained within various land use districts, calculated as an average number of trees per acre. However, no per-acre tree retention requirements are imposed under the city's code for

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mining activities in a Mineral Resource Overlay.

21. *Shoreline.* The portion of the North Parcel proposed to be mined is comprised entirely of upland and is not within 200 feet of the Puget Sound shoreline. As noted in the description of the project (Staff Report Section C.6), pursuant to the 2011 Settlement Agreement, CalPortland would preserve a 45-acre open space area along Puget Sound, generally corresponding to the 200 foot contour elevation west of the mine area, including bluffs and an area for a pedestrian trail. The open space area is shown on the proposed mining plan (Exhibit 3). The applicant would grant an easement for future public access for a pedestrian trail within the open-space area following close of the mine. Mining would not occur within this area. Procedures for establishing the easement are set forth in the 2011 Settlement Agreement (Section 3.5) and require conference and agreement by the parties to the Settlement Agreement. No specific action by the City is proposed or requested at this time regarding the open space easement.

22. *Site Plan Review Criteria (25.150).* As noted before, the City's Code specifies that a proposal must satisfy the requirements of various development regulations, in addition to requirements of the applicable zoning district. Development regulations specified in the Site Plan review chapter are discussed below.

a. *Commute Trip Reduction (DMC 25.75).* Commute trip reduction programs, which are mandated by state law in certain situations, are intended to reduce peak period motor vehicle trips associated with commute trips, and to thereby reduce environmental impacts associated with vehicle traffic. The City's program requires that large employers (i.e., those with 100 or more employees at a single work site) develop and implement commute trip reduction programs containing specified components. Based on historical employment records, employment at the DuPont facility has varied over time but at no time has exceeded 95 employees. The facility, therefore, does not meet the threshold for an "affected employer" and is not subject to the Land Use Code's commute trip reduction requirements.

b. *Cultural, Historical and Archaeological Resources (DMC 25.80).* DMC 25.80 designates specific resource sites within the City and prohibits construction within 50 feet of markers identifying these sites. The North Parcel does not contain and is not proximate to any of the designated sites. As disclosed in the EIS, however, a mining operation did occur on a portion of the North Parcel property in the late 1800s and early 1900's. No mining is proposed to occur within this area, and the historic mining area would be included in the proposed open space easement. Recommended conditions relating to cultural resources are identified later in this report.

c. Grading (DMC 25.85) was repealed by Ordinance 02-727, and was replaced by DMC Chapter 12.07 (Excavation and Grading), which does not require a grading permit for

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mining. *See* DMC 12.07.010 (adopting Appendix Ch. 33 of 1997 UBC); 1997 UBC Appendix. Ch. 33, Section 3306.2(6)(exempting "mining" of sand and gravel from grading permit requirement). Surface mining is regulated by the State Surface Mining Act (RCW 78.44) which is administered by the Department of Natural Resources (DNR). The applicant has submitted an application to DNR to modify its existing reclamation permit to include North Parcel mining.

d. Landscaping (DMC 25.90). The Land Use Code requires that a minimum portion of development sites be landscaped, with the amount of required landscaping varying by the type of use. The Code does not provide a standard for mining and its requirements do not apply to the subject application.

e. Off-Street Parking (DMC 25.95). The Land Use Code provides minimum and maximum parking standards that vary by the type of land uses. Mining operations are not a listed use. Parking requirements for the administrator on a case-by-case basis determines uses that are not listed in the Code. CalPortland's existing operation provides approximately 63 parking spaces for employees and for the facility office.

f. Setback Street Corners (DMC 25.110). This provision of the Land Use Code applies to corner lots and prohibits objects or structures that could obstruct the vision clearance triangle. This provision is not applicable to the subject application and is not discussed further in this staff report.

g. Signs (DMC 25.115). This section of the Land Use Code regulates the types, size and location of signs for land uses within the City of DuPont. No signage is proposed in connection with the subject application and this section of the Code is not discussed further in this staff report.

h. Wireless Facilities (DMC 25.125). The Land Use Code regulates the construction, modification and placement of wireless communication facilities with the City. The subject application does not involve the construction, modification or placement of wireless facilities, and these provisions are not discussed further in this staff report.

Public Comments.

23. Public comments received from Mr. Russell and the Environmental Caucus the members of which were parties to the 2012 Settlement Agreement expressed concern with portions of the environmental documentation for the North Parcel EIS that addressed potential South Parcel mining operations, expansion, and/or a future restoration plan for the area impacted by CalPortland's mining activities. In response to such comments, the City's Final EIS includes the following language:

"North Parcel mining is the only action that is proposed for review by the

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City at this time, and the EIS is focused on that action. As outlined in the 2011 Settlement Agreement, a separate and distinct permit process, including public involvement, is contemplated for any future South Parcel proposal and a future restoration plan for the Sequalitchew Creek watershed."

Exhibit 2, FEIS, Vol. 2 of 2, pages 16-17, item 7.

24. In response to several questions from the Examiner, Mr. Russell testified that he had no objection to any aspect of the North Parcel EIS as it relates to operations on the North Parcel, and that the environmental documentation was adequate for reaching a decision regarding proposed mining operations on the North Parcel. *Testimony of Mr. Russell.*

25. In response to written comments provided by the Department of Ecology regarding the Draft EIS, City staff modified mitigation measures and recommended conditions of approval, and/or noted that certain comments were already addressed in portions of the EIS. Ex. 2, FEIS, at pages 2 – 6.

26. During the public hearing, Mr. Stoltz presented recent correspondence with the Department of Ecology, explaining that the FEIS and the City's Staff Report for the North Parcel mining project "adopt, in their entirety, the conditions recommended in Ecology's EIS comment letter dated May 3, 2013", and seeking Ecology's approval of a modification to two conditions included in page 20 of the Staff Report, identified as Conditions 10(b) and (d), that would replace the word "grading" with the term "topsoil removal". Ecology reviewed and agreed with the applicant's proposed changes. *See* Ex. 13, July of 2013 email communications between P. Stoltz of CalPortland, and E. Weldin of the Department of Ecology; *Testimony of Mr. Stoltz.*

27. By letter dated May 1, 2013, the "Environmental Caucus" of non-governmental organizations that were parties to the 2012 Settlement Agreement, submitted written comments regarding the Draft EIS, which included the following statements[3]:

This current (May 2013 DEIS) proposal is a successor to a 2007 mine expansion plan, and our organizations, in many ways, have helped shape the current proposal for the northward expansion of the existing mine relative to plan aspects that will help with protection of the shoreline resources. In fact, the proposal we are discussing in this letter was described in general terms in a Settlement Agreement the City of DuPont itself helped shape, and endorsed in early 2012.

[3] See Exhibit No. 2, FEIS, Vol. 2 of 2, at pages 13-15, May 1, 2013 letter from Tom Skjervold, President, Nisqually Delta Association, as Representative of the Environmental Caucus for the 2012 Settlement Agreement, to Dawn Masko, DuPont City Administrator, SEPA Responsible Official.

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Under the terms of that 2012 Settlement Agreement (2012 SA), and subject to CalPortland's compliance with the 2012 SA and all applicable law and regulations including SEPA, we accept the North Parcel mine plan now being put forward. Our comments today intend to support that project in [a] way that is consistent with the 2012 Settlement Agreement.

28. At the public hearing, the applicant's representatives presented Exhibit No. 12, detailing suggested edits and modifications to the City's Staff Report and proposed conditions of approval. City representatives accepted and concurred with all of the applicant's suggested changes reflected in Ex. 12. This Decision and Conditions of Approval have been drafted to conform to such joint recommendation.

29. Any factual matters set forth in the foregoing or following sections are hereby adopted by the Hearing Examiner as findings of fact, and incorporated into this section as such.

V. CONCLUSIONS OF LAW.

1. Based on the record, particularly the City's recommendation of approval found in the Staff Report and the applicant's input as reflected in the environmental documentation and public testimony, the Examiner concludes that the applicant provided credible and convincing proof that the two applications satisfy applicable approval criteria.

2. Through compliance with the Conditions of Approval that are based on environmental review for the project, any environmental impacts associated with development/mining activities that occur on the North Parcel through approval of the site plan and associated buffer reduction request addressed in this Decision will be adequately mitigated.

3. The record provides substantial evidence to support the City's determination that the Conditions of Approval are necessary and adequate to mitigate for probable significant adverse environmental impacts associated with CalPortland's North Parcel mining proposal.

4. The principal purpose of SEPA is to provide decision-makers and the public with information about potential adverse impacts of a proposed action. *Save our Environment v. Snohomish County,* 99 Wash.2d 363, 373 (1983). "SEPA is primarily a procedural statute that requires the disclosure of environmental information. SEPA does not demand a particular substantive result in government decision-making; rather it ensures that environmental values are given appropriate consideration." *Glasser v. City of Seattle,* 139 Wn. App. 728, 742 (2007). The SEPA review process "assists agencies and the public to focus on issues that are ready for decision and exclude from consideration issues already

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decided or not yet ready. Broader environmental documents may be followed by narrower documents, for example, that incorporate prior general discussion by reference and concentrate solely on the issues specific to that phase of the proposal." WAC 197-11-060(5)(b); *Glasser,* 139 Wash. App. 728, 736-37.

5. Mr. Russell and other interested parties who share concerns or opposition to the underlying project based on portions of the EIS that addressed locations other than the North Parcel should be advised that the approvals granted through issuance of this Decision are limited to mining activities on the North Parcel, and that any subsequent applications required for new or expanded mining operations on other adjacent properties controlled by CalPortland are likely to include additional SEPA review and conditions may be imposed in accord with applicable regulations and authority. See discussion in *Glasser,* 139 Wash. App. 728, 738-39; WAC 197-11-443(2); WAC 197-11-060(5)(c); and Finding No. 23.

Compliance with Comprehensive Plan Provisions.

6. Mineral Resource Overlay. The North Parcel proposal is consistent with Comprehensive Plan policies and procedures applicable to mineral resource lands. As shown on the City's Official Zoning Map, Exhibit No. 5, the North Parcel is within the designated Mineral Resource Overlay area. The City reviewed the site-specific mining proposal for the North Parcel using its site plan review process, and complied with applicable procedural and substantive requirements for such application.

Compliance with Land Use Code Provisions.

7. *Mineral Resource Overlay.* The North Parcel is located within the designated Mineral Resource Overlay area, and mining is a permitted use. The applicant submitted its site plan application to mine the North Parcel, and its application was deemed to be complete on April 3, 2012. As required by DMC 25.60, the *North Parcel Final EIS* evaluates potential impacts relating to traffic, visual screening, vegetation, noise and sensitive areas, as well as other issues (e.g., air and water quality) that are within the jurisdiction of federal, state or regional agencies. To the extent significant impacts are anticipated and mitigation measures are required, such measures were incorporated in staff's recommended conditions. The EIS scoping process did not identify lighting as a potentially significant impact of the proposal and it was not evaluated in detail in the EIS.

a. Traffic. Traffic impacts are evaluated in Section 3.11 of the Final EIS. North Parcel mining would extract the same amount of material on an annual basis as is currently mined from the existing Pioneer Aggregates facility. North Parcel mining would also continue the existing split of transportation of material by barge (80 percent) and truck (20 percent). Transport could vary on a daily basis depending on season and general market conditions. The proposal would generate an estimated 9 PM peak hour trips on an average day, and 20 PM peak hour trips on a peak day. PM peak hour Level of Service (LOS) at affected signalized intersections in 2024 would be LOS C at DuPont-Steilacoom

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Road/Center Drive, and LOS D at the DuPont-Steilacoom Road/Barksdale Ave-Wilmington Road intersection. The proposal would add approximately 2 seconds of delay at these intersections. At affected stop controlled intersections, PM peak hour level of service would be LOS A at Wharf Road/Pioneer Way, and LOS C at DuPont-Steilacoom Road/Wharf Road. The proposal would add a fraction of a second of delay at these intersections. Resulting LOS complies with the City's adopted LOS D standard, and would be the same as traffic conditions without the proposed project. The EIS also concluded that the proposal would not result in adverse safety conditions or adverse impacts to transit or non-motorized traffic. No project-specific mitigation measures were identified in the Final EIS.

The I-5 northbound and southbound ramps at Barksdale Avenue would both operate at LOS F in the PM peak hour in 2024. These LOS conditions would also occur without the proposed project. The North parcel proposal would represent approximately 1 percent of total volumes entering these intersections. The I-5 ramps are under the jurisdiction of WSDOT; and the agency is currently preparing an Interchange Justification Report (IJR) for I-f to evaluate the need for future improvements. WSDOT did not comment on the EIS or the notice of application.

b. Lighting. Lighting associated with North Parcel mining would be the same as presently occurs for the existing mining operation. Within the mine area, portable lighting on stands is used during dark hours, typically in the early morning and afternoon during winter months. The mining floor is below the ground surface elevation; lighting is contained within the mine area and does not escape beyond the site. Small lights are also located at conveyor transfer points. Lighting would be consistent with the performance standards contained in other sections of the Land Use Code, such as 25.45.030(15). No changes would occur to lighting associated with the transport dock, which is subject to existing conditions of approval (Ordinance 95-521, No. 73- 74). A condition applicable to lighting of conveyor transfer points is included in the Conditions of Approval.

c. Visual screening. Impacts to aesthetics/views are evaluated in Section 3.9 of the Final EIS. The EIS concludes that North Parcel mining would not be visible and would not cause any changes to views from any of the Key Viewpoints. Existing vegetation (tall trees) and topography prevent views of the North Parcel from all of the Key Viewpoint locations. Vegetation along the western boundary of the North Parcel would be retained and permanently protected through establishment of an open space easement and would not be mined. Retained vegetation would, therefore, continue to prevent views of the site or mining operations from the Nisqually Reach Nature Center (KVP3) and Anderson Island (KVP4). No additional mitigation measures beyond those already included in the project were identified in the Final EIS.

d. Vegetation. Logging of the North Parcel followed by mining would remove vegetation on approximately 109 acres of the 201-acre site. Impacts to vegetation and

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wildlife habitat from the proposal are evaluated in Section 3.4 of the Final EIS. The EIS concludes that the North Parcel does not contain vegetation that provides habitat for any species that are designated as rare, threatened, endangered or species of concern by the City, state or federal agencies and that are likely to be present on the North Parcel. No significant impacts to Washington Department of Fish and Wildlife (WDFW) identified priority species, such as pileated woodpecker, are expected. The "biodiversity area and corridor" which includes the bluffs along Puget Sound, would not be mined and would be included in the 45-acre open space easement established by the applicant pursuant to the 2011/2012 Settlement Agreement (Exhibit 7).

The Washington Department of Fisheries and Wildlife (WDFW) has indicated that it agrees with the EIS conclusion that Western gray squirrels are unlikely to be present in the area of the North Parcel where the proposed action would occur. WDFW records suggest that the area is part of the historic range of the Puget Trough population that now occurs primarily on JBLM property south of I-5. As a matter of policy, WDFW monitors the distribution of the Western gray squirrel population, and may monitor property that is unlikely to be occupied by the current population but within their historic range. WDFW has suggested a coordination protocol which is included in the conditions of approval.

e. Noise. Impacts to noise are evaluated in Section 3.5 of the Final EIS. Noise from logging, clearing and mining operations was modeled at 8 receptor locations, which correspond to the residences located closest to the site (Final EIS Figure 3.5-1). The EIS concludes that sound levels generated by the proposal would be well within the adopted noise standard at all receptor locations. Pre-mining logging and clearing activities would occur more than 5,000 feet from the nearest residential receptors and at least 1,000 feet from the closest business land uses, and would fall within the City's daytime noise limits for residential, commercial or industrial receivers. In addition, logging and clearing activity is exempt from the City's noise regulations. Project-related truck traffic would not travel past residential receivers. Existing regulations limit commercial vehicle access to portions of Center Drive (DMC 16.05.020). In addition, traffic on local roadways is exempt from City noise regulations. No additional mitigation measures beyond those already included in the project were identified in the Final EIS.

f. Sensitive Areas. Impacts to sensitive areas are evaluated in Sections 3.1, 3.4 and 3.7 of the Final EIS. Steep slopes are the only sensitive area present on the North Parcel and the steep slope top of slope buffer reduction application is addressed below.

8. *Residential Reserve Zoning Considerations.* The Residential Reserve zoning designation indicates that the subject property was not needed to meet the current 20-year growth projection, which ended in 2012. Pursuant to a number of amendments to the GMA, the City is not required to update its Comprehensive Plan to incorporate new growth projections until 2015. Based on the analysis in Section 3.8 of the EIS, regarding *Population, Housing & Employment*, the City likely has sufficient undeveloped, residential-designated land to meet its potential 2025 growth projection and its 2040 growth projection

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without re-designating the North Parcel Residential Reserve area for higher density residential use.

Sensitive Areas – Steep Slopes/Buffer Reduction.

9. Regulated sensitive areas that are located on the North Parcel are limited to the forested bluffs/hillsides to the west and northwest, generally between the area proposed for mining and the Puget Sound shoreline. No mining or logging would occur in this area. Pursuant to the June 2011 Settlement Agreement, a conservation easement encompassing 45 acres will be established. This open space area would encompass the buffers required by the sensitive area regulations.

10. Based on historical information, a portion of the North Parcel was mined in the period between the 1870's to 1906. (See the discussion in Final EIS Section 3.10, *Cultural Resources*.) Mining is not proposed in this area; however, the applicant is proposing to reduce the steep slope setback adjacent to this area to 25 feet. Consideration of the proposed buffer reduction was part of the site plan review process.

11. Aspect Consulting prepared a geotechnical report for the North Parcel, included as part of the Final EIS, Exhibit 2, at Section 3.1.2.3. The report describes the geology and hydrology of the site and evaluates the proposed buffer reduction according to the criteria in the Land Use Code (DMC 25.105.070(2)(c)). The geotechnical analysis concludes that the proposed development would not create a hazard to the subject property or to surrounding developments, and would not cause erosion or sedimentation to off-site properties or bodies of water. The geotechnical report further concludes that the buffer can be reduced to 25 feet from the top of the steep slopes without increasing the hazards to the steep slope areas, and without increasing risks to adjacent properties.

12. City Staff reviewed the geotechnical report, found that all decisional criteria of DMC 25.105.070(2)(c) are met, and recommended that the request to reduce the environmentally sensitive steep slope buffer from 50 to 25 feet at the top of man-made slopes exceeding 40 percent be approved.

13. The Examiner concludes that the Geotechnical Report prepared by Aspect Consulting provides convincing proof sufficient to support applicant's buffer reduction request.

14. *Tree Retention.* A tree survey of the North Parcel was conducted in October, 2012, and is documented in Appendix B of the Draft EIS. The property is dominated by Douglas fir, and also contains Western hemlock, pacific yew, pacific madrone, and a few Oregon white oak. A total of 164 trees were identified that met the dbh criterion, and 148 were determined to be healthy. The oak that were encountered were small (<30 feet tall, <5 inches dbh) and appeared to be stressed. Douglas fir is the predominant landmark tree (61 percent), and madrone represents 39 percent, mostly multi-trunk. The majority (57 percent)

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of potential landmark trees are located in the proposed open space conservation easement, and the remainder are located in the proposed mining area. The number of landmark trees retained in the open space conservation area would satisfy the requirement of DMC 25.120.030(2). The tree retention requirements of DMC 25.120.030(3) do not apply to the Mineral Resource Overlay and would be inconsistent with mining.

15. *Shoreline.* The portion of the North Parcel proposed to be mined is comprised entirely of upland and is not within 200 feet of the Puget Sound shoreline. No shoreline issues, therefore, are raised by the proposed site plan. The application includes a draft conservation easement for the 45-acre open space area along Puget Sound, which is shown on the proposed mining plan (Exhibit 3). Procedures for establishing the easement are set forth in the 2011 Settlement Agreement (Section 3.5). The procedures require conference and agreement by the parties to the Settlement Agreement regarding the language of the easement. No specific action by the City is proposed or requested at this time regarding the open space easement. As a signatory to the 2011/2012 Settlement Agreement, the City will confer with the other parties to the Agreement and will take appropriate planning or regulatory actions in the future to implement the open space easement.

16. *Cultural, Historical and Archaeological Resources.* The North Parcel does not contain and is not proximate to any of the sites designated by DMC 25.80. No mining is proposed to occur within the area of the North Parcel where historic mining operations occurred, and the historic mining area would be included in the proposed 45-acre open space easement.

17. As noted in Section B.6 of the Staff Report, the Examiner concludes that site plan review criteria contained in DMC 25.150 that relate to several adopted regulations and programs are not applicable to the pending North Parcel mining application. Inapplicable provisions include those addressing commute trip reduction (DMC 25.75); grading (DMC 25.85); landscaping (DMC 25.90); off-street parking (DMC 25.95); setback street corners (DMC 25.110); signs (DMC 25.115); and wireless communication facilities (DMC 25.125).

18. The record established during the open-record public hearing process for the North Parcel mining proposal provides credible, convincing, unrebutted expert reports and recommendations on a wide range of relevant topics that are more than sufficient to satisfy applicable policies and development regulations.

19. Based on the record, including Findings and Conclusions set forth above, the Examiner concludes that CalPortland's North Parcel mining proposal can be conditioned so as to be compatible with applicable policies and regulations and to mitigate probable significant environmental impacts.

20. Any Finding of Fact or other provision of this Decision that may be considered a Conclusion of Law shall be deemed to be a Conclusion of Law.

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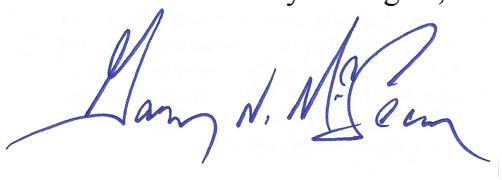
VI. DECISION.

Based on the record, and for the reasons set forth above, the site plan and buffer reduction applications for CalPortland's North Parcel mining proposal are approved, subject to the attached Conditions of Approval[4], that are incorporated herein by reference.

ISSUED this 15th Day of August, 2013



Gary N. McLean
Hearing Examiner

[4] The pages containing Conditions of Approval are highlighted with a dark border, for ease in locating them in the event pages are misplaced or re-sorted.

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CONDITIONS OF APPROVAL
FOR THE CALPORTLAND NORTH PARCEL MINING PROJECT

The conditions set forth below are based on the impacts and mitigation measures identified in the North Parcel Final EIS, and the requirements of adopted City plans, policies and regulations, which are set forth in DMC 23.01.150 as bases for exercise of the City's SEPA substantive authority. The approvals granted in the attached Decision are subject to compliance with each and every of the following Conditions of Approval, which the Examiner finds and concludes are reasonable and capable of being accomplished.

A. Conveyance, Processing and Loading/Transport of Mined Materials:

1. All existing conditions of approval contained in Ord. No. 95-521 (Exhibit 6) regarding the conveyance and processing of aggregates, and the operation of the shipping dock at Tatsolo Point shall continue to apply to North Parcel operations. A summary of these existing conditions and their applicability to the North Parcel proposal is included in Exhibit 8.

B. Logging:

2. The applicant shall obtain a Forest Practice Permit from the Department of Natural Resources (DNR) prior to logging the site. Logging shall comply with all requirements of the permit, including implementation of best management practices (BMPs) to address potential impacts to soils, vegetation and stormwater management.

C. Mining and Reclamation:

3. Mining shall be limited to approximately 142 acres of the site as shown on the mining plan, Exhibit 3.

4. Mass clearing of the site shall not be permitted. Clearing, mining and reclamation of the site shall occur sequentially in approximate 40-acre segments. A maximum of approximately 120 acres may be in the process of being cleared, mined and reclaimed at any one time. Mining shall follow the mining plan as approved by DNR.

5. Reclamation of mined areas shall occur pursuant to the revised reclamation plan as approved by DNR pursuant to the Surface Mining Act. Any revisions or subsequent amendments to the existing reclamation plan shall be communicated to the City and shall be implemented by the applicant. Re-grading and re-vegetation of each incremental mining area must be completed within two years of the completion of mining within that area. The applicant shall replace any vegetation that dies within the first two years.

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D. Open Space Preservation:

6. To preserve vegetation and wildlife habitat, and to avoid adverse impacts to views, no mining shall occur in the 45-acre open space area located west of the mine area adjacent to Puget Sound. The geographic limits of the open space area shall be as shown on the mining plan (Exhibit 3). Consistent with the provisions of the 2011/2012 Settlement Agreement (Section 3.5.2), a deed restriction, restrictive covenant, or conservation easement shall be executed prohibiting mining within this area and allow future public access for a pedestrian trail. The City will confer with other signatories and will follow the procedures set forth in the Settlement Agreement regarding finalizing dedication of the easement.

E. Conditions Applicable to Specific Elements of the Environment:

Earth.

The Final EIS discusses significant impacts to earth resources and identifies mitigation measures that should be implemented. Pursuant to DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Comprehensive Plan Policies LU-40, LU-43, ESA-13 and ESA-14, and Land Use Code sections 25.60.030 and 25.105.070(2), the following mitigation measures will be required.

7. Earthwork for excavation and reclamation shall be in accordance with the U.S. Mine Safety and Health Act and the Washington Surface Mining Act. Reclaimed slopes shall be no greater than 2:1 (a ratio of 2 horizontal to 1 vertical). Working slopes shall be at the angle of repose.

8. Appropriate erosion control facilities and procedures shall be implemented consistent with requirements of the NPDES Sand and Gravel General Permit and the approved reclamation plan.

9. Based on review of the geotechnical report submitted with the application, the steep slope buffer adjacent to the western portion of the mine area meets the applicable criteria in DMC 25.105.070(2)(c) and may be reduced to 25 feet. The area of the reduced buffer shall be included in the 45-acre open space area that is subject to a conservation easement, as identified in Condition No.5. Future planning for public use of the open space area will address the presence of the buffer and adjacent steep slopes.

10. Topsoil/Tacoma Smelter Plume. The site is within the Tacoma Smelter Plume (TSP) and potentially contains soils that are contaminated and require clean-up. The following conditions respond to comments on the proposal from the Department of Ecology (Final EIS, Chapter 8) and shall be implemented by the applicant.

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a. The applicant shall operate the facility to meet health and safety requirements and to limit worker exposure to potentially contaminated soils. The applicant shall notify operators, employees and construction workers that the property is located within the Tacoma Smelter Plume (TSP) and may contain contaminated soils and duff.

b. Before undertaking any topsoil removal, the applicant shall enter into a Voluntary Cleanup Program (VCP) with the Department of Ecology pursuant to the Model Toxics Control Act (MTCA) RCW 70.105D and WAC 173-340.

c. The applicant shall develop a cleanup action plan for the disturbed area of the property consistent with Ecology requirements, and will include compliance sampling and a remediation plan for area of the property, approximately 20 acres, that are not proposed for mining or open space. The cleanup action plan will acknowledge that the 45-acre open space area will be addressed in the Settlement Agreement process.

d. Prior to initiating topsoil removal, the applicant shall obtain an opinion letter from Ecology for property areas outside of the open space area. The opinion letter will state that the proposed duff and soil remediation, and the human health and environmental protections, will likely result in no further action under MTCA. The opinion letter will also acknowledge that the open space area will be addressed later as part of the Settlement Agreement process.

e. City-permitted site development plans shall be consistent with the plans that Ecology reviewed and deemed consistent with MTCA.

f. Because the soil and duff may be contaminated, appropriate best management practices (BMPs) shall be installed to avoid escaping dust, soil erosion and water pollution during clearing and grading activities.

g. If contamination is left on the property, the applicant shall record a notice on title about the contamination to notify future buyers. The notice on title shall be recorded prior to any public access to the property, including the open space area.

h. Prior to the public gaining any access to the property, including the open space area and any un-mined areas, the property owner shall obtain a "No Further Action" determination from Ecology indicating that the remediation plan and protections for human health and the environment were successfully implemented under MTCA.

i. Any imported soil shall follow the *Tacoma Smelter Plume Model Remedies Guidance, Chapter 9: Imported Soil Sampling.*

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11. Subject to the procedures in Condition No. 10, topsoil shall be stockpiled and used for reclamation of mined areas, subject to the procedures in Condition No. 10. After application of topsoil, slopes shall be re-vegetated by plantings consistent with the requirements of the revised reclamation plan. Following the completion of reclamation, heavy equipment shall not operate on reclaimed slopes except for the construction or maintenance of pedestrian paths, access roads and other permitted facilities.

Air Quality.

The Final EIS discusses significant impacts to air resources and identifies mitigation measures that should be implemented. Pursuant to DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Comprehensive Plan Policies LU-43 and ESA-5, and Land Use Code section 25.60.030, the following mitigation measures will be required.

12. The applicant shall continue to implement its current operational best management practices to reduce air emissions, including but not limited to washing truck tires/wheels with a water-based cleaner before they exit the site, and washing and sweeping the haul road. The applicant shall operate the existing wheel wash in compliance with City and DOE requirements.

13. For logging and clearing operations, the applicant shall comply with PSCAA Regulation I, Section 9.15 regarding fugitive dust emissions, and shall implement reasonable precautions to prevent visible emissions as identified in that regulation.

Water Resources – Groundwater and Stormwater.

The Final EIS discusses significant impacts to water resources and identifies mitigation measures that should be implemented. Pursuant to DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Comprehensive Plan Policies LU-43, ESA-9 and ESA-10, Land Use Code section 25.60.030 and DMC section 22.01, the following mitigation measures will be required.

14. Mining shall occur above the seasonal high groundwater table. The seasonal high groundwater elevation is estimated at 10 to 12 feet; the mine floor shall be established at an elevation of 25 feet (NGVD 29) to maintain a minimum vertical separation and a soil buffer between the mine floor and groundwater of 10 feet. Operations in mining areas that are close to the seasonal groundwater table shall not involve storage of maintenance materials or conduct of maintenance activities, and should avoid parking of vehicles that are not being used in operations. [Note: Ordinance 95-521, adopting conditions of approval for the Pioneer Aggregates mining project, requires a 25-foot separation from the seasonal high groundwater table and 10 feet on slopes (Condition No. 24). City Staff observed that the source of the 25-foot requirement has not been identified in the 1993 Pioneer Aggregates

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Final EIS or associated technical reports. Thus, it is possible that a 25-foot mine floor elevation was misinterpreted as a recommended vertical separation].

15. The applicant shall comply with all requirements of the NPDES Sand and Gravel General Permit and applicable regulations including preparation and implementation of a Stormwater Pollution Prevention Plan, an erosion and sediment control plan, monitoring stormwater, compliance with effluent limits, and implementation of applicable stormwater best management practices.

16. The applicant shall adopt and implement spill control and cleanup procedures and shall monitor stormwater consistent with NPDES permit requirements. The use of materials that could generate contaminants will be handled in accordance with best management practices and the site-specific spill prevention and response plan.

17. The mine's stormwater management system shall be designed consistent with City and DOE requirements. The applicant shall submit detailed engineering drawings to the City for review and approval.

18. Stormwater shall be infiltrated in stormwater in ponds located on the mine floor. Maintain a minimum vertical separation of 5 feet between the pond bottom and the seasonal high groundwater table, consistent with Ecology standards for infiltration ponds. The stormwater ponds shall be constructed, operated and maintained consistent with Ecology and City standards.

19. Runoff in the mine area shall be treated using two-celled wetponds constructed upstream of the infiltration ponds. The wetponds shall be constructed, operated and maintained consistent with Ecology and City standards.

20. The groundwater monitoring program and the supply well monitoring program approved by the Department of Ecology and implemented for the Pioneer Aggregates facility (see Ordinance No. 95-521, Conditions 25, 26 and 30) shall continue during North Parcel mining.

Plants and Animals.

The Final EIS discusses significant impacts to vegetation and wildlife resources and identifies mitigation measures that should be implemented. Pursuant to DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Comprehensive Plan Policies LU-40, LU-43, ESA-4, ESA-17, ESA-18 and ESA-22, and Land Use Code sections 25.10.120, 25.60.030, and 25.120, the following mitigation measures will be required.

21. To maintain permanent habitat and a corridor for wildlife movement,

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preserve the bluff/shoreline/open space area pursuant to the Settlement Agreement, as identified in Condition No. 6.

22. To maintain habitat during and following mining, conduct clearing, mining and reclamation operations in the sequential process identified in Conditions 3, 4 and 5, and consistent with the requirements of the revised reclamation plan approved by DNR.

23. The applicant shall control invasive species consistent with the requirements of the reclamation plan.

24. The project proponent shall continue to coordinate with the Washington Department of Fish and Wildlife through the field season (July 1 – October 1) as appropriate to evaluate and document the presence/absence of Western gray squirrels prior to removing Douglas fir forest habitat in the North Parcel Project Area.

Noise.

The Final EIS discusses significant noise impacts and identifies mitigation measures that should be implemented. Pursuant to DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Land Use Code section 25.60.030, and DMC 9.09.40, the following mitigation measures will be required.

25. Clearing and mining shall be conducted so as to meet the City's noise regulations as contained in DMC 9.09.040.

Aesthetics.

Pursuant to DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Comprehensive Plan Policies LU-40, LU-43, ESA-1, ESA-3 and ESA-4, and Land Use Code sections 25.60.030 and 25.120, the following mitigation measures will be required.

26. The vegetated area along the Puget Sound bluff, west of the proposed mining area, screens the site from off-site views and shall be maintained consistent with Condition No. 6.

27. The dock conveyor shall be lighted only at transfer points and only when the conveyor is operating or being maintained.

Historic and Cultural Resources.

The Final EIS discusses significant impacts to historic, cultural and archaeological resources and identifies mitigation measures that should be implemented. Pursuant to

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DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Comprehensive Plan Policies LU-40, LU-43, CR-4 and CR-5, and Land Use Code sections 25.60.030 and 25.80, the following mitigation measures will be required.

28. The Applicant shall notify the cultural resources representative for the Nisqually Indian Tribe at least 14 days prior to initiating any clearing or topsoil stripping in each mine segment. The Applicant shall make reasonable accommodations for the tribal Archaeologist to observe all clearing and topsoil removal, and hire the tribal Archaeologist to write a closing report to the City and State Office of Archaeology and Historic Preservation documenting any contact with the Nisqually Indian Tribe and observed conditions.

29. The applicant shall notify the Department of Archaeology and Historic Preservation and the Nisqually Indian Tribe if any Native American remains are unearthed during project activities. Any discovered remains shall be excavated in a professional manner consistent with standard archaeological techniques.

30. The applicant shall monitor clearing activities to identify any historic resources. Any resources discovered shall be treated according to state historic preservation requirements, and the appropriate agency shall be notified.

31. In planning for future public access to the 45-acre open space area, the City, in cooperation with other parties to the 2011 Settlement Agreement, will consider potential impacts to the old mining area (Site 1494-1(H)).

Transportation.

The Final EIS discusses significant impacts to transportation and identifies mitigation measures that should be implemented. Pursuant to DuPont SEPA Ordinance section 23.01.150, subsections (a), (b)(1)-(5), and (d)(1)-(5), Comprehensive Plan Policies LU-40, LU-43, TR-1 and Capital facilities Element page 79, and Land Use Code section 25.60.030, the following mitigation measures will be required.

32. The applicant shall document and report to the City annually regarding the relative proportion of mined material shipped by barge and by truck. If the proportion of truck shipments to total shipments in any two consecutive years is 25 percent or greater, the applicant shall submit an updated traffic report to the City. A qualified independent consultant approved by the City shall prepare the report. The report shall evaluate any traffic attributable to the operation.

F. Assurances and Enforcement:

33. The applicant shall comply with any requirement for assurances established

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by state law and determined by the Department of Natural Resources that is included in the mining permit and/or reclamation plan.

34. The bonding requirements of Ordinance 95-521, Condition 112, shall continue in effect to ensure performance of and compliance with all conditions of approval applicable to North Parcel mining. The amount of bond may be reduced at the discretion of the City.

35. The applicant shall pay the cost of all plans, reports and monitoring programs required by these conditions of approval and for the time required by City staff to review such plans, reports and programs.

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Attachment 8.c

ORDINANCE NO. 95-521

AN ORDINANCE APPROVING THE APPLICATION OF LONE STAR NORTHWEST, INC. FOR SHORELINE PERMITS, MASTER PROGRAM AMENDMENT, SITE PLAN APPROVAL, AND SENSITIVE AREA ORDINANCE EXCEPTION FOR THE PIONEER AGGREGATES TATSOLO POINT BARGE TRANSSHIPMENT PROPOSAL.

Section 1: Master Program. The application for an amendment to the Shoreline Master Program (Exhibit "B") is approved, subject to the recommendations contained in the City Council's decision, with findings and conclusions, a copy of which is attached hereto as Exhibit "A". The City's final action on the proposed Shoreline Master Program Amendment will be transmitted to the Department of Ecology for review and final approval.

Section 2: Shoreline Permits. The applications of Lone Star Northwest, Inc. for a Shoreline Substantial Development Permit and Shoreline Conditional Use Permit, dated January 31, 1995, located at Tatsolo Point within Section 14, Township 19 North, Range 1 East, W.M., is approved subject to the conditions and requirements contained in the City Council's Decision, with Findings and Conclusions, a copy of which is attached hereto as Exhibit "A". The approval of the shoreline permit action is subject to the following notice requirements:

> The City's final action on both shoreline permit applications will be transmitted concurrently to the Department of Ecology and the Attorney General as required by RCW 90.58.140(6), and implementing regulations. The Department of Ecology is required to review the conditional use permit, and issue a decision of approval or disapproval.
>
> Pursuant to the terms and provisions of the Shoreline Management Act, RCW 90.58.180, any person aggrieved by the granting, denying or rescinding of a permit on a shoreline of the State pursuant to RCW 90.58.140 may seek review from the Shorelines Hearings Board by filing a request for the same within 30 days of the "date of filing" of DOE's decision as defined in RCW 90.58.140(6) and WAC 173-14-090.

Section 3: Site Plan Approval and SAO. The applications of Lone Star Northwest, Inc. for a Site Plan Approval and Sensitive Areas Ordinance Exception for the Pioneer Aggregates Tatsolo Point Barge Transshipment Facility, dated April 10, 1995, and revised August 11, 1995, located at Tatsolo Point within Section 14, Township 19 North, Range 1 East, W.M., are approved subject to the conditions and requirements contained in the City Council's decision, with findings and conclusions, a copy of which is attached Exhibit "A". **Exhibit A includes a composite list of both (1) new conditions for the Revised Project, which are shown in bold face type, and**

(2) those conditions of approval from Ordinance No. 485 (the existing site plan approval) which remain relevant to the Revised Project.

Section 4: Official Notice. This Site Plan Approval action taken hereunder is subject to the following official notice requirements:

Time limit for commencing an appeal of the Site Plan Approval decision (i.e., the underlying governmental action) is governed by the City of DuPont Zoning Code Z/ADM 060.000.000, which provides that the decision of the City Council is final unless an aggrieved person seeks review from the Superior Court in and for the County of Pierce, State of Washington. Requirements of the new state Land Use Petition Act, Ch. 347, Sections 701-719, Laws of 1995, should also be considered which provide that land use actions must be appealed within 21 days of the date of passage of this Ordinance.

The time limit of commencing any appeal pursuant to the State Environmental Policy Act, RCW 43.21C, shall be the same as the date for appealing the Site Plan Approval (i.e.21 days from the date of the passage of this Ordinance containing the official notice). The applicable requirements of RCW 43.21C.075 and WAC 197-11-680 must be met.

Section 5: Disposition of Prior Shoreline Permit. Under the terms of the Settlement Agreement dated December 25, 1994, the applicant has agreed that, upon completion of construction of the new dock authorized herein, they will withdraw the permit applications for use of the existing DuPont dock. Upon withdrawal of the applications, the prior shoreline permit authorized pursuant to Ordinance No. 486, shall cease to be effective.

Section 6: Effective Date. This Ordinance shall be effective from the date of its passage.

PASSED THE COUNCIL AND APPROVED BY ME this 26th day of Sept, 1995.

MAYOR

ATTEST:

CITY CLERK

EXHIBIT A
CITY COUNCIL DECISION ON
PIONEER AGGREGATES BARGE TRANSSHIPMENT FACILITY & ASSOCIATED PERMITS

FINDINGS

I. BACKGROUND

A. Subject Applications:

1. The subject site is located at Tatsolo Point on Puget Sound, which is in the City's Industrial zone. The subject applications are contained in the project file maintained by the City Clerk. A list of materials included in the project file are attached as Appendix A. The proposed action consists of four related programmatic and project-specific actions, as outlined below.

- **Master Program Amendments**: An amendment to the DuPont Shoreline Master Program is proposed. The amendment would include a text amendment to incorporate policies, use regulations and development standards for a Tatsolo Point Special Management Unit ("TPSMU"). The TPSMU would permit construction and operation of a dock for barge loading and shipping of aggregates as a conditional use. The second part of the shoreline amendment is a proposed map amendment which would effect two changes to the existing shoreline map: the TPSMU designation would replace the existing Conservancy designation at the site of the new transshipment facility, and the current shoreline environment around the existing dock north of Sequalitchew Creek would be redesignated from Urban to Conservancy.

- **Shoreline Permits**: The applicant requests a shoreline substantial development permit pursuant to the City of DuPont Shoreline Master Program ("SMP"). A shoreline conditional use permit is also requested consistent with the proposed TPSMU use regulations. The shoreline permit applications were filed with the City on January 31, 1995. Proposed development on and within 200 feet of the shoreline includes the following activities: construction of a new dock; construction of an access road to the dock; and construction of a conveyor system to the dock (from the previously approved aggregate processing plant located on an adjacent upland site). The applicant also proposes placement of a mooring buoy located southwest of Ketron Island to accommodate barge staging/temporary mooring; the mooring buoy is outside of the City's permit jurisdiction and will be reviewed by the appropriate state and federal agencies. A complete project description is described in the applications on file, and in the FSEIS.

- **Site Plan Approval**: The applicant is requesting site plan approval pursuant to the City of DuPont Land Use Zoning Code (Sections Z/IND 090.000.000 and Z/ADM 040.040.000). The application for site plan review was filed on April 10, 1995. It covers the Lone Star Property located north of the originally permitted Pioneer Aggregates project site plan and includes only those elements necessary to implement the Revised Project as set forth in the

Settlement Agreement. A complete description of the site plan is contained in Section 3 of the application on file with the City and is summarized in the FSEIS.

- **Sensitive Area Ordinance Exception**: The applicant is requesting an exception from the DuPont Sensitive Areas Ordinance ("SAO") in order to construct the access road and conveyor to the dock site.

2. Under applicable City codes, the Planning Agency makes recommendations to the City Council on the Site Plan Approval and Sensitive Area Ordinance Exception only; however, the Planning Agency has been requested to comment on the total package. The City Council must review and approve all applications: the Master Program amendments, the shoreline substantial development permit and conditional use permit, the Site Plan Approval and Sensitive Area Exception. Review and approval of the DuPont Shoreline Master Program amendment (and applications for shoreline permits) would follow the procedures of the Shoreline Management Act (RCW 90.58) and implementing rules (WAC 173-19). Following action on the amendment by the City Council, the revised Master Program and conditional use permit would be submitted to the Department of Ecology for review and approval.

B. Site History, Prior Planning & Environmental Review:

3. The DuPont SMP was approved by the City and the Department of Ecology in 1975, and has remained in effect without any major amendments since that time. The SMP designated approximately 83 percent of DuPont's 3 1/2-mile shoreline as Conservancy. Approximately 3,200 feet (17 percent) was designated as Urban, including the area around the existing dock. In general, the Urban shoreline designation permits intensive land uses, including water-dependent and water-related industries. The Conservancy designation is intended to maintain the existing character of the balance of the City's shoreline. The 1975 Master Program vision for the DuPont shoreline has been a source of controversy since its adoption, in part due to the contemplated use of the shoreline by Weyerhaeuser Company which owns much of the land adjacent to the shoreline.

4. Information on the history of the 1976 Weyerhaeuser Company export facility proposal is summarized in the Pioneer Aggregates Final EIS (1993) and in the ordinances approving the site plan and shoreline applications for the prior Lone Star Northwest proposals (Ordinance No. 485 at page 6, and Ordinance No. 486 at page 8); that information is incorporated herein by reference.

5. Pursuant to the 1985 Comprehensive Plan, Lone Star submitted applications for the Pioneer Aggregates facility on February 2, 1990. The proposal involved a mine and reuse of the existing dock for shipment of sand and gravel. Draft and Final Environmental Impact Statements were issued.

6. In December, 1991, after Lone Star submitted its application, several environmental groups petitioned Ecology to redesignate DuPont's Urban shoreline as Conservancy or Natural and to prohibit mining in these environments. In February, Ecology denied the petition finding no

compelling reason to justify the change, and noting that prior judicial decisions supported the Urban designation. A copy of the letter is contained in the official City file.

7. In September, 1993, following public hearings, the DuPont City Council approved the original Pioneer Aggregates proposal, including the mine, the processing plant and the rehabilitation of the existing dock. The approvals are contained in Ordinances 485 and 486. Relevant file materials developed as part of the record of the prior proceedings are transmitted with the file of the present applications and are made part of the record.

C. Litigation, Settlement Agreement And Revised Project History:

8. Following the City's approvals, a number of appeals ensued. Various environmental interests challenged the City's actions on its shoreline permits. The Department of Ecology denied approval of the Shoreline Conditional Use Permit; the applicant challenged Ecology's decision to overrule the City on the shoreline conditional use permit.

9. In January, 1994, the various parties retained a professional mediator and commenced discussions to determine whether a settlement was possible. A Settlement Agreement was signed in December of 1994, which set forth a plan for resolving 20 years of conflict over proposals for the DuPont shoreline. Parties to the agreement include the Department of Ecology, City of DuPont, Lone Star Northwest, Weyerhaeuser Real Estate Company, Nisqually Delta Association, Black Hills Audubon Society, Washington Environmental Council, National Audubon Society, People for Puget Sound, Tahoma Audubon Society, and Anderson Island Quality of Life Committee. The City's approval followed an opportunity for public comment and a vote of approval by the City Council.

10. The Settlement Agreement expressed a new vision for the DuPont shoreline, one which serves public and private interests by protecting the environment and providing a location for water shipment of aggregate resources from DuPont. The applicant agreed to pursue programmatic and permit actions necessary to locate the aggregate transshipment facility at a site approximately 1.25 miles to the north of the existing dock; the new dock would be located in the area of Tatsolo Point. The non-governmental parties agreed to propose and support this new vision. The governmental agencies, including the City, agreed to consider the new proposal in good faith.

11. Under the new proposal, plans to use the existing dock for commercial shipping would be abandoned if the new proposals are approved and no appeals are filed. The future of the existing dock is not part of this proposed action. Under the Settlement Agreement, the dock could be removed at the option of the Department of Natural Resources; alternatively, all or part of the dock could remain for public use. A future process will determine the fate of the dock if the present applications are approved. If the present applications are not approved, then the litigation over the prior shoreline permits will resume.

12. The present applications are intended to implement a new alternative for the barge transshipment facility of the Pioneer Aggregates project. The present applications do not alter the

approvals previously granted to the upland mining facility or the processing plant, which were previously approved by the City.

D. Project Description:

13. The proposal consists of both programmatic and project actions. A complete description is included in the project applications, as well as in the Supplemental Environmental Impact Statements. A summary is provided below.

a. Programmatic Proposal: Shoreline Master Program Amendments.

14. A proposed amendment to the DuPont Shoreline Master Program would create a "Tatsolo Point Special Management Unit" (TPSMU) shoreline designation. This designation would be located approximately 1.25 miles to the north of the existing dock, in the area of Tatsolo Point. The southern border of the management unit is approximately 1.75 miles north of the water boundary of the Nisqually National Wildlife Refuge. Fort Lewis and the Fort's sewage treatment plant are located to the east. The area is presently designated Conservancy under the DuPont Shoreline Master Program. Figure 2 in the DSEIS shows the location of the existing Urban shoreline designation and the proposed "TPSMU." The proposed TPSMU shoreline would be approximately 750 feet in length, and is located approximately 250 feet southwest of the northern boundary of the City of DuPont. An alternative configuration studied in the EIS would include the northerly 250 feet in the TPSMU, so that the TPSMU would be 1,000 feet and no sliver of conservancy would be left. A third alternative, discussed in this report, would use the 750-foot TPSMU and would amend, through subsequent city-initiated action, Shoreline Master Program use provisions to eliminate intensive uses within the Conservancy environment. This alternative location for an aggregate loading and shipping dock was designated in the City of DuPont's 1995 Comprehensive Plan.

15. The current Urban shoreline surrounding the existing dock would be redesignated Conservancy. Future uses would be consistent with regulations for the Conservancy environment in DuPont's current Shoreline Master Program and the DuPont Comprehensive Plan Update. Commercial use of the existing dock would be abandoned; the physical structures would be removed (in whole or part) or conveyed to the Department of Natural Resources. (Removal of the existing dock is not part of the present proposal. A decision to remove the dock would be subject to a separate permit process and environmental review.) Use of the shoreline in this area would be primarily public access and passive recreation. Public access would be provided by a 20-foot-wide access for a trail along the north side of Sequalitchew Creek encompassing the existing narrow gauge railroad; *see* Figure 3 of the DSEIS. A public parking area would be provided at the eastern end of the trail; no other construction would occur adjacent to the creek. Educational signs and plantings would be installed to help deter pedestrians from entering the salt marsh at the mouth of the creek.

16. A draft of proposed policies, use regulations and development standards for the Tatsolo Point Special Management Unit is included in Appendix B of the DSEIS and is attached hereto as Appendix B.

17. The Tatsolo Point Special Management Unit is intended to preserve the resources of the Nisqually Delta while providing appropriate shoreline locations for water-dependent industrial uses and passive recreational activities in the future. Policies call for visual buffering of development within the management unit so as not to be visible from the Nisqually National Wildlife Refuge; limiting uses to water-dependent uses associated with public transportation or sand and gravel transshipment (only a single industrial use and single dock is permitted within the management unit at any time); and designing, developing and conducting all activities to minimize adverse impacts to the environment, aesthetic character and public use and enjoyment. Proposed development standards address visual compatibility, structure height, dock size, lighting, vegetation removal, fishing and navigation interference, dredging, and compensatory mitigation. Under the draft TPSMU regulations, the proposed structure height for the conveyor was 35 feet (above the railroad tracks), unless the applicant fully demonstrates a need otherwise. (This report recommends that the conveyor height limit be modified to 60 feet in order to accommodate the preferred conveyor height.)

b. Project Proposal.

i. Dock Construction and Operation

18. ***Dock Construction.*** The proposed dock consists of mooring dolphins, pilings, a vehicle access trestle and walkway, and a barge loader platform (see Figures 4, 5 and 6 of the DSEIS). Six-to-seven concrete mooring dolphins (each approximately 12 feet square) supported by steel pipe or concrete piles would be constructed in the water. The mooring dolphins would be spaced 80-100 feet apart and used to secure barges during loading. Three-to-four timber or steel pipe fender piles would be placed on the barge side of the dolphins to protect the dolphins from damage. A concrete barge loader platform (approximately 40 feet by 40 feet), supported by 22-26 piles, would support the barge loader. A 3-4-foot wide walkway would connect the dolphins to the barge loader to provide access. The dolphins and access walkway would extend for a distance of 600-700 feet parallel to the shoreline. Water depth at the dock location is 50 feet; no dredging will be required.

19. The western edge of the dock would be approximately 175-200 feet from the shoreline. It would connect to the shore with 15-foot wide access trestle constructed of grated steel (from the edge of the Burlington Northern right-of-way to the end of the barge loader platform). The trestle would be supported by at least one pile supported steel structure located in Puget Sound.

20. The barge loader platform would support an approximately 60-foot high (measured from the top of the platform) open steel tower. The tower would support an 80-foot long movable conveyor boom connecting to the loadout conveyor. The conveyor boom (between the tower and the barge) would be capable of being lowered close to the barge deck to help reduce noise during loading. The loader platform and tower would also support a 16-square-foot control booth for the loading operator and a 100-square-foot block building containing associated electrical equipment.

21. An electrically operated cable system would be used to position barges during loading. The cable would run the length of the loading area and connect to two winches located in the barge loader platform.

22. Construction-related conditions of approval adopted by the DuPont City Council for the original dock site will be applied to the new dock site (Ordinance 486). These include prohibiting use of creosote-treated materials for the dock, and limiting construction during certain fish migration periods. These conditions have been incorporated into the list of recommended conditions contained at the end of this report.

23. ***Dock Operation.*** Operation would be as described in the *Pioneer Aggregates Final EIS.* Eighty percent of mined materials would be transported from the site by barge. Barges would be brought to the dock by tug. An average of 5.2 barges per day (8.6 barges per day during peak periods) – each carrying an average of 2,100 tons – would be loaded from the dock. An average barge would require 2.4 hours to be loaded. Some tugs would transport multiple barges. A mooring buoy would be constructed in Puget Sound to stage barges. The preferred mooring buoy location is now proposed to be off the southwest tip of Ketron Island, where it creates little interference with marine traffic and fishing activities. FSEIS at 25. Loading operations would occur day and night everyday, with hours varying with tides through the Tacoma Narrows.

24. The dock would be used for off-site shipping only. There would be no marine deliveries of materials for plant operation and no refueling would occur at the dock. A spill prevention plan for the site would cover marine operations; a preliminary plan was contained in Appendix G to the *Pioneer Aggregates Final EIS* and would be modified as necessary to apply to the new site. Oil spill containment equipment would be available on-site; vessel safety and discharge regulations would be implemented to reduce the risk of marine contamination. Conditions of approval adopted by the DuPont City Council – including a marine monitoring program and provision of notice to tug/barge operations regarding safety and environmental requirements – would be implemented. No dredging is proposed or anticipated to be necessary.

25. Lighting at the barge-loading dock would likely include two 400-watt lights on 20-foot masts, two 400-watt lights mounted on the side of the loading boom at a height of approximately 40 feet above the dock, three 250-watt lights mounted on 20-foot masts and one 400-watt light mounted beneath the conveyor boom. In addition, lights would be located intermittently along the dolphin access walkway as required by building codes for safety. The lighting system at the dock will be designed to minimize the amount of light reaching the water surface next to the dock. Lights would generally be shielded or directed away from off-site and adjacent land uses. Lights would be the minimum necessary to meet OSHA and Mine Safety Health Administration (MSHA) standards and would be turned off when not needed. As required by the conditions of approval contained herein, a detailed lighting plan would be submitted in conjunction with building permits and would be reviewed by an independent professional.

ii. Conveyor Systems

26. The proposed conveyor system would connect the aggregate processing plant to the loading dock. The conceptual route of the overland section of the conveyor is shown in Figure 4 of the DSEIS. This conveyor would be approximately 4,100 feet long and would traverse property owned by Lone Star Northwest. The conveyor structure is a 5-foot wide steel frame with a 48-inch wide reinforced rubber belt. The frame and belt are supported about 5 feet above the ground surface by steel legs spaced 10-12 feet apart. An approximate 10-foot area would be cleared on one side of the conveyor to permit maintenance. Total width of the area cleared for the overland conveyor would be approximately 35-40 feet (including the conveyor, roadway and stormwater drainage system).

27. The over-water section of the conveyor (between the bluff and the dock) would be 50-70 feet above the ground and supported by two or three concrete and steel bents (supports); depending on final design, at least one support would be located in Puget Sound. The section of the conveyor traveling from the bluff, over the Burlington Northern tracks, to the dock would be fully enclosed within a tube to prevent spillage of materials and reduce noise.

28. Two design alternatives are identified for connecting the overland conveyor to the shipping dock. Both options involve excavation of the bluff to provide a shallower slope for the conveyor (which is necessary to transfer the aggregate down at a slope). The first conveyor alternative would excavate an open cut or trench in the bluff (open cut alternative), while the other would place the conveyor in an underground pipe through the bluff (cut and cover alternative). The preferred height of the conveyor would provide a clearance of approximately 58 feet above the Burlington Northern Railroad tracks. Both alternatives include a design option that would lower the height of the conveyor so that it would pass 35 feet above the Burlington Northern Railroad tracks (referred to as the "low conveyor route"). These options are described more fully and shown in Figures 7-10 of the DSEIS. The excavation required for each variation is shown below:

Table 1.
Estimated Total Excavation Quantities* and Bluff Face Acres Disturbed for the Conveyor Route Alternatives and Lower Elevation Design Option

Alternative	Estimated Quantity of Excavated Material High Conveyor Route (~ 58' above BNRR Tracks)	 Low Conveyor Route (~ 35' above BNRR Tracks)
Open Cut		
Access Road	19,000 Cubic Yards	34,000 Cubic Yards
Conveyor	161,000 Cubic Yards	324,000 Cubic Yards
Total Excavation	180,000 Cubic Yards	358,000 Cubic Yards
Approximate Area of Bluff Face Disturbed	2.5 Acres	3.0 Acres
Cut and Cover		

Access Road	30,000 Cubic Yards	36,000 Cubic Yards
Conveyor	160,000 Cubic Yards	374,000 Cubic Yards
Total Excavation	190,000 Cubic Yards	410,000 Cubic Yards
Approximate Area of Bluff Face Disturbed	4.0 Acres	4.5 Acres

*Total excavation quantities include excavation of the bluff face as well as excavation required for the conveyor east of the bluff face.

29. The **high conveyor route/open cut alternative**, shown in Figures 7 and 8 of the DSEIS, involves excavating approximately 161,000 cubic yards of earth from the bluff face and upland area east of the bluff for construction of the conveyor (*see* Table 1 above). An approximate 220-foot-wide opening in the existing vegetation at the top of the bluff (and 30-feet wide at the bottom) would be cleared and excavated. Approximately 1.2 acres of the bluff face would be cleared and/or disturbed for the conveyor. The **lower conveyor route** alternative would require significantly more excavation of the bluff face and upland area; approximately 324,000 cubic yards of material would be removed for the conveyor. The opening at the top and base of the bluff would be approximately 340 feet and 30 feet, respectively.

30. The **cut and cover alternative** would place the conveyor in an underground pipe that travels through the bluff, exiting at approximately the 90-foot elevation. The pipe would be placed in a trench that was excavated and then backfilled to original grade. Under the **higher height** design, this alternative would require about the same amount of clearing and excavating work as the open cut alternative; the bluff would also be revegetated after the pipe holding the conveyor was covered. Maintenance of the conveyor under this option would be more difficult and engineering and construction would be significantly more expensive. As shown in Table 1, the **low conveyor route option** would require more than twice the amount of excavation as the higher route option under the cut and cover alternative (190,000 cubic yards for high vs. 410,000 cubic yards for low). Under the open cut alternative, the high route requires 180,000 cubic yards total excavation compared to 358,000 cubic yards for the low.

31. The high, open cut alternative requires the least excavation of all conveyor alternatives (180,000 cubic yards).

32. Under both the open cut and cut and cover alternatives, material excavated for the conveyor and access road would be stockpiled behind the bluff. This material would be used to backfill the excavated trench under the cut and cover alternative, or processed under the open cut alternative.

iii. Maintenance Road

33. A 15-foot wide crushed gravel surface maintenance and emergency access road would be constructed from the upland portion of the property to the base of the bluff. Vehicles using the road would pass over the Burlington Northern Railroad tracks at grade to reach the access trestle connecting to the dock. Projected use of the road is five to ten trips per day. It would be capable

of accommodating an ambulance or aid car in the event of an emergency at the dock. The road would not be available for general public access to the dock or Puget Sound.

34. Two design options for the maintenance road are identified, one for each of the conveyor route alternatives (see Figures 7-10 of the DSEIS). The open cut conveyor would involve a 725-foot road, and the cut and cover option a 1075-foot road. Additional information on the road options is provided in table 1 above and in the Final Supplemental EIS.

iv. Mooring Buoy

35. The original permit proposal included an anchor buoy system located approximately 1400 feet off of the existing dock site. The buoy would provide staging for barges awaiting an opportunity to dock. The original location is shown in Figure 6 of the Final EIS (February 1993). The Settlement Agreement did not alter this location; however, based on comments received on the Draft Supplemental EIS, a new location for the buoy was evaluated. The mooring buoy is now proposed to be located off of the southwest tip of Ketron Island. It is fully described and depicted in the FSEIS at page 25 and on Figure 11.

36. The buoy is outside of the City's jurisdiction and will be reviewed by the appropriate state and federal agencies, such as the Army Corps of Engineers, Coast Guard and the Department of Natural Resources. The City can, however, comment on a preferred location. The new proposed location offers the following advantage over the original location: it is located in an area away from the channel, with less impact to navigation.

E. Compliance With State Environmental Policy Act:

37. A Draft and Final Environmental Impact Statement ("EIS") were prepared for the Pioneer Aggregates proposal in compliance with the State Environmental Policy Act ("SEPA"). The City of DuPont and the Department of Ecology acted as co-lead agencies for preparation of the EIS. In response to comments, additional studies were performed, including analyses of air quality, noise, wildlife, transportation, marine habitat, and groundwater. Two additional alternatives were also analyzed in the FEIS. The FEIS was distributed on February 4, 1993.

38. Following execution of the Settlement Agreement, the applicant submitted the subject project and programmatic applications. A Determination of Significance and scoping notice was issued by the Department of Ecology on March 1, 1995, advising that a supplemental environmental impact statement would be prepared on the proposed actions, and inviting comment. A citizens committee called for in the Settlement Agreement was constituted and provided additional input into the SEPA process.

39. A DSEIS was issued on May 1, 1995. The DSEIS analyzed the programmatic and project actions called for in the Settlement Agreement; the DSEIS essentially considered an additional alternative to the original proposal by considering a new location for the dock facility. The Department of Ecology was the lead agency for the SEIS, with the City acting as a nominal co-

lead agency. A written comment period followed issuance of the DSEIS, during which time two public meetings were held at City Hall in order to answer questions and take comments. A FSEIS was issued on August 1, 1995. The FSEIS responded to comments received on the draft and analyzed the following new alternatives: a 1,000-foot TPSMU (instead of the original proposed 750 feet), and a new buoy location off of Ketron Island. No action was taken within seven days of issuance of the FSEIS.

F. Summary Of Permit And Master Program Amendment Process:

Master Program Process

40. The site of the new dock facility at Tatsolo Point is currently designated Conservancy under the Shoreline Master Program. The proposed amendments to the Master Program would add a new section called the Tatsolo Point Special Management Unit, which is attached hereto as Appendix B. Under the proposed Tatsolo Point Special Management Unit, the proposed barge loading and shipping facility would be considered a shoreline conditional use.

41. The City has followed the procedures for approval of Master Program amendments set forth in WAC Chapter 173-19. The City has issued the required public notice of the public hearing by publishing the notice in each of the three weeks immediately preceding the hearing in the following newspaper of general circulation: *The Tacoma News Tribune*. A copy of the notice is contained in the official file transmitted herewith.

42. The City has consulted with, and solicited the comments of, federal, state, regional, and local agencies, including tribes, with respect to any environmental impacts of the proposal, as described in the section setting forth the State Environmental Policy Act compliance (*see* Findings 43-45). The Department of Ecology provided comments on development of the proposed Master Program amendment through the Settlement Agreement process. Compliance with the State Environmental Policy Act was achieved through issuance of the Draft and Final Supplemental Environmental Impact Statements. If the City Council approves the proposal, the Master Program amendments will be submitted to the Department of Ecology. The shoreline permits are being processed simultaneously with the Master Program amendments, and will be submitted to Ecology as described below.

Shoreline Permit Process

43. The applicant submitted shoreline substantial development and conditional use permit applications containing required information on January 31, 1995.

44. Notice of the shoreline permit applications was published in accordance with the requirements of the SMA and the DuPont SMP. Notice of the application was published twice in the *Tacoma News Tribune*, on February 7 and 14, 1995, and was posted on the property.

45. Under the DuPont SMP, the City Council has the authority to review and decide whether to grant or deny shoreline permits. Although a public hearing is optional, the City Council

decided to hold joint hearings with the Planning Agency on the site plan and shoreline applications. Hearings have been scheduled for August 16, 1995. Notice of the public hearing on the shoreline permit applications was published in the *Tacoma News Tribune* on July 27, August 3 and August 10, 1995, posted at City Hall, and mailed to property owners within 300 feet of the property. Notice was also mailed to all persons who within the past year filed a request for notice of this and other land use actions with the City Clerk. In addition, notice was provided in the cover memo of the FSEIS. Following the public hearings, the Planning Agency will transmit a recommendation on the applications to the City Council.

46. According to state law, any decision on a shoreline permit -- whether approval or denial -- must be filed with the Department of Ecology. The Department of Ecology has jurisdiction to approve or disapprove shoreline conditional use permits and Master Program amendments.

Site Plan Approval Process

47. Under the City's Land Use Zoning Code, site plan approval is required for all new industrial development (Z/IND 090.010.). A complete application for Site Plan Approval was filed by the applicant for the Revised Project on April 10, 1995. A public hearing has been scheduled for August 16, 1995; notice was provided in accordance with applicable requirements on July 27, August 3 and August 10, 1995. The Planning Agency must prepare a report and make a recommendation to the City Council within thirty (30) days of receipt of the Mayor's Report. The Mayor must then transmit a copy of the Planning Agency's report and recommendation to the City Council, applicant and parties of record (Z/ADM 050.020.000).

Sensitive Area Ordinance Exception Process

48. In April 1992, The City adopted a Sensitive Areas Ordinance ("SAO"), identifying and providing regulations for protection of environmentally sensitive areas. Among the sensitive areas covered by the Ordinance are the bluffs, ravine and hillsides of DuPont. Regulations on development in these areas are intended to guard against the loss of slope and soil stability that can increase potential for erosion and slope failure; avoid increased runoff from removal of vegetation, which can reduce the percolation of precipitation into the soil and increase erosion; maintain the City's aesthetic resources; and avoid public expenditures to repair damaged facilities and protect against future damages due to slope instability caused by development activities.

49. The SAO specifies sensitive areas that may not be developed unless the proposed development is exempted from coverage of the SAO, or qualifies for an exception. Sensitive areas include ravine sidewalls, bluffs, slopes of 40% or greater and their buffers. Exceptions to the general prohibition of development in sensitive areas include construction of new transportation corridors such as roads, sidewalks, and trails; and utilities such as water and sewer lines, gas lines, telecommunications and underground power lines, where the following criteria are met: 1) clear demonstration that the project is needed for the benefit of the public; 2) no feasible alternative exists or to gain access to private property; 3) there is no feasible alternative to the proposed location; and 4) the proposed development results in no net loss to the sensitive area's functional value.

50. An alternative site is considered feasible if it is available and the proposed activity can be carried out on the site after taking into consideration costs, existing technology, infrastructure, and logistics, in light of overall project purpose. There is no feasible alternative when the following can be demonstrated: a) the basic purpose of the public transportation or underground utility project cannot reasonably be accomplished using one or more other sites in the City that would avoid or result in less adverse impacts on sensitive areas; and b) the basic purpose of the project cannot be accomplished by a reduction in the size, scope, or configuration of the project as proposed or by changing the design of the project in a way that would avoid or result in fewer adverse effects on the sensitive area.

51. The applicant included a request for an SAO exception in its application for Site Plan Approval, submitted April 10, 1995. The application identifies that there are bluffs bordering the

site on the western boundary above Puget Sound. In order for the Revised Project to be implemented, it will be necessary for the emergency access road and conveyor to be constructed on a route descending the bluff at the location of the proposed new dock near Tatsolo Point. The applicant requested that the City grant an exception to the SAO allowing the necessary construction, including clearing and excavation of a "V-notch" in the bluff to create a more shallow slope for the conveyor and roadway route. Except where this excavation would occur, a natural buffer would be retained along the rest of the Puget Sound bluff, in accordance with the City's SAO and buffers established in previous conditions of approval (Ordinance No. 485, condition 4). The request for an SAO exception and alternative conveyor and access road designs were analyzed in the SEIS. The application for Site Plan Approval identifies the applicant's preferred alternative; any alternative would require excavation of the bluff to provide a shallower slope. The application provides details of the conveyor and corresponding access road alternatives, design options, extent of excavation and construction, and mitigation measures. Revegetation of the affected areas would occur under a Landscaping Plan, as conceptually proposed in the Site Plan Application.

II. SUMMARY OF APPLICABLE CITY POLICIES AND REGULATIONS

A. DuPont Shoreline Master Program Provisions:

52. ***General Goals & Policies***. The general goal of the DuPont SMP is to realize the full potential of the City's shoreline, which is defined in relation to the City and surrounding area, and its unique aesthetic qualities, natural resource values, and maritime character. Policies supporting this goal include minimizing shoreline pollution; restricting mineral extraction; satisfying the growing need for recreational facilities; providing modern competitive marine terminal facilities for world trade; preserving and enhancing fish and wildlife; defining appropriate and compatible shoreline uses; establishing reasonable shoreline development standards; and requiring that all shoreline uses conform to applicable federal, state and local environmental laws and regulations.

53. Certain shorelines are designated by the SMA as shorelines of statewide significance (SOSWS). The Puget Sound shoreline in DuPont up to Tatsolo Point has received this designation. DOE determined that the new dock location at Tatsolo Point would be off of the SOSWS. The Settlement Agreement at page 8 acknowledges that all parties agree that the proposed new Tatsolo Point Special Management Unit would be outside the SOSWS.

54. ***Plan Elements***. The DuPont SMP contains six elements. These include economic development, public access and circulation, recreation, shoreline use, conservation, and historical/cultural. Together, these elements reflect the range of values the SMP is intended to balance in determining appropriate shoreline uses. Each element contains an objective and policies intended to achieve the objective. Overall, DuPont has strived to balance a strong economic element with measures to minimize impacts to the shoreline

55. ***Existing Environmental Designations***. To facilitate effective shoreline planning and management, the Department of Ecology developed several basic shoreline categories. These

categories or environmental designations have been incorporated into the DuPont SMP. The SMP designates the Puget Sound shoreline on both sides of and including the existing dock as Urban and the remainder of the City's shoreline (including the Tatsolo Point area) as Conservancy. The intent of the Urban shoreline area has been to provide one area in the City for maritime commerce and more intense uses of the shoreline. The remaining shoreline area in the Conservancy environment is intended to protect the existing character of the shoreline and permit non-consumptive uses, such as dispersed recreation and passive agriculture. This designation is also used to protect areas with severe development limitations, such as steep slopes and flood hazards.

56. ***Proposed Special Management Unit Designation***. Some jurisdictions combine the basic DOE environment concepts into more tailor-made environments to meet the needs of a particular, unique area. The concept of a Special Management Unit, for example is one such environment designation. The proposed Tatsolo Point Special Management Unit ("TPSMU") would add a new environment to the Master Program, and would provide increased protection of shoreline resources compared the more intensive Urban designation. The TPSMU allows the flexibility of crafting regulations to fit this unique shoreline area; appropriate water dependent uses like the shipment of sand and gravel can be allowed, while prohibiting more intense uses currently allowed by the Urban designation. The purpose of the TPSMU is to ensure that the shoreline resources of the SMU and the adjacent SOSWS associated with the Nisqually Delta are protected while still providing the City with a location for access to Puget Sound for appropriate water-dependent uses and activities and water-related passive recreational uses and activities.

57. ***Proposed Development Standards.*** The proposed TPSMU contains height limits for development within the shoreline. Heights should generally be the minimum necessary to accomplosh the permitted activity. Unless the applicant demonstrates otherwise, heights are 35 feet for the dock, 65 feet for the barge loading tower, and 35 feet above the railroad tracks for the conveyor (this report recommends the high conveyor option which would involve increasing the height above the railroad tracks to 60 feet).

58. ***Existing Use Regulations***. The existing DuPont SMP contains regulations applicable to various shoreline uses and activities. Categories of uses include "commercial and industrial development," "ports and water-related industry," "piers," "roads and railroads," and "mining." The DSEIS notes that the regulations for the Conservancy environment permit water dependent commercial and industrial uses including docks, piers and mining as a conditional use. Ports and water related industries are prohibited (DSEIS at 79-80).

59. Policies for commercial and industrial development include making efficient use of shoreline areas; locating associated parking away from the shoreline; insuring protection of natural areas or systems; assessing impacts of commercial structures on views; and giving priority to water-dependent commercial/industrial uses, but allowing both water-related and non-water dependent uses if future higher priority uses cannot reasonably be expected. Policies related to commercial piers include integration into commercial operations; and consideration of impacts to navigation, the environment, and adjacent proximate uses.

60. The applicant has not requested that the Revised Project permit applications be evaluated under the existing Master Program Conservancy designation of the site; rather the proposal is being evaluated under the proposed Master Program amendments being processed simultaneously with the applications. The TPSMU use regulations would supersede the existing use regulations.

61. ***Proposed Use Regulations***. The proposed TPSMU would be governed by its own set of policies and regulations that limit uses to water-related passive recreational uses, and to water-dependent uses associated with public transportation or with sand and gravel barge transshipment. Uses should be designed to minimize impacts to the environment; aesthetic character of the area; and public use and enjoyment of the area. Appropriate mitigation should be required for all unavoidable adverse impacts; only one industrial use utilizing one dock may be permitted and operating within the SMU at any one time. Further discussion of the TPSMU can be found in the DSEIS at pages 80-82. A copy of the proposed Master Program text and map is attached as Appendix B.

62. ***Conditional Use Provisions***. The TPSMU use regulations provide that certain activities may be allowed as a conditional use including: utilities, roads and railroads located waterward of the ordinary high water mark; facilities for the barge shipment of sand and gravel, including such uses as a pier, a dock, mooring dolphins, mooring buoys for barge staging, a barge loader, a conveyor, necessary utilities, and an access road; necessary accessory or ancillary uses of a commercial or industrial nature associated with a listed permitted or conditional use where the need for a shoreline location is fully demonstrated.

63. As stated in the Master Program, the intent of the conditional use provisions is to provide more control and flexibility for implementing shoreline regulations. The conditional use permit process is intended to apply performance standards and to achieve compatibility between adjacent uses. Criteria for shoreline conditional use permits include a demonstration that the use will avoid adverse effects on the environment and other uses; will not interfere with public use of the shoreline; will be compatible in site design; and will be consistent with the general intent of the Master Program.

B. 1985 DuPont Comprehensive Plan and Zoning Code Provisions:

64. When the Revised Project applications were filed, the City was governed by the 1985 Comprehensive Plan and Zoning Code. Policies of the 1985 Comprehensive Plan are summarized in the FEIS on the Proposed Pioneer Aggregates Mining Facility (pages 224-226), in the Draft Supplemental EIS at 85, and in the Mayor's Report on the original applications. Applicable policies include the following:

a. ***Plan Concepts.***

65. An underlying premise of the 1985 Comprehensive Plan is to promote growth within a specified policy framework (C/INT 030.010.000). It encourages industrial development as a means of providing a strong employment and tax base and as the foundation of the Plan's long-term development pattern (C/INT 030.050.000).

b. ***Natural Systems.***

66. The Plan encourages development which minimizes adverse effects on marine and freshwater resources, including the water quality of the Nisqually Reach and the adjacent shoreline (C/NAT 010.000.000, 010.010.000). Shoreline uses, such as marine transportation and public recreation, should be permitted consistent with the State SMA and the City's SMP (C/NAT 010.010.010). Upland development which minimizes potential impacts on marine water quality and shorelines should also be promoted (C/NAT 010.010.020). Policies also recognize Sequalitchew Creek Canyon and encourage protection of the stream's ecological value (C/NAT 010.020.060).

67. Objectives relating to maintaining visual quality include maintaining the wooded character of the Puget Sound bluff and native vegetation at the mouth of Sequalitchew Creek to screen future development from the Nisqually Delta and Puget Sound (C/NAT 030.010.000).

c. ***Industrial Development.***

68. A Plan goal is to maximize the development potential of areas designated for industrial use (C/IND 020.000.000). Full industrial development of the area north of Sequalitchew Creek is to be promoted (C/IND 020.010.000). The Plan also recognizes the potential for industry, consistent with applicable laws created by the history of water-borne commerce and its deep water shoreline (C/IND 020.020.000). 020.000, 020.040.000-020.040.020).

d. ***Shorelines and Adjacent Lands.***

69. Comprehensive Plan policies relating to the shoreline are intended to maximize the potential of the City's marine shoreline while protecting the ecological and scenic value of this resource (C/SHO 010.000.00, 020.000.000). The importance of careful regulation of lands adjacent to shorelines is recognized as necessary to avoid significant shoreline impacts. The Plan

encourages coordinating the City's land use plan with its SMP as a means of implementing the SMA (C/SHO 030.000.000-030.010.000).

e. Zoning Code Provisions.

70. The subject property is zoned Industrial under the DuPont Zoning Code. The Revised Project is a permitted use in the Industrial zone. Permitted uses in the Industrial zone must meet applicable City performance standards, including:

a. **Noise**. Noise levels must meet applicable provisions of the City Noise Ordinance.

b. **Dust**. Dust, dirt, flyash or airborne solids shall meet applicable PSAPCA regulations and shall not be emitted in quantities unreasonably affecting adjacent property.

c. **Vibration.** Vibration from manufacturing equipment shall not be discernible beyond the property lines of the site.

d. **Light and Glare.** Any outdoor lighting for industrial facilities shall be designed to minimize light escapement beyond the property lines of the site.

C. City's 1995 GMA Comprehensive Plan Update:

71. The City adopted a Comprehensive Plan Update meeting requirements of the Growth Management Act on July 25, 1995. The proposal is consistent with the special management unit designated in the Comprehensive Plan.

72. A single dock would be allowed within the special management unit pursuant to the Comprehensive Plan; public access would not be provided and use of the dock after mining is completed would be limited. The Urban shoreline designation surrounding the existing dock would be changed to Conservancy to implement local, low-impact recreational use. The existing dock and surrounding shoreline area near the mouth of Sequalitchew Creek is identified as a local recreation facility. Pedestrian access would be provided down the Sequalitchew Creek canyon railroad grade.

73. Proposed policies for Industrial Development promote environmentally sensitive development as an integral element in establishing a balanced community; encourage a range of industrial uses; call for establishing performance standards that promote "clean" industrial uses; and encourage site development standards that address siting, site preparation and grading, building design, access, storm water management and erosion control, sensitive areas, landscaping, parking, lighting, signage and proximity to other uses.

74. The Plan's Environmental Systems policies address shorelines, habitat and other resources. Policies for shorelines include periodic review of the City's Shoreline Master Program to ensure that appropriate issues and uses are addressed; changing the current Urban shoreline

designation near the mouth of Sequalitchew Creek to Conservancy; creating a "dock study area" near the City's northern border and requiring uses within the study area to develop a long-range shoreline use and management plan in cooperation with the City and Department of Ecology; and limiting access and use of the shoreline to low-impact uses. Habitat policies include promoting retention of habitat areas including the bluffs along Puget Sound; protecting significant ecological areas; minimizing the potential for adverse impacts to the Nisqually Wildlife Refuge; protecting the biological productivity of Sequalitchew Creek; locating development away from the Puget Sound bluff to maintain its habitat and visual value; limiting activities allowed along the shoreline to protect near-shore habitat; and updating the City's Sensitive Areas Ordinance to include near-shore aquatic habitats, the Oak Savannah and other significant trees.

III. SUMMARY OF PUBLIC HEARING, AUGUST 16, 1995

Brenden McFarland for the Department of Ecology indicated continued support for the Settlement Agreement. He noted the remaining issues for which additional mitigation may be necessary have been identified in the draft and final supplemental EIS.

Jim Repman representing LoneStar Northwest recommended approval subject to the conditions of the staff report.

Jay Geck for the Nisqually Delta Association indicated support for the staff report, high conveyor and open cut alternative. He also supported 1,000 foot Special Management Unit designation because it offers the best long term certainty.

CONCLUSIONS

III. ANALYSIS OF SHORELINE MASTER PROGRAM AMENDMENTS

75. The proposed map and text amendments to the Shoreline Master Program (programmatic action) should be approved. They reflect changing local circumstances, are supported by new data and information. and create a new vision for the DuPont shoreline which serves the health, safety and welfare of the citizens of DuPont and citizens of the state. The programmatic action is consistent with the Settlement Agreement, which is a historic landmark involving multiple parties and interest groups that include the State Department of Ecology, various environmental groups, and citizen groups.

76. ***Changing Local Circumstances.*** The DuPont Shoreline Master Program was adopted in 1975, and has remained generally unchanged since its enactment. A number of local circumstances have changed since its adoption, which warrant amendments to the DuPont Shoreline Master Program.

77. The Master Program was adopted at a time when a major forest products export facility was envisioned by the Weyerhaeuser Company. That facility was never developed, and has now been abandoned.

78. Since adoption of the 1975 Master Program, Washington enacted the Growth Management Act supporting mineral resource uses. The Pioneer Aggregates mine has been approved and is now operating. A shoreline dock location is needed to transport the aggregate. DuPont has recently enacted a Comprehensive Plan Update which supports mineral resource uses on the upland leased site and a dock at Tatsolo Point. The Comprehensive Plan Update reflects a new vision for the shoreline, by providing one location for a single industrial dock for the shipment of sand and gravel at Tatsolo Point in lieu of the Urban designation at Sequalitchew Creek. Under the Growth Management Act and Comprehensive Plan Update, the preferred use for the shoreline supports a single-purpose dock for sand and gravel shipment. The more intense Urban designation is no longer the preferred plan for the shoreline. This is a significant change in local circumstances.

79. The appropriate use of the DuPont shoreline has been a subject of dispute since its adoption and approval by the Department of Ecology in 1975. The Settlement Agreement provides the opportunity to implement a balanced approach to shoreline uses and to end this long-standing dispute.

80. ***New Information and Data.*** In the original (1993) Environmental Impact Statement, a dock at Tatsolo Point was not thought to be a reasonable alternative. Information contained in the Supplemental Environmental Impact Statement shows that, with the adoption of the proposed Shoreline Master Program amendments and with the framework provided by the Settlement Agreement, a dock at Tatsolo Point can be a feasible option which achieves the goals of the applicant, while protecting against environmental impacts. One obstacle to a dock at Tatsolo Point has been thought to be the lack of ability to obtain access to a dock facility in that location.

However, the Supplemental EIS shows that a road and conveyor can be constructed down the bluff in a manner which achieves the access needs of the applicant, while mitigating environmental impacts to the bluff and shoreline resources. No eagles would be impacted as previously thought. This new information and data is of substantial assistance in evaluating a new alternative to the Master Program from that presented in the 1975 document.

81. ***Public Interests.*** The new shoreline designation at Tatsolo Point offers the opportunity to create a tailor-made shoreline designation to address the unique area. It provides the opportunity to permit a shoreline location for water-dependent uses, including the proposed sand and gravel transshipment facility. The overall goals of the SMA and the DuPont Shoreline Master Program seek to provide a balance between economic and environmental elements.

82. ***TPSMU.*** The proposal to create the TPSMU would provide the following benefits to the environment: the industrial use would be located away from the Sequalitchew Creek area, which has a wetland at the mouth of the creek, and further away from the Nisqually Wildlife Refuge; the TPSMU limits the number of industrial uses to one, which is an advantage over the existing urban designation; future industrial uses are limited to those with no more severe impacts than the proposed sand and gravel shipping facility, thereby eliminating the possibility of more intense industrial development of the DuPont shoreline; and public access can be provided at the old dock location, which is more compatible with the overall City of DuPont Comprehensive Plan. Environmental impacts would be controlled by the TPSMU by: permitting only one industrial use at a time; by requiring a conditional use permit for the industrial dock facility; by creating development regulations that limit the intensity of the permitted use; and by requiring mitigating measures. The SEIS for the project identifies a number of mitigating measures for the Revised Project proposal, which are incorporated in the recommendation section at the end of this report.

83. ***Urban Environment Elimination.*** The removal of the urban shoreline designation at the existing dock site is in the public interest, provided it is done at the same time as creation of a new location for industrial use on the DuPont shoreline. It is in the overall long-term interest of the City, and consistent with the overall goals of the Shoreline Master Program, to permit one location for water-dependent, commerce within the city limits of DuPont. Benefits from such a location include: providing a location for industries such as the sand and gravel industry to have a shoreline frontage in order to reach customers by barge in the Puget Sound region; contributing to the tax base of the City; and creating opportunities for employment in the City. Allowing cost-efficient transportation of sand and gravel would also permit a ready supply of aggregate to the Puget Sound construction industry, which is necessary for affordable housing and cost-effective public works programs. The proposal also gives the City future options and access to the shoreline for future uses consistent with the purpose of the TPSMU.

84. ***Alternatives.*** The FSEIS discusses several alternatives for the TPSMU. This report recommends that the development regulations of the TPSMU be modified to permit the high conveyor alternative with a 60-foot height limit. The higher height alternative would significantly reduce the amount of excavation, thereby reducing environmental impacts discussed in the Earth Element of the SEIS, and reducing visual impacts discussed in the Aesthetic section of the SEIS.

85. Alternatives for the size of the management unit also exist. The Settlement Agreement initially proposed a 750-foot TPSMU, leaving a 250-foot sliver of Conservancy environment at the northernmost edge of the DuPont shoreline. The 250-foot area of Conservancy was conceived of as a buffer between the City of DuPont and Pierce County's shoreline jurisdiction. However, the City's SMP would also potentially permit commercial and industrial uses in the Conservancy environment as conditional uses. The FSEIS evaluated a second alternative which would expand the management unit to incorporate the remaining 250 feet of Conservancy. The resulting 1,000-foot TPSMU could allow the City to control potential uses within this area more efficiently. A third option recommended in this report is to adopt the 750-foot TPSMU as proposed at this time. The City would initiate another amendment to the use regulations of the Conservancy designation as part of a subsequent action, to eliminate the potential for intensive uses within this shoreline designation.

86. As recommended herein, the TPSMU will be in the overall public health, safety and welfare of the citizens of DuPont and State of Washington.

IV. ANALYSIS OF SHORELINE PERMITS

A. Consistency with Proposed Shoreline Master Program Amendments:

87. ***Use Regulations.*** All proposed improvements and activities related to barge loading and shipping would occur in the Special Management Unit, if adopted. The proposal is among the two types of uses that the TPSMU was designed to permit. Consistent with the intent of the new shoreline designation, the proposed barge loading and shipping operation requires frontage on navigable waters and is a water-dependent use. The proposal would also provide public access to the shoreline along the Sequalitchew Creek railroad corridor, which is a more appropriate location than the Revised Project site during the industrial operation of the dock.

88. ***Policies.*** Proposed shoreline facilities – dock, conveyors and access road – would be consistent with the policies, use regulations and development standards of the Tatsolo Point Special Management Unit. The proposed use of the shoreline for barge shipment is water-dependent, which is consistent with the purpose of the management unit. Facilities for barge shipment of sand and gravel are permitted as a conditional use, including a dock or pier, mooring dolphins, mooring buoy for barge staging, a barge loader, a conveyor and access road.

89. ***Development Standards.*** As indicated in the Supplemental EIS, the proposal would also meet the development standards applicable to the Tatsolo Point Special Management Unit:

- facilities have generally been designed to be the minimum size needed for their intended function; the proposed dock, for example, has a narrow profile to minimize shadows;
- as indicated in the Aesthetics section in the Supplemental EIS, the dock would be designed to minimize visibility from off-site viewing locations;
- the dock would extend 175-200 feet from the shoreline;
- no creosote pilings would be used;
- grated decking would be used for the access trestle in the near-shore environment;
- the barge loader would be about 65 feet high (above MHHW), and the dock would be about 5 or 6 feet above the MHHW; these heights are consistent with the limits in the proposed use regulations for the Tatsolo Point Special Management Unit. The over-water conveyor would be approximately 50 feet above the railroad tracks, which is higher than the general limit in proposed use regulations for the management unit as initially proposed, but within an alternative discussed in the FSEIS and recommended herein;
- lighting would be the minimum required to meet applicable safety standards and would be turned off when not needed;
- no dredging is proposed at the proposed dock location, and the Supplemental EIS evaluates alternatives for the access road and conveyor to help minimize clearing and grading;
- as discussed in the Transportation section of the Supplemental EIS, the mooring buoy for barge staging would be located at the Ketron Island location to minimize impacts to tribal fishing and navigation;
- no significant impacts to recreational and commercial navigation are identified; and

- the Supplemental EIS identifies mitigation measures for significant impacts that would be implemented by the applicant.

90. ***Alternatives.*** The low conveyor route alternatives would involve more extensive grading of the bluff to accomplish a lower profile. While this could marginally reduce visual impacts by achieving a lower profile for the conveyor itself, it would increase overall visual impacts because it would involve significantly greater impacts to topography; see the discussion in the Earth, Aesthetics, and Land and Shoreline Use sections of the SEIS. On balance, the reduction of excavation is of greater benefit than the reduction in height. Also, the open cut alternative is preferable because it causes the least disturbance to the bluff and least excavation (Table 1 above). The option recommended herein is that the high conveyor, open cut alternative be approved.

91. ***Conditional Uses.*** The proposal meets the criteria for shoreline conditional uses (WAC 173-14-140). As discussed in this subsection, the proposed facilities and use meet the intent, policies and use regulations of the revised Shoreline Master Program which has been drafted to be consistent with the policies of the Shoreline Management Act. The proposal would not significantly interfere with any existing public use of the shoreline at the proposed location. Although public access would not be provided at the new dock location because of potential safety conflicts, the proposed use of the area around the existing dock for passive recreation would enhance shoreline public access for local residents, consistent with previously approved conditions of approval for access to the existing dock. The area adjacent to the proposed use is primarily undeveloped; the proposal would be located a sufficient distance from existing and planned uses so as to avoid conflicts. Significant adverse impacts to the shoreline environment resulting from the proposed action are mitigated by the proposed mitigation measures and conditions recommended herein. The proposal furthers the public interest. In general, it has been located and designed to achieve the goals of the Shoreline Management Act while providing the City of DuPont and adjacent landowners with access to Puget Sound to permit planned extraction of commercial mineral resources.

B. Consistency With Existing DuPont Shoreline Master Program:

92. ***General Goal.*** The Revised Project proposal and master program amendments would be consistent with the stated goal of the DuPont SMP to realize the full potential of the City's shoreline. As discussed further below, the proposed use, if subject to appropriate conditions, would also be consistent with the SMP's multiple goals encouraging commercial development, aesthetic quality, and natural resource values.

93. ***Environment Designations***. The regulations for the Conservancy environment permit water-dependent commercial and industrial uses, including docks as conditional uses. DSEIS at P. 80-81. Preferred uses however are those which utilize resources on a sustained yield basis, such as recreation. The applicant has not requested that the project be evaluated under the Conservancy regulations; therefore it is not necessary to make any findings or conclusions about the appropriateness of a conditional use permit under the existing designation.

94. ***Use Regulations***. Under the original proposal, a number of policies and regulations were applicable to the barge loading and shipping operation, which the City has interpreted as qualifying as a commercial and industrial development. It is intended that the proposed Tatsolo Point Special Management Unit would be a self-contained environment designation with its own set of regulations, so the other development regulations of the Master Program would not apply. For reference, the Final SEIS at pages 33-35 contains a discussion of uses permitted in the Conservancy environment. Ord. No. 486, approving Lone Star Northwest's prior shoreline application, contains a discussion at pages of the consistency of the propoed use with Shoreline Master Program policies 15-23; that discussionis incorporated herein by reference. In general, the proposal would be consistent with policies in the DuPont Shoreline Master Program for commercial and industrial development, for piers and docks, and roads.

95. ***Commercial & Industrial Uses***. The policies applicable to the commercial and industrial this use category indicate a priority for water-dependent activities.
Commercial docks are provided as an example of water-dependent uses. Pursuant to these definitions, the proposed barge shipping operation from the new dock is considered to be intrinsically water-dependent. *See* Draft SEIS at 83.

96. The proposal is consistent with other relevant policies of the SMP applicable to commercial and industrial uses, including locating facilities in a pattern that will use shoreline areas efficiently; protecting sensitive natural systems; and not significantly affecting scenic views of a significant number of people. Compatibility with these policies is identified in the SEIS sections on Land Use, Plants & Animals, and Aesthetics.

97. The general regulations for the industrial and commercial use category would be met by the proposal, including a need for shoreline frontage to support a water dependent use; solutions to potential erosion and water quality problems, through use of an enclosed conveyor to limit spillage of materials during loading and by undertaking stormwater and erosion control measures during construction and operation; and by locating the proposal on a site with limited sensitive features which is generally suitable for development and by mitigating environmental impacts, as identified throughout the SEIS.

98. Other relevant use regulations applicable to commercial and industrial development include possible requirement for public access, and required conditional use approval for buildings over 35 feet in height. The proposal includes public access to the shoreline at the site of the existing dock via the Sequalitchew Creek access trail.

99. ***Piers.*** The proposal is also generally consistent with SMP provisions for commercial piers, which are allowed only as an integral part of a commercial operation. Considerations for decisions include environmental impacts, navigational impacts, and impacts on adjacent properties. Use of the dock for barge shipping is an integral part of the proposed operation.

100. The SEIS discusses potential impacts of the proposal on the natural environment, on navigation and on adjacent land ownership. Conditions are recommended to mitigate identified

adverse impacts to the environment, including earth, water quality, plants and animals, environmental health, aesthetics and public services. The SEIS identifies no significant adverse impacts to adjacent properties. Conditions of approval are also recommended to address impacts associated with pier construction and maintenance.

101. An anchor buoy system is proposed to stage (*i.e.*, temporarily anchor) loaded and waiting barges. Policies in the DuPont SMP relevant to anchor buoys include a demonstration that the proposed buoy will not obstruct important navigational or recreational areas; buoys must also extend at least eight inches above the water surface and be marked so as to be clearly visible. Based on the analysis in the FSEIS, it is concluded that Ketron Island is the best location because it would not obstruct navigation. Potential interference with recreation is also minimized so that fishing and recreational boating will not be significantly affected. The buoy would also meet the design criteria in the SMP.

102. The policies do not permit piers in areas having high value for shellfish, fish, or wildlife unless the development would not noticeably degrade the quality of the area. The SEIS concludes that the revised proposal would meet the intent of this policy. The Plants and Animals section of the SEIS describes wildlife and fisheries resources in the environs of the site of the proposal and concludes that the proposal would not significantly degrade habitat quality. There are no eelgrass beds at the site (DSEIS at 52). Geoducks are not present on the site at a density to support a commercial harvest (DSEIS at 51). Wildlife use and habitat in the Nisqually Wildlife Refuge is not expected to be significantly affected because of distance from the new dock; relocation of the dock facility from the existing DuPont dock would reduce the potential for adverse impacts to marine plants and animals in and adjacent to the NWR. DSEIS at 61. Bald eagle perching and foraging that occurs in the vicinity of the old dock, but were not observed perching within 1365 feet of the sites proposed for the new dock, conveyor route or maintenance road. DSEIS at 54. The EIS concludes that short term disruption may occur but that no long term significant impacts to bald eagles will occur because of the general low use of the site by eagles and the availability of other perch sites. DSEIS at 55. Conditions of approval include implementation of wildlife habitat management and enhancement measures. Potential impacts on fish and marine organisms could occur during construction and operation of the new dock; conditions are recommended to mitigate these effects.

103. The Shoreline Master Program also contains a number of health and safety requirements, such as proper fire safety equipment and lifesaving equipment such as life rings. The proposal will comply with the applicable requirements.

104. ***Roads.*** The applicant proposes to construct a new road for access to the dock. The general intent of the Master Program's policies is to ensure that construction of roads does not adversely affect the shoreline. Relevant general regulations require that the applicant demonstrate that no alternative upland location exists; construction is designed to prevent erosion and stormwater impacts; the project would fit the existing topography; natural shoreline vegetation will be maintained; and the proposal is coordinated with existing land use plans. *See* DuPont SMP at 36-37.

105. As discussed in Final SEIS, the area's topography provides no reasonable alternative vehicular access to the shoreline.

106. With implementation of appropriate road design and construction practices, potential adverse effects to the area will be minimized. Measures to protect against erosion and geologic instability are contained in the conditions at the end of this report under the "Earth" section. With the implementation of these mitigation measures, the road is consistent with the Master Program.

107. ***Shorelines of Statewide Significance.*** The SMA designates the Puget Sound shoreline up to Tatsolo Point as a "shoreline of statewide significance."(SOSWS). The Settlement Agreement documents that DOE and the other signatories determined that the location of the Special Management Unit and the proposed new dock would be outside the SOSWS.

108. The programmatic and the project proposals present an alternative approach to balancing the interests of the SMA, as well as the above policies and development guidelines for shorelines of statewide significance. The programmatic action would eliminate the Urban shoreline designation from the SOSWS. A TPSMU would allow the area for commercial shipping to be moved outside the SOSWS and to limit permitted uses in a way to maximize compatibility with the objectives of the adjacent SOSWS. The EIS contains an extensive discussion of potential and probable impacts to environmental resources; identified impacts can be effectively mitigated with imposition of appropriate conditions.

109. ***Compliance with Conditional Use Criteria.*** The project has demonstrated compliance with the criteria in the DuPont SMP for conditional uses:

i. <u>No adverse effects on the environment or other uses.</u>

110. As indicated in the SEIS and in the analysis in this report, the proposed use of the shoreline -- dock improvements, a maintenance road, construction of a conveyor, and operation of the dock to load barges -- will not result in probable significant adverse environmental impacts if appropriate mitigation measures required as conditions of approval are implemented by the applicant. Such measures are recommended at the end of this report.

111. While the proposal could result in potential and/or minor impacts, with the imposition of the recommended conditions, the project will have no unreasonable adverse effect.

ii. <u>No interference with public use of the shoreline.</u>

112. Currently, public shoreline access is not available at the new dock site, because of a steep bluff and the Burlington Northern railroad tracks. The proposal will not cause significant interference with public use of the shorelines for recreational activities. Access has been required to the existing dock under the existing permit; in addition, the applicant has agreed to provide public access as part of the Revised Project proposal under the Settlement Agreement. The new public access is considered as mitigation for the Revised Project, which does not provide public access at the new site because it is not considered a desirable location for public access. Use of

the new dock site for public access is not optimal because of: its remote location; potential conflicts with the industrial use; desire to keep the new dock structure to a minimum; and safety issues due to the need to cross the railroad tracks.

iii. Design compatible with the surroundings.

113. The SEIS sections on Land Use, Aesthetics and Noise evaluate the compatibility of the proposal with surrounding uses and activities. The proposal, either by itself or in combination with the upland mining operation, is not expected to be incompatible with or cause significant impacts to existing or planned land uses. The loading boom, tower, access road and the over-water section of the conveyor will be visible from near-by locations by recreational boaters and pedestrians. Because of distance, and the size and design of the facilities, they will not be clearly visible from off-site viewing locations used by large numbers of people, such as the Nisqually Wildlife Refuge. Recommended conditions of approval will require that appearance of visible structures blend in with the background. Retention and replacement of vegetated buffer along the bluff on Puget Sound will screen upland operations from view. Lighting will be required to ensure safety during night time hours, and could be visible from off-site. Conditions of approval are recommended to mitigate lighting impacts, including focusing light downward, using the lowest lighting levels consistent with safety, and turning lights off when facilities are not operating. Noise impacts will not be significant. Under the Settlement Agreement the applicant has agreed to meet a stricter noise standard of 5db increase on a 24-hour (Ldn) basis, and the SEIS concludes that the stricter standard will be met. FSEIS at 43-44. A noise monitoring and compliance program will be developed to mitigate impacts.

iv. Consistent with general intent of the Master Program.

114. As noted in the preceding discussion, the proposal would be consistent with the intent of the DuPont SMP. It would further the general goal of developing the full potential of the DuPont shoreline in a manner consistent with policies, use regulations and environmental designations of the DuPont SMP and the amendments proposed herein. It would also be consistent with the Comprehensive Plan. Significant environmental impacts identified in the EIS documents for the proposal would be mitigated pursuant to measures incorporated in the proposal and/or conditions imposed on the project.

Site Plan Review

C. Consistency with 1985 DuPont Comprehensive Plan and Zoning Code

115. ***Comprehensive Plan Concepts***. The proposal is consistent with the intent of the Comprehensive Plan to encourage industrial growth as a foundation of the City's long-term development pattern. As indicated in the Fiscal Impact analysis contained in the SEIS, the proposal would facilitate an industry which would enhance the City's tax base, and result in an increase in net revenues accruing to the City. (DSEIS at 129-130) Infrastructure is adequate to serve the proposal. With the imposition of recommended conditions, the proposal will not

significantly affect City services and facilities. The proposal is located north of Sequalitchew Creek, where the plan encourages industrial growth because of the occurrence of relatively few environmental constraints. The bluffs along Puget Sound will be preserved except to the extent necessary to construct the access road; however, revegetation will be used to minimize aesthetic impacts. Sequalitchew Creek will be preserved and protected through avoidance and other mitigation measures incorporated in the proposal and as provided in previous conditions of approval.

116. ***Natural Systems***. The proposal is consistent with Comprehensive Plan policies that encourage development which minimize adverse effects on marine and freshwater resources, shorelines and the Nisqually Delta. Plan policies also encourage preservation of Sequalitchew Creek, important wildlife habitat, and visual quality. Effects of the proposal on these natural systems are discussed in the DSEIS at 52-62.

117. With the imposition of measures incorporated in the proposal and additional recommended conditions, the proposal would comply with relevant Comprehensive Plan policies. Impacts to Sequalitchew Creek would be mitigated by relocating the dock to the north, limiting development in the Canyon; through prior conditions of approval; and by compliance with requirements for controlling drainage, erosion and sedimentation. *See* DSEIS at 85-90.

118. Impacts to marine waters would be mitigated by imposing conditions requiring that the project prevent spillage of gravels into Puget Sound by use of a closed pipe conveyor; by limiting the time of in-water construction associated with the dock to avoid affecting migrating fish; and by preparation and compliance with an emergency spill response plan. A wildlife enhancement plan will be implemented to mitigate for loss of wildlife habitat on the site.

119. Potential impacts to the Nisqually Delta are discussed in the EIS documents. With implementation of the measures called for in the Settlement Agreement, any impacts to the Delta will be avoided or otherwise mitigated. Preservation of the bluff along Puget Sound except to allow construction of an access road, and the condition requiring re-vegetation, would maintain the wooded or vegetated character of the slopes and screen most on-site activities from off-site views. Conditions are recommended to further reduce aesthetic impacts.

120. ***Industrial Development.*** The proposal is consistent with policies that promote industrial development in the area north of Sequalitchew Creek and that recognize the potential for waterborne commerce. DSEIS at 85-90. The use of the dock for transport of commercially valuable gravel resources is a water-dependent use that is consistent with the DuPont SMP.

121. ***Shorelines and Adjacent Lands***. The proposal is consistent with Plan policies that encourage protecting the ecological and scenic values of the shoreline while maximizing the potential of the City's marine shoreline. The proposed barge shipping operation is consistent with the Plan's goal for encouraging waterborne commerce.

122. ***Zoning Code***. The Revised Project will provide for shipment by water to local and regional markets of aggregate materials mined on a permitted industrial site, consistent with

Z/IND 010.000.000. The proposal would be consistent with the provisions of the Zoning Code (DSEIS at 90); each performance standard is set forth below with a statement of how the project complies with each:

a. ***Meet all Applicable Provisions of the City Noise Ordinance, Consistent with Z/IND 020.010.000.*** The Revised Project will meet applicable local and state noise standards. Pioneer Aggregates FEIS, pp. 20-22; 189-213. Additionally, Lone Star Northwest has committed to meet a stricter noise standard at Cole Point on Anderson Island, as established pursuant to the Settlement Agreement. FSEIS at 37-46. That standard limits noise to 5 dBA above background Ldn, which has been documented to be 53 dBA. The SEIS demonstrates that even under worst case conditions, the project will meet this additional noise standard. Lone Star Northwest will establish a noise monitoring plan with provisions for monitoring and enforcement, to ensure that conveyor and barge transport operations comply with the noise standards established in the City's Code and Settlement Agreement. This monitoring and compliance program will be developed cooperatively among the signatories of the Settlement Agreement. Other proposed noise mitigation measures are the use of rubber lining at transfer points on the conveyor; and the lowering of the barge loader boom to the barge deck for transfer of the aggregate.

b. ***Meet All Applicable Smoke Regulations Established by Puget Sound Air Pollution Control Authority, Consistent with Z/IND 020.020.000.*** No smoke emissions are associated with any activities proposed on site.

c. ***Meet All Applicable PSAPCA Regulations for Dust, Dirt, Flyash and Airborne Solids, Consistent With Z/IND 020.030.000.*** The Revised Project would meet all applicable PSAPCA regulations. Minimizing the number of transfer points along the conveyor line and lowering the barge loader boom for barge loading will reduce dust emissions. The access road will be used only an average of 5-10 trips per day, thereby limiting dust emissions. No off-site traffic is generated by the Revised Project proposal.

d. ***Control Odors so that Adjacent Properties are not Unreasonably Affected, Consistent with Z/IND 020.040.000.*** No odorous emissions are associated with any activities proposed on site.

e. ***Permit No Emissions of Toxic Gases or Matter In Quantities That Are Injurious To Health, Animals, Vegetation or Property, Consistent with Z/IND 020.050.000.*** No toxic gases are associated with any activities proposed on site.

f. ***Limit Vibration from Manufacturing Equipment So That It Is Not Discernible Beyond the Boundaries of the Project Area, Consistent With Z/IND 020.060.000.*** The vibration from the conveyor system will be negligible and would not be discernible beyond the property lines of the Revised Project area.

g. ***Minimize Lighting Impacts from Outdoor Lighting for Industrial Facilities, Consistent With Z/IND 020.070.000.*** The Zoning Code criteria is met because

lighting will be designed to limit off-site light and glare from the Revised Project. No permanent lighting would be required in the overland segment of the conveyor; the conveyor will be lit only at transfer points. All lighting would be the minimum required to meet OSHA and Mine Safety standards and would be turned off when not needed. Light fixtures would be directed downwards, shielded or directed away from off-site and adjacent land uses. Lights would be located intermittently along the dolphin access walkway. Lighting at the dock will be designed to minimize the amount of light reaching the water surface next to the dock. Lighting associated with the barge-loading facility would be operational only when a barge was being loaded between sunset and sunrise. As required by the conditions of approval, a detailed lighting plan would be submitted in conjunction with building permits and would be reviewed by an independent professional.

h. ***Prohibit Truck Access Through Areas Developed or Planned for Residential Uses, Consistent With Z/IND 030.010.000.*** This Revised Project site plan application creates no additional truck traffic. Truck access to the site will be from the adjacent processing plant. No truck access is proposed through areas developed or planned for residential use.

D. Consistency With 1995 Comprehensive Plan Update:

123. The programmatic and project proposals are consistent with proposed policies in the Comprehensive Plan Update and with the Preferred Alternative Land Use Map. The site of the proposed dock is within the "special management unit" identified on the Comprehensive Plan Update land use map. Proposed use of the dock for shipment of significant quantities of sand and gravel is consistent with the intent of the Update's policies.

124. Shifting the location of the dock to the proposed site would help implement the Plan Update's intent to use the existing dock and the area around the mouth of Sequalitchew Creek for local low-impact recreational activities. Locating the conveyor and access road through the Planned Open Space corridor would not permanently foreclose future land uses, including open space. It would not be inconsistent with this designation which is directed at identifying the long-term components of the City's Open Space system. The Land Use Map acknowledges that public open space or trails or use of the bluff on the site would not be proposed until after the completion of mining.

125. The proposal would be consistent with the Plan Update's policies for Industrial Development. It would facilitate operation of sand and gravel mining in the City's Industrial area which would provide employment and help make the City more balanced in terms of land uses. The proposal is planned to comply with federal, state and local environmental requirements.

126. The proposal is consistent with the intent of the Mineral Resource overlay designation applicable to the lease area. It would facilitate water-borne shipment of valuable sand and gravel resources located on property designated as having significant Mineral Resource value. The conveyor, road and new dock are consistent with the Industrial designation.

127. The proposed Shoreline Master Program revision evaluated in the Supplemental EIS would help to implement Plan Update policies for shorelines. The proposed amendment applies to the area designated as a dock study area on the Preferred Alternative map. It would also change the designation of the area around the existing dock from Urban to Conservancy; it would limit existing and future uses of the new dock; and overall, it would embody a long-range shoreline use and management plan for the dock study area. The designations and policies of the existing Shoreline Master Program generally require low-impact uses of the shoreline; these would be continued in the proposed Shoreline Master Program revision.

128. The proposal is consistent with the Plan Update's habitat policies. The analysis in the Supplemental EIS indicates that the proposal would not cause significant adverse impacts to aquatic habitat. DSEIS at 62. Moving the dock location to the proposed site would place greater distance between dock construction activities and shipping operations and Sequalitchew Creek and the Nisqually Wildlife Refuge; greater distance would provide additional protection to the Creek's biological resources and reduce the potential for adverse impacts to the Refuge. Based on the analysis in the Plants and Animals section of the Supplemental EIS, the proposal would not have significant adverse impacts to protected wildlife or habitat. Most of the upland portion of the property will be retained in a natural, undeveloped state for the term of the permitted mining operation. Exceptions include the corridor for the overland conveyor and proposed grading of the bluff face for the access road and conveyor to the dock. This alteration of the bluff would not significantly affect wildlife or habitat.

E. Consistency With Sensitive Areas Ordinance

129. No wetlands or streams have been identified on the site of the proposed action. Development of the bluff for use as a transportation corridor for roads and utilities qualifies for an SAO exception if the other criteria are met. The proposal meets the criteria as described below.

130. Topography provides no reasonable alternative vehicular access to the shoreline. The applicant had a site (i.e., the existing dock site at Sequalitchew Creek) with access that fit the topography of that area; the applicant has been willing to give up that site in order to achieve the multiple interests advanced by the Settlement Agreement. Although this new site requires topographical modifications, with implementation of appropriate road design and construction practices, potential adverse effects to the area will be minimized.

131. *The Revised Project benefits the public.* The Revised Project cannot proceed without an access road and conveyor for gravel delivery. The Revised Project (including conveyor and road) provides numerous public benefits.

i. Settlement Agreement. The Revised Project was proposed as a preferred barge loading location to the existing dock under a Settlement Agreement entered into between Lone Star Northwest, the City, the State Department of Ecology, and various private parties. The Settlement Agreement embodies a balance of public interests, including: (1) providing a site for

sand and gravel shipment to the greater Puget Sound region; (2) mitigation of environmental impacts; and (3) ending frequent conflict.

ii. Economic Development. A barge loading dock is necessary to enable the Pioneer Aggregates mining and processing operation to operate at full capacity. By providing necessary transportation for the sand and gravel, the Revised Project constitutes an economic asset that will strengthen the City's tax base, provide continued employment for residents of the region, and support construction activity throughout the region. Granting the SAO exception to allow the proposed use of the industrially zoned property is consistent with the City's goals and vision for the future.

iii. Growth Management Act. The City has designated the Pioneer Aggregates site as Mineral Resource Land of long-term commercial significance, consistent with requirements of the State Growth Management Act. The Pioneer Aggregates mining site is the last available source of the unique and extremely high-quality sand and gravel known as the Steilacoom gravels. The Revised Project makes the natural resource available to the region and enhances the natural resource industry, consistent with GMA.

iv. Environmental Benefits. The new vision of the DuPont shoreline embodied in the Revised Project is intended to relocate any intensive use from the Sequalitchew Creek Canyon area to the Tatsolo Point area, which is less sensitive itself.

v. Emergency Access and Future Use. There is no existing access in the City from upland to the shoreline in the area of Tatsolo Point. The road will provide new emergency vehicle access to the shoreline. In addition, the access road will provide the City with options for future use of the shoreline.

132. *The proposal is necessary to gain access to private property and there is no feasible alternative to the proposed location.* The road and conveyor are necessary for access to the new dock location from the upland mining operation. There is no existing road serving the shoreline site and no feasible alternative location for a road and conveyor to serve the new dock that would avoid the bluff or result in lower impacts than the proposal.

i. Sequalitchew Creek: The original project proposed an access road along Sequalitchew Creek to reach the existing dock. A Sequalitchew Creek road is not an alternative for the Revised Project because it does not reach the new site. In addition, as part of the Revised Project, the Sequalitchew Creek access road will not be built, and instead a public access trail will be dedicated along the narrow gauge railway along the north side of the Creek.

ii. Shoreline Access: There is no feasible road access to the Revised Project dock site along the shoreline from either Sequalitchew Creek or Solo Point. A road along the shoreline from either of those locations would conflict with the Burlington Northern railroad tracks that run along the bottom of the bluff. Also, the shoreline is too narrow in some locations to accommodate a road. Hard rock to the north of the site prevents extension of a road from Solo Point to the site. The proposed road is at the only feasible location.

133. Vehicles using the road will have to cross the railroad tracks; Burlington Northern will determine the type of control required for the crossing to ensure safety

iii. Alternative Conveyor Route: The SEIS for the Revised Project initially evaluated a third conveyor route that would have switchbacked down the bluff with the objective that the road and conveyor could be jointly located within a single bluff cut. Preliminary evaluation indicated that the alternative would require increased clearing and excavation of the bluff, and the alternative was eliminated from further analysis due to the potential for increased environmental impacts, safety considerations and increased maintenance requirements and project costs.

134. *The proposal will result in no net loss of the functional value of the bluff.* Construction of the road and conveyor at the proposed Revised Project location will result in no net loss in the functional value of the bluff. The open cut alternative, with the high conveyor route, requires the least amount of clearing and excavation, with about 1.2 acres of bluff affected (2.5 acres including the access road). The bluff at the proposed location does not provide unique habitat for threatened or endangered species. Slope stability, erosion control and stormwater management are discussed in detail in the SEIS for the Revised Project and will not be significantly affected. Mitigation measures are included in the proposed Conditions attached hereto. The bluff construction will not be visible from the Village of DuPont and will not be clearly visible from the Nisqually Wildlife Refuge. While the conveyor and road will be visible to varying degrees from different locations on the water or from Anderson Island, those views will be mitigated, especially over the long-term, by revegetation under the required Landscaping Plan. Landscaping will be with natural vegetation; the SEIS and conditions recommended herein provide further detail.

135. In sum, the Revised Project does not affect wetlands or streams, and the road and conveyor would fall under an exception for new transportation corridors and utilities. A condition is recommended in this Report requiring the applicant to obtain a Sensitive Areas Permit for development associated with the conveyor and road in the bluff and buffer. In addition, the applicant must comply with development standards of the City's SAO for construction on hillsides of greater than 15% but less than 40%.

RECOMMENDATION

A. Shoreline Master Program Amendment

136. The proposed Shoreline Master Program amendments are recommended for approval by the City and forwarding to the Department of Ecology with the following modifications:

i. The TPSMU should not incorporate the 250 feet of Conservancy environment on the north; the City should initiate future amendment to the DuPont Shoreline Master Program to limit the potential for intensive conditional uses in the Conservancy shoreline environment; and

ii. Consistent with the high conveyor options, the TPSMU development regulations should be revised to permit a conveyor height of 60 feet.

iii. Delete the following words (lined out) from the list of conditional uses in the TPSMU: Necessary accessory or ancillary uses ~~of a commercial or industrial nature~~ associated with a listed permitted or conditional use where the need for a shoreline location is fully demonstrated.

B. Shoreline Permits and Site Plan

137. Based on the foregoing analysis, the proposal can be conditioned so as to be compatible with applicable policies and regulations of the DuPont SMP and to mitigate significant environmental impacts. The site plan approval, Sensitive Area Ordinance Exception, the shoreline substantial development permit and conditional use permit are recommended for approval subject to the conditions set forth below. The conditions identified herein are based on the proposed project design, significant impacts and mitigation measures identified in the FSEIS for the proposal, as well as additional conditions based on the foregoing findings and conclusions. The applicant has assumed additional obligations pursuant to the terms of the Settlement Agreement and previously adopted conditions of approval. Previously adopted conditions shall continue to apply to the extent they are relevant to the revised proposal and consistent with the terms of the Settlement Agreement.

Earth

(1) Excavation should be limited to that necessary to implement the high conveyor route/open cut alternative. The bluffs along Puget Sound and Sequalitchew Creek shall otherwise be retained. Excavation and clearing of the bluff above Puget Sound is permitted as necessary to bring the conveyor and access road down the bluff face to the shoreline. To protect steep slopes, to ensure visual and noise buffering, and to provide wildlife habitat, an undisturbed buffer shall otherwise be retained as required in the

previous Site Plan Approval. (Condition 4, Ord. No. 485), Shoreline Approval (Condition 2, Ord. No. 486), and the 1995 Comprehensive Plan.

(2) The applicant must obtain a Sensitive Areas Permit for work within the bluff and its buffer; work must be undertaken in compliance with terms and conditions of that permit. In addition, the applicant must meet the City's development standards for work undertaken on hillsides of greater than 15% (but less than 40%) slope.

(3) Appropriate erosion control facilities and procedures shall be implemented during construction to reduce the potential for soil erosion. Disturbed soil surfaces shall be revegetated within 14 days of completion of construction.

(4) Topsoil removed from the access road and conveyor alignments shall be stockpiled for reuse as cover soil over disturbed areas.

(5) Erosion of exposed cut slopes shall be reduced by engineering measures such as grading cut surfaces to appropriate slopes (1.5H:1V), planting vegetation, and placing armor (riprap rock or fabricated elements), as needed.

(6) The following slope stability measures will be required, and compliance will be verified as part of the grading permit process:

(a) Proper geotechnical engineering, design, and construction of temporary and permanent cut and fill slopes shall be used to reduce the potential for adverse impacts due to slope failures. Failures most likely in the soil conditions at the site consist of stormwater erosion, surface raveling, and shallow surface slides. Permanent cut slopes exceeding the natural angle of repose shall not be constructed, to reduce the potential for initiating a progressive failure at the toe of the cut. Permanent cut slopes shall be no steeper than 1.5H:1V (67 percent).

(b) Any stockpiled material from construction of the conveyor should be located a minimum of 150 feet back from the top of the existing slope for excavated slopes and outside the buffer area identified in the 1995 Comprehensive Plan to prevent it from acting as a surcharge that could tend to destabilize the slope.

(c) The access road shall be constructed using methods such as fill-bench cut and end-hauling of excavated material to prevent the placement of loose material on the slope that could fail and be transported downslope. The access road surface shall be sloped inward, toward the slope, with a ditch to direct storm runoff away from the outside road

shoulder and also to catch slope ravel and direct it back to the ditch line, thereby reducing maintenance and keeping the road clear of rocks. Check dams should be constructed at appropriate intervals (commonly 300 feet) in the ditch to control the amount and velocity of the water flow and erosion.

(d) The access road shall be constructed on the "moderate" stability section of the slope and shall be as short as possible to lower the overall impact. Locating the road on the moderate portion of the slope will require a short-radius switch back to traverse the slope and stay within property boundaries.

(e) Minor grade work at the toe of the slope would require some fill placement. Fills should be placed using appropriate geotechnical methods to improve stability and reduce the potential for raveling and slope failure. Inclined surfaces to receive fill would be cut with a series of benches as filling progressed to help "key in" the fill to the native soil. Fills would be placed using construction methods such as incremental lifts of appropriate thicknessess and compaction equipment and thoroughly compacted to a firm and unyielding condition.

(7) Concurrent clearing, mining and reclamation shall occur in maximum 40-acre increments. Mining shall follow the mining plan as approved by appropriate agencies. Restoration of the site will progress in increments and must include regrading, replacement of topsoil, and revegetation of the site as shown in the Pioneer Aggregates Mining and Reclamation Plan, a copy of which is included with the site plan application and transmitted herewith. The reclamation plan shall also be consistent with the City's landscape plan requirements. Any amendments to the reclamation plan required by the Department of Natural Resources (DNR) shall be communicated to the City, incorporated in the landscape plan, and shall be implemented by the applicant. Regrading and revegetation of each incremental mining area must be completed within two years of the completion of mining in that area. Any vegetation that dies within the first two years shall be replaced.

(8) During the first five mining increments, the applicant shall submit an annual report to the City evaluating implementation of the reclamation plan. The report shall be prepared by a qualified, independent consultant approved by the City. The report shall identify how restoration of the site compares to the approved reclamation plan and whether any corrective action is contemplated by the applicant or required by DNR.

(9) The bluffs along Puget Sound and Sequalitchew Creek shall be retained. To protect steep slopes, to ensure visual and noise buffering, and to provide wildlife habitat, an undisturbed buffer a minimum of 65 feet in width shall be retained along Puget Sound and **100**

feet along Sequalitchew Creek. Based upon a field meeting of resource specialists of the applicable federal, state, and local wildlife resource officials, the **Puget Sound** buffer may be widened to a width not to exceed 100 feet, or as depicted in Appendix K, whichever is greater, depending upon the recommendations provided by the foregoing professionals. The buffer shall be measured from the top of the slope (i.e., the highest elevation of the bluff) to the limits of clearing for the conveyor and shall generally follow the alignment shown in the final EIS, Appendix K. The proposed buffer shown in Appendix K is greater than the 50-foot buffer required by the Sensitive Areas Ordinance and may vary from the widths depicted in the graphic.

(10) The buffer along the bluff shall be maintained so as to reduce the potential for wind throw of trees. Trees that blow down shall be replaced. Existing open, degraded or damaged areas on the bluff shall be replanted with native species of substantial or mature size. The applicant shall submit a report to the City outlining any incidents of wind throw, evaluating the health of the buffer, and providing recommendations. The reports shall be prepared by an independent, qualified consultant, approved by the City. A report shall be submitted to the City in alternative years, beginning two years after operations begin.

(11) No mining, construction or other activities shall occur in any portions of the Consent Decree area until authorized by the Department of Ecology.

(12) Engineering design shall reflect the presence of any geologically sensitive area(s). All structures, whether upland or marine, shall be designed and built in accordance with applicable building codes and regulations addressing slope stability, seismicity, environmental quality, and water quality.

(13) The applicant shall pave the haul road, including the road shoulders, from the plant site to DuPont-Steilacoom Highway prior to commencing operations. During operation, this road will be swept and washed at least twice per week - and more frequently during summer months - to prevent dirt and dust accumulation. The City will monitor operations during the first summer of operation to determine the appropriate frequency of washing and/or sweeping; this could include multiple daily sweepings to mitigate dust impacts. Internal roads shall be sprayed with water or other dust-binding agents.

(14) During construction and operation, truck tires/wheels shall be washed with a water-based cleaner before they exit the site to reduce dust emissions and to prevent exceedance of applicable quality standards.

(15) Mining operations shall be operated in a manner designed to reduce dust emissions. This should include, but is not limited to, operational procedures that reduce the distance between the gravel loader and storage hoppers.

(16) In accordance with PSAPCA regulations, "best available control technology" shall be used at the processing plant to ensure that no visible emissions occur. Such control measures shall be determined in compliance with PSAPCA standards and may include, but are not limited to, water spraying to prevent emissions at material transfer points and/or enclosing transfer points.

(17) The applicant shall maintain a high moisture content in sand and gravel material piles to minimize emissions of inhalable particulate matter. Periodic sampling may be required to verify that operations meet applicable particulate standards.

(18) Storm water runoff shall be controlled according to an approved storm water management plan, prepared consistent with the Department of Ecology Storm Water Management Manual for the Puget Sound Basin, that provides adequate retention/detention, promotes infiltration, and provides water quality treatment. The plan shall also incorporate the following elements:

(a) Storm water runoff shall be directed to infiltration ponds located on-site. Ditches must be constructed on both sides of the main access road to collect runoff; ditches should be designed as biofiltration swales and shall be regularly and properly maintained.

(b) No direct overland flow or discharge from the site to Sequalitchew Creek or the salt marsh shall occur.

(c) Any runoff occurring in the mining area shall be routed to the lowest elevation, where it can infiltrate into the soil.

(19) Clearing, mining and reclamation shall occur in the phased and incremental manner identified in Condition 7 and environmental documents. No mass clearing/grading of the site shall occur.

(20) Activities associated with conversion of the Sequalitchew Creek narrow gauge rail line to a trail shall be limited to the dry season (July 1 through October 31). Crushed rock shall be used for the trail.

(21) Access from the mining site to the Sequalitchew Creek trail shall minimize the need for clearing and grading; no excavation shall occur in the canyon.

(22) To minimize disturbance and potential impacts to Sequalitchew Creek, the existing narrow gauge rail tracks shall be left in place. Gravel shall be placed between and adjacent to the tracks to make the trail usable for emergency vehicles and pedestrians.

(23) Mining operations shall be conducted consistent with applicable Best Management Practices (BMPs) drafted by the Washington Department of Ecology. Mining BMPs applicable to the project that shall be implemented include the following:

(a) Truck and equipment wash water shall be routed to approved retention and detention facilities equipped with oil-water separators prior to release to retention ponds;

(b) Fuel handling facilities shall be located a minimum of fifty feet from the wash water retention facility; subject to fire department approval, fuel shall be stored above-ground in lined and bermed areas; run-off from these areas shall be routed to retention ponds for monitoring and clean-up in the event of a spill;

(c) Internal drainage shall be used for recycling and to support groundwater recharge and minimize off-site discharges;

(d) A fuel/hazardous waste management plan shall be prepared prior to occupancy; the plan shall be available on-site at all times and implemented;

(e) Following any accidental spills, contaminated materials shall be removed and disposed of at an approved disposal site(s);

(f) Excavation pits shall not be used as landfill disposal sites for unclassified or non-inert wastes;

(g) If any underground storage tanks are hereafter approved for the facility, such tanks shall be double-walled to contain leaks; and

(h) Any spills occurring at storage tank locations shall be contained by the use of concrete slabs and sumps.

(24) A 25-foot separation shall be maintained between mining excavations and the seasonal high groundwater table except on slopes where a minimum 10-foot separation shall be maintained; vertical separation shall be shown on mining plan cross-sections. During mining, ongoing groundwater depth/elevation data, such as measurements from temporary piezometers, shall be generated and evaluated to guide planned mining activities. A groundwater elevation monitoring program, as described in the Final EIS Appendix E, shall be implemented. Groundwater elevations shall also be measured in on-site monitoring wells to detect any changes in vertical and/or horizontal groundwater flows. Operations in mining areas that are close to the seasonal groundwater table should reflect this proximity; procedures shall include such measures as moving vehicles that are not being used to other locations, not storing maintenance materials, and conducting maintenance activities in other locations.

(25) Water levels in existing and future wells on the site shall be monitored for the life of the project. The applicant shall prepare a monitoring program which shall be submitted to the Department of Ecology for review and approval. The program shall identify necessary actions if any significant impacts are detected, including but not limited to, modification of pumping rates. Lone Star Northwest proposes to pump groundwater from the deep aquifer, using test well TW-1 as a production well. (See Final EIS, page 117 and Figure 26 at page 110.) Subsequent to 25 years of operation of the gravel mining facility, or upon completion of the mining, whichever

occurs first, subject to this site plan approval, the applicant or its successors or assigns shall dedicate to the City of DuPont, in order to insure adequate control of the City's water resources, the specific production well, or any replacement production well developed upon the property during the 25-year operation of the facilities.

(26) The applicant shall, on an annual basis, monitor groundwater quality for chloride to detect chemical trends and the possibility of saltwater intrusion. Monitoring shall be consistent with the program attached to this report as Attachment 3.

(27) A water clarifying process shall be implemented to help reduce water consumed in processing through recycling.

(28) All facilities and activities shall be located, constructed and/or conducted in accordance with adopted federal, state and local regulations and guidelines to reduce the likelihood of spills of lubricants, fuels and chemicals employed in the processing and manufacturing processes proposed for the site.

(29) To reduce the potential for groundwater contamination, the design of areas used for fueling, maintenance and washing equipment or vehicles shall include pavement aprons, retention systems and oil-water separators. A specified area for washing trucks shall be designated and shall be designed so as to contain wash water and prevent it from infiltrating to groundwater. Water-based cleaners shall be used.

(30) A long-term groundwater monitoring program, addressing water quality and quantity, shall be developed as required by the Department of Ecology in the context of water permitting.

(31) Pump tests shall be conducted if any additional wells are proposed to be developed. If the Delta aquifer is pursued as a water alternative, a groundwater monitoring program meeting Department of Ecology requirements, shall be developed.

(32) As an interim measure, sanitary wastes shall be collected and hauled off-site. At such time as connection to the public sewer system is feasible, the project shall connect to the public system. The applicant shall construct all improvements necessary to connect to the public system according to City and Pierce County specifications.

Environmental Health

(33) On-shore and marine structures shall be designed and constructed in accordance with applicable building codes and regulations addressing slope stability and water quality.

(34) Storm water runoff shall be controlled according to an approved storm water management plan, prepared consistent with the Department of Ecology Storm Water

Management Manual for the Puget Sound Basin, that provides adequate retention/detention, promotes infiltration, and provides water quality treatment.

(35) The over-water portion of the conveyor shall be enclosed to prevent spillage of gravel.

(36) To prevent contamination of marine waters, the following measures shall be required:

(a) No fueling shall occur at the dock; no supplies, chemical or other materials shall be delivered to the site by water;

(b) An emergency spill response plan for the facility shall be approved by the Department of Ecology prior to occupancy and implemented by the applicant; any amendments to the plan attached herein shall be transmitted to the City (see also Condition 42, below);

(c) The applicant shall prepare information, in the form of a handout, advising its customers and tug companies that Coast Guard regulations prohibit the discharge of sanitary sewage, ballast tanks and bilge water from tugboats in the Nisqually Reach/Delta. These handouts shall be provided to customers with invoices and/or bills of lading;

(d) Sanitary wastes shall be collected and hauled off-site;

(e) Condition 38 below, required to mitigate impacts to marine sediments, shall also serve to identify the extent of gravel spillage in marine waters and to identify the need for corrective action, if any; and

(f) The applicant shall develop for the Department of Ecology a water quality monitoring program for marine waters extending the life of the project. Numerical monitoring may conclude at a time agreed upon in the report if results demonstrate no project-related water quality exceedences. The report shall contain the following information: reporting requirements; recommended frequency of monitoring; water quality parameters to be evaluated; and remedial actions to be followed if appropriate. The program shall be prepared by a qualified consultant and shall incorporate additional information or criteria required by adopted Department of Ecology guidelines.

(37) The applicant shall in good faith cooperate with any program implemented by state or federal agencies or the Nisqually Tribe to increase flows in Sequalitchew Creek.

(38) The applicant shall sound water depths in the berth area and its approaches to monitor any impacts from aggregate spillage, or the effects of natural accretion. Such soundings shall be performed annually and documented in a report submitted to the City. The report shall be prepared by a qualified consultant.

(39) The applicant shall require tugs using the dock loading facility to use lower power settings during docking to reduce the potential for propeller scour of sediments.

(40) Dust emissions shall be regulated during construction by PSAPCA Regulation 1, Section 15, requiring contractors to take all reasonable means to minimize dust emissions.

(41) If any suspected contaminants or suspicious waste materials are discovered during clearing or construction, activity shall cease, Ecology and City of DuPont representatives shall be notified, and appropriate corrective actions shall be taken.

(42) A final, site-specific emergency spill prevention and response plan shall be developed and submitted to the Department of Ecology when the final design of the facility has been determined but prior to occupancy. The plan shall cover all elements and operations of the facility (marine and upland). Appropriate oil spill containment equipment shall be available at the dock site.

(43) During construction and operation of the facility, spills or releases of oils, hydraulic fluids, fuels and other petroleum products, paints, solvents, and other potentially deleterious materials shall be contained and reported immediately to Ecology and the City of DuPont. Spills in marine waters shall be reported immediately to the Nisqually Wildlife Refuge and/or other agencies with jurisdiction. Removal shall occur in a manner that will minimize potential contamination of land, ground or surface water, or Puget Sound.

(44) To reduce the potential for spills of petroleum products into marine waters, no refueling of tugboats shall occur at the site. The applicant shall advise tug operations periodically of applicable vessel safety and overboard discharge regulations by providing handouts. Instructive information about special handling and best management practices for sewage, ballast tanks and bilge water shall be posted on the loading dock. Additionally, workers associated with the barging facility as well as tug/barge operators shall be advised of such information quarterly.

(45) The kettle wetland located in the eastern portion of the site shall be preserved. Impacts to the wetlands from mining activities shall be avoided. A 200-foot buffer (greater than 200-feet between the wetland edge and the eastern property boundary) shall be established around the wetland. The wetland and buffer shall be placed in a separate tract and protected by execution of a covenant or other technique acceptable to the City.

(46) If the applicant pursues development of the Delta aquifer as an alternative water source, a wetland monitoring and contingency plan shall be prepared. The plans shall be prepared by a qualified independent consultant approved by the City. The plan shall follow the guidelines and contain the information required in the Sensitive Areas Ordinance.

(47) If any enhancement of the salt marsh is proposed as part of the wildlife management plan required in Condition 54, a monitoring and contingency plan shall be prepared according to the requirements of the Sensitive Areas Ordinance.

(48) Pursuant to the Consent Decree entered under the Model Toxics Control Act, no portion of the site within the former black powder area within the Consent Decree area shall be mined, altered, or used until any known hazardous substances have been removed. The alternative mining sequence, identified in the Final EIS as Figure 4, shall be implemented unless mining in the Consent Decree area is permitted by the Department of Ecology.

(49) If any suspected contaminants or suspicious waste materials are discovered during clearing, construction or mining, activity shall cease, Ecology and City of DuPont representatives shall be notified and appropriate corrective actions shall be taken.

(50) Above ground facilities for the storage or handling of fuel, petroleum products or chemicals shall be designed, constructed and managed in accordance with applicable federal, state and local regulations to reduce the risk of spills, fire or explosion.

(51) The storm water control plan shall include catch basins and oil-water separators at fuel handling areas.

(52) The area used for washing trucks shall be concrete and designed to prevent infiltration of wash water.

(53) The tank for the proposed process water clarifying system shall be lined to prevent infiltration.

Habitat

(54) A wildlife management plan shall be prepared for the site. The plan shall be prepared by a qualified independent consultant and shall be submitted prior to issuance of any permits for construction. The consultant shall confer with the Washington Department of Wildlife and U.S. Fish and Wildlife Service. Wildlife management techniques identified in the plan and implemented on the site shall include, but are not limited to, the following:

- **installation of eagle perch poles in appropriate locations;**
- **retention of trees and snags along the bluff;**
- **placement of bird nesting boxes off-site;**

- **connection of on-site and off-site habitat if feasible, or planting of trees that provide substitute habitat for relevant species; and**
- **enhancement of degraded portions to increase visual screening and improve habitat.**

(55) To reduce disturbances to wildlife, coniferous and deciduous trees shall be planted in openings on either side of the conveyor facilities to help screen or reduce noise and glare from lighting.

(56) Dock repairs, pile driving and other in-water construction shall be timed to avoid impacts to juvenile salmon and local Treaty Fisheries and shall be limited to the period identified by the Washington Department of Fisheries.

(57) Pilings shall be of non-creosote material.

(58) Grated decking shall be used in the near-shore environment to minimize impacts from shading.

(59) To minimize light reaching the water, the minimum levels of lighting possible on the dock shall be used consistent with interests of safety and the requirements of applicable laws. A lighting plan shall be prepared in accordance with Condition 73 below. Conveyor lighting shall be shaded or muted and would be directional and of the lowest intensity possible. ***See also*** **Condition 74, below.**

(60) An undisturbed natural buffer shall be retained on the bluffs along Puget Sound and Sequalitchew Creek to provide wildlife habitat, protection of steep slopes, and visual and noise screening. The size and alignment of the buffer shall be as described in Condition **9** above.

(61) Clearing, mining and reclamation shall occur in a phased, incremental manner and sequence as described in Condition 7 above. Tree planting, monitoring and maintenance of plantings shall occur consistent with the reclamation plan and conditions **7** and **10**. The reclamation plan shall include a corridor from Sequalitchew Creek to other forested areas.

(62) Trees within the buffers shall be maintained as described in Condition **10**.

(63) Trees and snags along the bluff shall be retained to provide habitat.

(64) Yew trees harvested from the site shall be made available for medical research.

(65) Sightings of eagles or peregrine falcons shall be documented and reported to the Washington Department of Wildlife.

(66) Dust control measures identified in Conditions **13** through **17** shall be implemented to avoid indirect effects to white-topped aster.

Noise

(67) Construction and operation of the facility shall comply with City noise standards, as contained in the City of DuPont Noise Ordinance.

(68) Pursuant to the terms of the Settlement Agreement, the Revised Project shall not cause an increase of more than 5 dBA over the existing measured Ldn (i.e. 24-hour noise level) at the eastern shore of Anderson Island. This standard shall be referred to as the Settlement Agreement Noise Standard. The existing baseline noise level Ldn at Cole Point on Anderson Island has been measured and is established as 53.5 dBA. The City and the applicant are members of a Cooperative Noise Compliance Committee ("CNCC") established under the Settlement Agreement. Compliance with the Settlement Agreement Noise Standard shall be determined pursuant to a Monitoring and Compliance Program to be developed by the CNCC and shall be measured against the adopted baseline. The applicant shall abide by the terms and process established in the Settlement Agreement for assurance that the Settlement Agreement Noise Standard is met.

(69) During barge loading, the end of the loading conveyor shall be lowered to within five feet of the deck of the barge to reduce noise attributable to falling aggregates.

(70) Noise from the site shall be further mitigated through site planning and operational considerations, including but not limited to, the following:

- **All equipment shall be properly maintained;**
- **Implement measures to mitigate pile driver noise by enclosing the driver, applying damping compound to steel pipes, shrouding the hammer, or muffling gas pulses from diesel hammers; and**
- **Rubber or synthetic-coated screens and resilient pads shall be installed at transfer points along the conveyor route.**

(71) State and City noise standards, as contained in WAC 173-60-040 and the City of DuPont Noise Ordinance, respectively, shall be met during construction and operation of the facility. Noise shall be limited accordingly. A noise monitoring, compliance and enforcement program, contained in Attachment 4 of Ord. No. 485, shall be implemented. The applicant shall comply with all procedures set forth in this program. Operating hours shall be limited or operations curtailed in the event of violations of the program.

(72) An undisturbed buffer of natural vegetation shall be retained around the perimeter of the site, consistent with Condition 9 and enhanced where degrated to reduce off-site noise impacts and screen operations.

Lighting/Aesthetics

(73) A lighting plan shall be prepared and submitted to the City for review prior to building permit approval for the dock. The plan shall indicate the number, height, intensity and location of all lighting proposed for the dock and associated barge-loading facilities. The plan shall also include a discussion of effects of varying the height and number of lights as viewed from off-site locations. The plan should also specify operational measures, including but not limited to, directing light downward, using cut-off type lighting fixtures, turning off lights when facilities are not operating, and using the minimum lighting levels possible.

(74) The lowest level of lighting consistent with safety and applicable regulations shall be used during dock operations. If permitted by federal regulations, dock lights shall be turned off when not needed for loading activities. Light reaching the water should be minimized. All light fixtures shall be directed downward and away from adjacent land uses.

(75) The conveyor shall be lighted only at transfer points and only when the conveyor is operating or being maintained. The minimum levels of lighting permitted shall be used on the over-water section of the conveyor.

(76) A landscaping plan incorporating the measures identified in Conditions 77-82 shall be submitted as part of building permit applications. It should contain provisions for monitoring success of the plan and identify contingencies for responding to failure of any measures.

(77) To mitigate impacts to aesthetics and wildlife, existing trees surrounding cut areas shall be preserved and disturbed cut and fill areas replanted with native vegetation. The new plantings should be vigorous and mimic the character of the existing bank. The initial plantings should consist primarily of aggressive "pioneer" plant species and evolve into relatively stable plant communities that are similar to the surrounding existing vegetation.

(78) The ground surface and soil shall be prepared by grading slopes no greater than 1.5H:1V (horizontal:vertical), with intermediate benches at least every 25 feet of vertical elevation. The alignment of the terraces should be somewhat irregular and random so as not to create long linear and unnatural-appearing bench lines in the landscape.

(79) Seeding, consisting primarily of grasses, woody groundcovers, shrubs and trees should be applied to the ground surface within two weeks of completion of construction by hydroseeding or similar means. The hydroseed mix should contain suitable fertilizers, mulch and binding agents. Grasses should be primarily low-profile rye and fescue - which can establish quickly and allow future development into native species groundcovers. Woody plant species should be a mix of natives, such as salal, Douglas fir, and big-leaf maple.

(80) Deciduous seedlings (1-2 years old) and conifer seedlings (3-4 years old) shall be planted after the seeding is established. Salvaging and transplanting existing plant material should be used if more cost effective than using imported nursery stock. Transplant stock may include Western Red Cedar, Indian Plum, Oceanspray, Pacific Dogwood, Red Alder, Amelanchier, Doughlas Fir, and Red Osier Dogwood.

(81) Seeding shall be undertaken to germinate within six weeks and provide a green cover over the slopes. Some taller and broader trees shall be transplanted to provide greater cover and screening of the slopes at the top of the bank. The majority of transplanted trees should be at the top of the bank and should be 10-12 feet tall; the balance shall be no less than 3 feet at planting. Transplanted trees should be planted at a density of 75 trees per acre to provide a good screen upon initial planting. Trees selected for transplant should be those which will mature to significantly cover the view in five to ten years. All transplanted material shall be maintained and replaced if it dies within a two year growing period.

(82) Seeding and planting should be accomplished in early September to late October, or early March to late April. This would allow relatively warm temperatures to germinate the seed, followed by periods of natural rainfall. In order to plant during these windows, finished grading should be planned to precede these periods as closely as possible. The barren-prepared slopes should be seeded within fourteen days of finished grading.

(83) All structures within 25-35 feet of MHHW shall be painted a light blue-gray hue that is a flat (low reflective) color. This color is similar to a hue that varies with the atmosphere and the water on Puget Sound and would significantly minimize the contrast of the facilities with their surroundings. Higher structures should be painted an olive gray green, dark charcoal, or a combination of the two to blend in with the background.

Historic

(84) The applicant shall be subject to the procedures set forth in the Memorandum of Agreement (MOA) between the Nisqually Tribe and the Weyerhaeuser Real Estate Company. Any skeletal remains inadvertently unearthed during construction or mining shall be treated in accordance with the MOA.

(85) Construction activities shall be monitored to identify any historic resources. Any resources discovered shall be treated according to state historic preservation requirements; appropriate agency personnel shall be notified.

Transportation

(86) Lone Star shall require proof of insurance for towing contractors using the DuPont facility. Tug operators shall be advised annually prior to the drift net fishing

season to use extra caution at night during the drift gill net fishing season and should avoid, to the extent possible, intensive fishing areas.

(87) Vehicular use of the access road shall be limited to personnel needed for barge loading, operation, maintenance and emergencies.

(88) The following procedures shall be implemented to address conflicts with tribal and recreational fishing:

(a) Incidents of conflicts between tugs/barges and tribal and recreational fishermen shall be recorded and reported to the City as they occur.

(b) The City shall confer with agencies with jurisdiction and determine if the frequency of conflicts warrants further corrective action. Such action could include construction of a lighted sign system to notify boaters of high fishing activity, and/or scheduling of maximum barge loading during daylight hours during the drift gill net fishing season.

(89) Lone Star Northwest shall assume the cost for construction of a rail crossing for the access road to reach the barge dock facility if deemed necessary by Burlington Northern Railways. The final determination will be made by the Tacoma Road Master's Office once Lone Star submits the required documentation at the Burlington Northern permit office.

(90) The mooring dolphin location shall be north of the barge loading facility and shall not conflict with the normal navigational channel.

(91) The haul road, from the processing plant to DuPont-Steilacoom Road, shall be paved and maintained by the applicant.

(92) Lone Star Northwest shall participate in near-term road improvements necessitated by its project. These shall include the following:

(a) Changing the striping of the lanes on Barksdale Avenue between Wilmington and the I-5 southbound ramps to two lanes northbound (one left-turn/through lane and one right-turn-only lane), and two lanes southbound (one through lane and one right-turn-only lane).

(b) Providing a right-turn-only lane on the Fort Lewis leg of the Barksdale/I-5 northbound ramp intersection.

(c) Extending the left-turn lane on southwest-bound DuPont Steilacoom Road for vehicles headed for I-5 or Fort Lewis.

(d) Installing a traffic signal at the Barksdale/I-5 north-bound ramp intersection.

(e) Interconnecting the three signals on Barksdale.

Lone Star's share of these improvements, based on traffic generated, would have been eleven(11) percent. The cost of these improvements was estimated at $180,000 if ramp metering is not required. The estimate was made prior to elimination of the concrete and asphalt plants. Based on the estimate, the applicant's share would be $19,800. The applicant may submit revised estimates showing percentages without the eliminated plants, prior to building permit issuance. All funds shall be collected and administered according to state law.

(93) Lone Star shall implement the conditions imposed by Pierce County relating to improvements to the County road system necessitated by the proposal, and if deemed necessary by Pierce County, Lone Star shall construct an extra southbound lane on DuPont-Steilacoom from the mining road entry to Davis Place.

(94) The applicant shall document and report to the City annually regarding the relative proportion of material shipped by barge and by truck. If the proportion of truck shipments to total shipments in any consecutive two-year period is twenty-five percent or greater, an updated traffic report shall be submitted to the City. The report shall be prepared by a qualified independent consultant approved by the City. The report shall evaluate any additional traffic improvements necessitated in whole or part by the increase in truck traffic relative to total traffic attributable to the operation. Prior to building permit issuance, the applicant shall also submit a report verifying the number of truck trips from the Steilacoom site currently passing through Steilacoom.

(95) Lone Star shall participate in City-sponsored traffic planning to identify lone-term improvements to the road system. If reconstruction of the I-5 interchange is required, Lone Star shall contribute its fair share of this improvement. Lone Star's contribution shall be calculated as its proportionate share of traffic generated to the intersection (using passenger vehicle equivalents or other agreed upon methods).

Public Safety

(96) A fire protection plan, covering all project facilities and operations, shall be prepared. The plan shall be submitted to the Fire Department for City approval prior to building permit issuance.

(97) Fire suppression systems meeting City requirements shall be installed at the loading dock.

(98) If the emergency access road to the dock is secured to restrict entry of non-authorized personnel, the City shall be provided with a key to permit entry.

(99) On-site security shall include fencing, lighting and an entry gate.

(100) Fire suppression systems meeting City requirements shall be installed at the processing plant. Fire alarms and sprinkler systems meeting Fire Code specifications shall be installed.

(101) If underground storage tanks are proposed or required, the applicant shall comply with applicable construction, safety and monitoring provisions.

Public Access

(102) Public access shall be provided along the narrow gauge railway north of Sequalitchew Creek to the Puget Sound shoreline. The applicant shall in good faith cooperate and support in a non-financial way, the City's efforts to retain only the curved portion, extending approximately 100 feet from the shoreline, of the existing dock at the mouth of Sequalitchew Creek.

(103) Under the Settlement Agreement, WRECO has agreed to dedicate to the City an area for public trail access along the existing narrow gauge rail on the north side of Sequalitchew Creek to the Puget Sound shoreline in the vicinity of the existing dock. Other improvements provided in connection with public access shall include the following:

(a) A cleared public parking area shall be provided in the general location shown in the Final EIS on Figure 22. An easement necessary to provide access shall be obtained from the Weyerhaeuser Company.

(b) Educational signs shall be installed at intervals along the trail to notify the public of the sensitivity of this environment, particularly at and near the salt marsh. The existing buffer of the salt marsh along the Sequalitchew Creek shall be maintained. Prior to building permit approval, the applicant shall submit a plan that maintains visual access to the salt marsh but prevents intrusion by pedestrians through signs, plantings and other appropriate means. The City shall review and approve the design and location of all signs. Additional native plantings shall also be provided to discourage intrusion into the salt marsh.

(c) To minimize disturbance and potential impacts to Sequalitchew Creek, the existing narrow gauge rail tracks shall be left in place.

(d) The applicant shall provide picnic tables and trash cans for local use at two locations along the shoreline. Such locations shall be identified by the City.

(104) Until development is permitted in the Consent Decree area, or public access to the shoreline can be provided via the Sequalitchew Creek road, the applicant shall maintain the existing access down the bluff from the Longshoreman's trail and parking area.

(105) Lone Star Northwest, in cooperation with Weyerhaeuser, shall submit a plan to the City prior to building permit issuance identifying areas to be dedicated to the public as parts of the open space and trails system. The plan shall include a schedule and any proposed conditions of education to meet the intent of Z/OPE 030.010.000. Pursuant to the foregoing section, Lone Star Northwest shall be required to dedicate to the City one-half of the buffer area for open space or trail purposes, to mitigate the potential impacts of development of the City's natural and recreational resources and to promote the public health, safety and welfare.

Sewer & Water

(106) Lone Star shall purchase potable water for domestic use (8 up to 109 gpm) from the City water system. The applicant shall construct all on-site and off-site improvements necessary to connect to the City system.

(107) As an interim measure, sanitary wastes shall be collected on-site and trucked to the Chambers Creek Treatment Plant. Lone Star shall connect to the public sewer system when such connection is feasible as determined by Pierce County. The applicant shall construct all on-site and off-site improvements necessary to connect to the public system.

(108) Water conserving fixtures shall be installed in wash rooms.

(109) All on-site facilities shall be designed to reduce fire flow requirements through use of alarms and sprinklers.

Solid Waste

(110) The applicant shall encourage recycling of paper, metal and used old wastes.

(111) Proposed methods of storing and disposing of fines (i.e. sand) shall be submitted to the City prior to building permit issuance. If possible, accumulated fines from the clarifier should be mixed with topsoil and used in reclamation.

Assurances & Enforcement

(112) Lone Star Northwest shall post a bond, letter of credit, or other assurance device in the amount of five million dollars ($5,000,000) in favor of the City. This shall be in addition to bonds of assurances required by any other conditions of approval of the project. The assurance device or security shall be in a form acceptable to, and shall be approved by, the City Attorney. In the event of default or non-compliance with any terms or conditions of this site plan approval, the Shoreline Substantial Development Permit, or the Conditional Use Permit, the City may apply the proceeds of the bond or other assurance device to enforce such terms or conditions.

(113) The applicant shall pay the cost of all plans, reports and monitoring programs required by these conditions of approval and for the time required by City staff to review such plans, reports and programs. These plans, reports and programs include the following:

(a) Reclamation plan implementation (first 5 mining increments);
(b) Temporary erosion and sedimentation control plan;
(c) Forest management reports in alternative years;
(d) Monitoring to determine road sweeping/washing frequency;
(e) Amendments to emergency spill response plan;
(f) Water quality monitoring program (life of project);
(g) Groundwater elevation monitoring program;
(h) Wildlife management plan;
(i) Noise monitoring program/reports;
(j) Lighting plan;
(k) Mode split report;
(l) Fire protection plan; and
(m) Open space plan.

City officials and representatives of Lone Star Northwest shall meet prior to issuance of any building permit and reanalyze the fiscal impacts of this site plan approval on all City Departments and the City's provision of municipal services. If there are negative fiscal impacts evident as a result of such meeting and analysis, then Lone Star Northwest shall meet with City of DuPont officials to discuss additional fiscal contributions to mitigate such unforeseen fiscal impacts.

(114) Any changes to mitigating measures, the terms and conditions of the approval, and the scope of the project may be approved only by the City Council, and not by any other City official, during the entire term or duration of this permit or approval.

EXHIBIT B

Tatsolo Point Special Management Unit

I. Purpose

The purpose of the Tatsolo Point Special Management Unit is to ensure that the shoreline resources of the Special Management Unit and the shoreline of statewide significance associated with the Nisqually Delta are protected while providing the City of DuPont with a location for access to Puget Sound for appropriate water dependent uses and activities and water related passive recreational uses and activities.

II. Policy

The Special Management Unit is located outside the shoreline of statewide significance. Development within the Special Management Unit should not be visible from anywhere within the Nisqually National Wildlife Refuge.

Uses in the Special Management Unit should be limited to water dependent uses and water related passive recreational uses. Water dependent uses should be limited to those uses associated with public transportation or with sand and gravel barge transshipment. Uses directly associated with the railroad may be allowed, provided that no feasible non-shoreline location is available.

All uses and activities should be designed, developed and conducted in a manner that minimizes the impact to: the natural and human environment; the aesthetic character of the area; and the public use and enjoyment of the area. Appropriate offsetting mitigation should be required for all unavoidable adverse impacts associated with permitted development.

Passive recreational uses and an industrial use may occur concurrently within the Tatsolo Point Special Management Unit. However, only one industrial use utilizing one dock may be permitted and operating within the Tatsolo Point Special Management Unit at any time.

III. Use Regulations

A. Permitted Uses: The following uses and activities are permitted within the Special Management Unit subject to compliance with the development standards contained in Section IV below:

- Passive recreational uses.
- Facilities associated with such passive recreational use, such as parking and restrooms, that are located landward of the ordinary high water mark.
- Fish and wildlife related research activities and developments.
- Fish and wildlife related natural resource enhancement activities and developments.
- Roads and railroads when located landward of the ordinary high water mark.
- Utilities when located landward of the ordinary high water mark.

B. Conditional Uses: The following uses and activities may be allowed only upon approval of a conditional use permit subject to compliance with the conditions of Section IV below:

- Facilities associated with passive recreational use that are located waterward of the ordinary high water mark.
- Aquaculture facilities and uses except when such facilities are for fish and wildlife related research and/or enhancement as provided in the Subsection A above.
- Utilities when located waterward of the ordinary high water mark.
- Roads and railroads when located waterward of the ordinary high water mark.
- Facilities for the loading and unloading of passengers and/or vehicles carried by ferry.
- Train station provided that the facility is located landward of the ordinary high water mark.

- Facilities for the barge shipment of sand and gravel, including such uses as a pier, a dock, mooring dolphins, mooring buoys for barge staging, a barge loader, a conveyor, necessary utilities, and an access road.

- Necessary accessory or ancillary uses associated with a listed permitted or conditional use where the need for a shoreline location is fully demonstrated.

- Necessary shoreline stabilization activities associated with existing or proposed uses.

- Maintenance dredging may only be authorized provided that it is fully demonstrated that there is no feasible alternative that will have less environmental impact than the proposed dredging.

- Industrial facilities that are fully demonstrated to have less adverse impact to the natural and human environment than a sand and gravel barge transshipment facility that may be permitted within the Special Management Unit.

C. Prohibited Uses: The following uses are expressly prohibited in the Tatsolo Point Special Management Unit:

- All uses and activities not specifically listed above as permitted or conditional use.

- More than one industrial use within the Special Management Unit.

- More than one industrial dock within the Special Management Unit.

IV. Development Standards

In order to ensure that all uses and activities within the Special Management Unit minimize adverse impacts to the natural and human environment; the aesthetic character of the area; and the public use and enjoyment of the area, the following regulations and development standards apply:

- The footprint, shadow and disturbed area caused by a development or associated construction shall be the minimum necessary to accomplish the authorized use, and shall not be oversized to accommodate speculative future uses.

- All structures shall be designed and constructed to blend visually with the background as viewed from the water, unless the applicant fully demonstrates a need otherwise. Development shall to the maximum extent practicable avoid visibility from the Nisqually National Wildlife Refuge and shall minimize any unavoidable impacts to visibility from the Refuge while accomplishing the intended purpose of the permitted development.

- No dock may extend waterward more than 255 feet from the ordinary high water mark.

- The height of all structures shall be the minimum necessary to accomplish the permitted activity. Height shall be measured from mean higher high water if the structure is over water and from above average grade level if over land. Unless the applicant fully demonstrates a need otherwise, the following height limitations apply:

  a. Any dock and associated structure: 35 feet

  b. Any barge loading tower: 65 feet

  c. Any conveyor structure: maximum 60 feet above the railroad tracks

- Lighting shall be the minimum necessary for the permitted purpose. Lighting shall be designed and constructed to minimize lighting of the shoreline, upland, and water areas and to minimize visibility from shoreline, upland, and water areas. Lighting shall meet applicable safety standards.

- Alteration and disturbance of the existing bathymetry, land contours, and upland and aquatic vegetation within shoreline jurisdiction shall be minimized.

- Any industrial use or activity shall be located to minimize interference with tribal fishing.

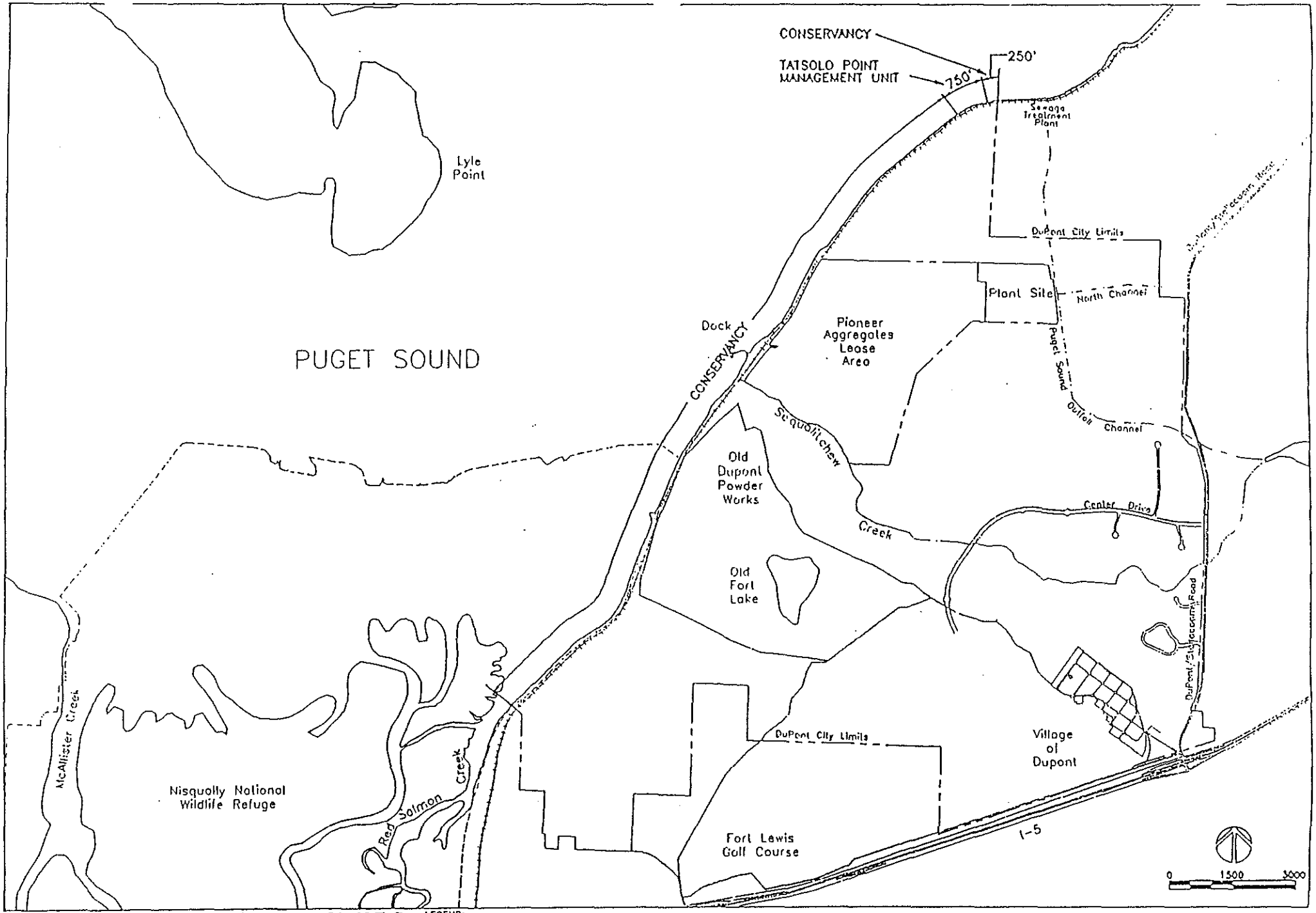
- Obstruction and interference with recreational and commercial navigation and use of the water and shoreline areas shall be minimized.

- Dredging for the creation of berthing areas is prohibited. Berths shall be located to minimize the potential for maintenance dredging. Maintenance dredging may be authorized only by conditional use permit provided that the applicant fully demonstrates that there is no feasible alternative that will have less environmental impact than the proposed dredging.

- Shoreline stabilization activities shall only be authorized when the applicant fully demonstrates that: the stabilization design and method used is compatible with and uses the natural shore processes and conditions present on the site to the greatest extent possible; and that the materials used are compatible with the natural conditions of the site.

- No aquatic or upland vegetation within shoreline jurisdiction shall be disturbed or removed nor any land form altered except as authorized by the specific terms of a shoreline permit.

- Compensatory mitigation shall be provided for all identified adverse impacts to the human and natural environment. This shall include mitigation for impacts caused by the ongoing operation of any use or activity and potential impacts caused by accidents.



IONEER AGGREGATES
UPONT, WASHINGTON

LEGEND:
- LEASE AREA
- DUPONT CITY LIMITS
- ROADS
- NISQUALLY NATIONAL WILDLIFE REFUGE BOUNDARY

Shoreline Redesignation from Urban to nservany

Attachment 9.a

From: Samuel Thayer
To: Barbara Kincaid
Subject: Cal-Portland South Expansion
Date: Friday, September 10, 2021 1:15:16 PM

I have difficulty not getting emotional about this topic.

I live in Dupont and resent the continuous expansion of industry around our neighborhood. Sacrificing virgin land and wildlife for economic gain is inexcusable and will meet with significant resistance.

My concerns about the south parcel expansion include, but are not limited to:

- Any impact on the local wildlife and their living spaces (displacing deer, coyotes, bears and trees); this is part of what makes Dupont attractive, not 50 acres of warehouses down the street
- Any impact on ANY aquifers or drainage features that sustain life and the local vegetation.
- Any impact on the quality of life for myself, my children and future residents of Dupont, when Cal Portland starts mining in you back yard.

Where does the development end? Dupont has limited real estate and must find a balance between residential, commercial and natural. I feel this expansion will be tipping the balance; that I will eventually be living in a suburban industrisl district.

Even if the expansion meets all the regulatory criteria, what if the residents of Dupont just don't want it? Do we get a vote on the expansion or will the city just breeze it through for their own gain?

Sam Thayer

2393 McDonald Ave

From: Janet Howald
To: Janet Howald
Subject: Notice of Application Pioneer Aggregates South Parcel Project:
Date: Thursday, September 9, 2021 8:23:35 AM

-------- Original message --------
From: Don Russell <krdr1@juno.com>
Date: 9/9/21 4:21 AM (GMT-08:00)
To: Barbara Kincaid <bkincaid@dupontwa.gov>
Cc: Ronald Frederick <rfrederick@dupontwa.gov>
Subject: Notice of Application Pioneer Aggregates South Parcel Project:

Barbara,

In reading the Notice of Application for the Pioneer Aggregates South Parcel Project I noticed that the Project Description reads *"The proposal is to expand the mining operation to the South Parcel for an area of approximately 188 acres."*

In my prior involvement in commenting on CalPortland's mining issue the South Parcel was defined as being comprised of 117-acres of its existing 360-acre mine pit plus that located in a 177-acre South Expansion area. This makes a total of 294 acres of groundwater saturated gravel that will have to be dewatered to enable CalPortland to mine gravel under dry conditions, not 188 acres as cited in the Project Description.

Accordingly my question: Is it 188 acres or 294 acres of Vashon aquifer saturated gravel that CalPortland wants to access under provision of its proposed Pioneer Aggregates South Parcel Project?

Why do I ask?

It is my understanding that CalPortland's current conditional use permit does not permitted mining the Vashon aquifer groundwater saturated gravel located beneath 117 acres of its originally permitted 360-acre gravel mine.

The approximately 200-acre North Expansion area (Parcel) is dry gravel mined under provisions of a separate DuPont issued conditional use permit since it does not contain any Vashon aquifer groundwater saturated gravel.

I have a hard copy file containing many hundreds of pages of copies of my correspondence with the City of DuPont's previous Mayors, City Council members, Planner and citizens, Tom Skjervold of the Nisqually Delta Association, David Troutt of the Nisqually Tribe, Pete Stoltz of CalPortland, Lance Winetcka of the South Puget Sound Salmon Enhancement Group, Ecology staff members, DuPont's Hearing Examiner, Andy Estep of the Sequalitchew Creek Council, and others about the adverse environmental impact of allowing the mining of groundwater saturated gravel that I would be happy to share at no cost to the
City with who ever is drafting the City's SEPA for this South Parcel Project.

Best regards,

Don

Sent from Mail for Windows

From: Don Russell
Sent: Tuesday, September 7, 2021 2:29 PM
To: Barbara Kincaid
Cc: Ronald Frederick
Subject: RE:

Barbara,

Thank you for the link. Will follow this case with interest and provide a comment or two along the way.

Best regards,

Don

Sent from Mail for Windows

From: Barbara Kincaid
Sent: Tuesday, September 7, 2021 9:56 AM
To: Don Russell
Cc: Ronald Frederick
Subject: RE:

Hello Mr. Russell,

Thank you for your email. At this time, the City has issued a Notice of Application on the underlying land use application for the mine expansion. I have attached a link to the notice for your convenience.

20210830-NOA-Newspaper-Version-PLNG2021-006 (dupontwa.gov)

We are currently preparing our SEPA notice which will be a Determination of Significance (DS) and combined scoping notice for the EIS. There will be a 30 day window to provide comments on the scope of the EIS. We'll be holding a public meeting and there will be an online portal to capture comments as well. I look forward to your participation during this process.

Sincerely,
Barb

From: Don Russell [mailto:krdr1@juno.com]
Sent: Tuesday, September 7, 2021 6:27 AM
To: Barbara Kincaid
Cc: Ronald Frederick
Subject:

Barb,

Pursuant to the my comment to Mayor Ron Frederick that:

"I intend to send Barb copies of my responses to Hearing Examiners in regard to CalPortland's two previous attempts to obtain a conditional use permit that would allow it to permanently dewater the Vashon aquifer that sustains what is left of groundwater fed Edmond Marsh and Sequalitchew Creek."

Attached is a copy of my comments to DuPont's Hearing Examiner in February 2009 in regard to CalPortland's proposal to offer DuPont the "North Sequalitchew Creek" mitigation option.

This option was challenged by the Nisqually Delta Association. As a result no public hearing occurred that year. However what I said then is germane to what has subsequently transpired.

Don

Sent from Mail for Windows

From: Hannah Thornton
To: Barbara Kincaid
Subject: Re: Thank you
Date: Friday, September 10, 2021 1:06:56 PM
Attachments: image001.gif

Thank you so much!

I feel so much better knowing I still have a chance to have a voice in this process.

I appreciate your help,
Hannah

On Fri, Sep 10, 2021 at 1:05 PM Barbara Kincaid <bkincaid@dupontwa.gov> wrote:

> Hello Hannah,
>
> Thanks for your phone call earlier today. I will put your name on our distribution list for interested parties for the Pioneer Aggregate Mine Expansion proposal.
>
> You can also follow along with the project by checking the City's website at this link:
>
> Pioneer Aggregates South Parcel Project | DuPont, WA - Official Website (dupontwa.gov)
>
> Also – if you want to keep track of things as they come in, we post new Notices at this location on our website: Notices & Decisions | DuPont, WA - Official Website (dupontwa.gov)
>
> Sincerely,
>
> Barb Kincaid, AICP
>
> Community Development Director
>
> City of DuPont
>
> 253.912.5393

Attachment 9.b

From:	Damer, Nicole (DNR)
To:	Barbara Kincaid
Cc:	SHAFER, ANA (DNR); DNR RE SEPACENTER; Janet Howald
Subject:	RE: City of DuPont, Pioneer Aggregate So Parcel Project
Date:	Friday, September 24, 2021 9:54:23 AM

Hi Barbara,

Thank you for the opportunity to comment on the proposed Pioneer Aggregates South Parcel Project EIS scope. DNR Surface Mine Reclamation Program has reviewed the provided paperwork and does not wish to make any comment.

Nicole Damer
Surface Mine Reclamation Specialist
Washington Geological Survey
Washington Department of Natural Resources
Cell: 360.870.7805
Nicole.Damer@dnr.wa.gov
www.dnr.wa.gov

From: DNR RE SEPACENTER <SEPACENTER@dnr.wa.gov>
Sent: Monday, September 20, 2021 9:36 AM
To: Damer, Nicole (DNR) <Nicole.Damer@dnr.wa.gov>
Cc: SHAFER, ANA (DNR) <ANA.SHAFER@dnr.wa.gov>
Subject: FW: City of DuPont, Pioneer Aggregate So Parcel Project

Hello Nicole,

Attached is a notice from the City of DuPont to expand the mining operations currently occurring on the North to the South Parcel by approximately 188 acres and extend mining at the current rate for 14 additional years. DNR sent notice due to being an agency with jurisdiction over the activities.

Location: Sections 22, 23, and 26 Township 19N, Range 1E bordering the existing Pioneer Aggregates Mine, to the east by industrial facilities and to the south by Sequalitchew Creek and the Creekside Village residential development.

Comments, if any, are due by mid-October with a final comment period date set once the formal scoping notice is sent out.

Thank you.

From: Janet Howald <JHowald@dupontwa.gov>
Sent: Monday, September 20, 2021 9:23 AM
To: Janet Howald <JHowald@dupontwa.gov>

Subject: City of DuPont, Pioneer Aggregate So Parcel Project

External Email

Attached is the Notice of Application and SEPA-DS Scoping Notice for Pioneer Aggregates So Parcel Project, City File No. PLNG2021-006.

You are receiving this information as your agency has been identified an effected agency or an agency with jurisdiction.

Please advise if you received this in error and provide me with the correct contact information.

For questions or concerns, please contact Barb Kincaid at bkincaid@dupontwa.gov

Respectfully,

Janet Howald
Community Development
Administrative Specialist
City of DuPont
1700 Civic Drive, DuPont WA 98327

Direct - 253.912.5232
Internal Ext. 5209
City Hall - 253.964.8121
Jhowald@dupontwa.gov

From: Maggie Corbin
To: Janet Howald
Cc: Brian Renninger
Subject: FW: City of DuPont, Pioneer Aggregate So Parcel Project
Date: Thursday, October 14, 2021 11:14:44 AM
Attachments: image001.png

Thank you for including the Puget Sound Clean Air Agency in your request for comments on the Scope of the Environmental Impact Statement for Pioneer Aggregates South Parcel Project.

Any project where earth moving and material handling, heavy equipment operations, and/or disposing of vegetative matter is to occur, is subject to Puget Sound Clean Air Agency regulations. The requirements may include, but are not limited to the following:

Agency Regulation I:
Article 8 – Outdoor Burning
Article 9 – Emission Control Standards, Section(s) 9.03, 9.11, and 9.15

In addition, establishment of a new source of air emissions (including modification or increase in permitted capacity of an existing source), or the replacement or substantial alteration of control equipment installed on an existing source would likely require a permit from the Agency. Please ask the applicant to contact Brian Renninger at 206-689-4077 or review our requirements on our website.
www.pscleanair.gov

Agency Regulations can be viewed in full on our website:
http://www.pscleanair.gov/219/PSCAA-Regulations

Thank you,

Maggie Corbin
Engineer II

1904 3rd Ave #105, Seattle, WA 98101

DIRECT 206-689-4087
FAX 206-343-7522

WEBSITE pscleanair.gov

From: Janet Howald <JHowald@dupontwa.gov>
Sent: Monday, September 20, 2021 9:23 AM
To: Janet Howald <JHowald@dupontwa.gov>
Subject: City of DuPont, Pioneer Aggregate So Parcel Project

Attached is the Notice of Application and SEPA-DS Scoping Notice for Pioneer Aggregates So Parcel Project, City File No. PLNG2021-006.

You are receiving this information as your agency has been identified an effected agency or an agency with jurisdiction.

Please advise if you received this in error and provide me with the correct contact information.

For questions or concerns, please contact Barb Kincaid at bkincaid@dupontwa.gov

Respectfully,

Janet Howald
Community Development
Administrative Specialist
City of DuPont
1700 Civic Drive, DuPont WA 98327

Direct - 253.912.5232
Internal Ext. 5209
City Hall - 253.964.8121
Jhowald@dupontwa.gov

From:	Krystal Kyer
To:	Barbara Kincaid
Subject:	RE: gravel mine scoping notice?
Date:	Friday, September 10, 2021 11:13:55 AM
Attachments:	image001.png

Great, thanks for your quick response. I will look for the announcement next week.

Krystal L. Kyer
C:(253) 307-0819|O:(253) 798-2485|krystal.kyer@piercecountywa.gov

---

From: Barbara Kincaid <bkincaid@dupontwa.gov>
Sent: Friday, September 10, 2021 9:14 AM
To: Krystal Kyer <krystal.kyer@piercecountywa.gov>
Subject: RE: gravel mine scoping notice?

Good morning Krystal,

Thank you for reaching out. The DS/Scoping Notice has not yet been published. I anticipate it going out next week. It will have dates listed for the 30-day comment period on the EIS scope. The comment period on the Notice of Application is open now and will remain open during the 30-day comment period listed on the scoping notice.

Sincerely,
Barb Kincaid, AICP
Director of Community Development
City of DuPont

From: Krystal Kyer [mailto:krystal.kyer@piercecountywa.gov]
Sent: Friday, September 10, 2021 8:23 AM
To: Barbara Kincaid
Subject: gravel mine scoping notice?

Hello Barb,

I am trying to find out when public comments are due for the Pioneer Aggregates South Parcel Project and the Notice of Application only refers to the EIS scoping comment period deadline without listing a specific deadline. I also didn't find a scoping notice for the EIS. Has it been published? When is the deadline for public comments?

The Chambers-Clover Creek Watershed Council would like to share this public comment opportunity during their meeting on Sept. 15th.

Thank you,

Krystal L. Kyer (she/her)
Watershed Planner
Pierce County Planning & Public Works
C:(253) 307-0819|O:(253) 798-2485|krystal.kyer@piercecountywa.gov

From: Britton, William C II CIV USARMY ID-READINESS (USA) <william.c.britton.civ@mail.mil>
Sent: Wednesday, September 15, 2021 11:47 AM
To: Janet Howald
Cc: Remington, Barney R (Barnabas) CTR USARMY ID-READINESS (USA); Castro, Isabella K CTR (USA)
Subject: RE: [Non-DoD Source] Pioneer Aggregates So Parcel Project-PLNG2021-006 (UNCLASSIFIED)
Attachments: NPD Form 32 - Project delivery Comments - 21-522_S. Callahan.docx; Review Summary for Project - 21-522.pdf

Hello Mrs. Howald,

The environmental review of this project has been completed, please see attached comments and review summary.

Very Respectfully,

William (Bill) Britton
Environmental Project Review Clerk/Key Control Manager/
Environmental Division GSA Fleet Manager
Environmental Division, Directorate of Public Works
Building 2012 Liggett Ave, Rm 303
Phone: 253-477-3891
DSN: 677-3891
Joint Base Lewis-McChord, WA 98433-9500

Email: william.c.britton.civ@mail.mil

From: Britton, William C II CIV USARMY ID-READINESS (USA)
Sent: Tuesday, August 31, 2021 9:25 AM
To: 'JHowald@dupontwa.gov' <JHowald@dupontwa.gov>
Cc: Kowalski, Rebecca J (Becky) CIV USARMY (USA) <rebecca.j.kowalski.civ@mail.mil>
Subject: FW: [Non-DoD Source] Pioneer Aggregates So Parcel Project-PLNG2021-006 (UNCLASSIFIED)

Good morning Mrs. Howald,

Thank you, this information has been distributed to environmental staff for review as project 21-522 with a suspense date of TUES 14-SEP-21. You should receive the comment summary from me within 1-2 business days of the suspense date.

Very Respectfully,

William (Bill) Britton

Environmental Project Review Clerk/Key Control Manager/
Environmental Division GSA Fleet Manager
Environmental Division, Directorate of Public Works
Building 2012 Liggett Ave, Rm 303
Phone: 253-477-3891
DSN: 677-3891
Joint Base Lewis-McChord, WA 98433-9500

Email: william.c.britton.civ@mail.mil

From: Janet Howald <JHowald@dupontwa.gov>
Sent: Monday, August 30, 2021 5:02 PM
To: Anne Fritzel, AICP, WA State Dept of Commerce <Anne.fritzel@commerce.wa.gov>; Donna Joblonski, DOE SW Regional Office <donna.joblonski@ecy.wa.gov>; WA State Dept. of Ecology/SW Regional Office Toxic Clean-up Program <Marian.abbett@ecy.wa.gov>; Eva Barber - Dept. Of Ecology/SW Regional Office <Eva.barber@ecy.wa.gov>; Zachary Meyer - DOE/Shorelines & Environmental /SW Region <Zachary.meyer@ecy.wa.gov>; WDFW <Teammontesano@dfw.wa.gov>; WA State Dept. of Natural Resources/South Puget Sound Region <Southpuget.region@dnr.wa.gov>; Dept of Social and Health Services <hubenbj@dshs.wa.gov>; Heather Benson, Puget Sound Partnership <Heather.benson@psp.wa.gov>; FEMA <john.graves1@dhs.gov>; Kelly Still, WDFW <Kelly.Still@dfw.wa.gov>; Markham, Charles S CIV USARMY ID-READINESS (USA) <charles.s.markham2.civ@mail.mil>; Kowalski, Rebecca J (Becky) CIV USARMY (USA) <rebecca.j.kowalski.civ@mail.mil>; Tyrell Bradley <Tyrell.bradley@scjalliance.com>; Nisqually Nat'l Wildlife Refuge <Glynnis_nakai@fws.gov>; Environmental Official-Pierce Cty <Klarrab@co.pierce.wa.us>; Adonais Clark, Pierce County) <aclark@co.pierce.wa.us>; Darci Brandvold - Pierce Co. Assessor/Treasurer <darci.brandvold@piercecountywa.gov>; Debbie Germer @ Pierce County <debbie.germer@piercecountywa.gov>; Karri Muir <KMuir@dupontwa.gov>; Joe Cushman <Cushman.joe@nisqually-nsn.gov>; Elizabeth Sanchey <elizabeth_sanchey@yakama.com>; Fullmer, David John CIV USARMY USAG (USA) <david.j.fullmer4.civ@mail.mil>; Doug Fortner, Steilacoom Community Development <doug.fortner@ci.steilacoom.wa.us>; Steilacoom Historical School Dist <cjohnston@steilacoom.k12.wa.us>; LeMay <Cust2180@wcnx.org>; Jeffrey Payne <Jeffrey.payne@pse.com>; Lisa Klein, AHBL <LKlein@AHBL.com>; Dominic Miller <dmiller@g-o.com>; Geri Reinart <greinart@msn.com>; Annette Bullchild (Nisqually Indian Tribe THPO Dept) <bullchild.annette@nisqually-nsn.gov>; Emily Griffith <assistdirector@nwlanding.org>; Jeremy "badoldman" Perkuhn (Nisqually Tribe, THPO Dept) <badoldman.jp@nisqually-nsn.gov>; Brad Beach (Nisqually Tribe, THPO Dept) <beach.brad@nisqually-nsn.gov>
Subject: [Non-DoD Source] Pioneer Aggregates So Parcel Project-PLNG2021-006

All active links contained in this email were disabled. Please verify the identity of the sender, and confirm the authenticity of all links contained within the message prior to copying and pasting the address to a Web browser.

Please see attached the Notice of Application for Pioneer Aggregates South Parcel Project, File No's. PLNG2102-006, 009, 010, SEPA2021-002.

Respectfully,

Janet Howald
Community Development
Administrative Specialist
City of DuPont
1700 Civic Drive, DuPont WA 98327

Direct - 253.912.5232
Internal Ext. 5209
City Hall - 253.964.8121
Jhowald@dupontwa.gov < Caution-mailto:Jhowald@dupontwa.gov >

CLASSIFICATION: UNCLASSIFIED

REVIEW COMMENTS

PROJECT: **Type title here**

LOCATION: Joint Base Lewis-McChord WA

REVIEWERS: **Sean Callahan, Environmental division - DPW, 253-966-0474**

PROJECT MANAGER: **Name**

IJO/SPEC/PKG:

REVIEW MEETING:

DATE OF REVIEW: **date**

Design Document					
	D. Memo		Concept		Civ/San
	P&S	x	Prelim.		Mech/El
	Draft final		Final		Struct

Arch/LA

Item No.	Drawing Sht. Spec. Para.	**COMMENTS** w/ reviewers name in ( ) if multiple reviewers	Action taken on comment by: REVIEW CONF A-Accept W-Withdraw	DESIGN OFFICE C-Correction made. List dwg or para number where correction is made	BACK CHECK (initial)
1		General – Project Delivery team recommends that JBLM DPW is aware of potential sediment discharges (from this southern expansion area) entering the JBLM overflow channel. DPW may have to adjust their compliance sampling regime as well as be liable for off-post discharges entering waterbodies located on JBLM property. ED – DPW will have to work with applicant in the future on this issue. (ED – DPW Callahan)			
		End of comments			

(FOR INTERNAL USE ONLY -DELIBERATIVE PROCESS)

IMLM-PWE 15 September 2021

MEMORANDUM FOR RECORD

Subject: Environmental Review for	Pioneer Aggregates South Parcel Project - PLNG2021-006 - City of DuPont

Environmental Review Project #: 21 522

Air:	NR 15-SEP-21
Cultural Resources:	RNC NLP 13-SEP-21
Drinking Water:	NR 15-SEP-21
Energy:	RNC WRA 9-AUG-21
Fish & Wildlife:	RWC SC 2-SEP-21
Forestry:	NR 15-SEP-21
Hazardous Waste:	NR 15-SEP-21
IRP:	NR 15-SEP-21
NEPA:	NR 15-SEP-21
P2 (Haz. Mat., EMS, Sustainable Acquisition) :	NR 15-SEP-21
PreTreatment:	RNC GMA 07-SEP-21
Solid Waste:	RNC VDG 10 SEP 21
Storm Water:	NSP FL 7-SEP-21
Tanks:	NSP 15-SEP-21
Toxic Substances:	RNC MCR 31-AUG-21
Waste Water:	NR 15-SEP-21

Project Managers are reminded that this document is a review only. Additional actions may be required to comply with all environmental requirements. See individual Program Managers comments on NPD 32 for more information.

Definitions of Comments: RNC means Reviewed with No Comments, RWC means Reviewed with Comments (see NPD 32), NR means No Response, NSP means Not sent to Program

RECEIVED
NOV 08 2021
CITY OF DUPONT

November 4, 2021

Barb Kincaid, AICP
Community Development Director and City SEPA Official
City of DuPont
1700 Civic Drive
DuPont, WA 98327
bkincaid@dupontwa.gov

Re: **CalPortland South Parcel Project**
PLNG2021-006 (Site Plan Review), PLNG2021-009 (Tree Modification), PLNG2021-010 (Critical Areas Permit) and SEPA2021-002 (SEPA)

Dear Ms. Kincaid:

The Nisqually Delta Association (NDA) is writing to express its support for CalPortland's applications to conduct sand and gravel mining activities within what is known as the "South Parcel," located within the area zoned Mineral Resource District in the City of DuPont, so long as consistent with the 2012 Settlement Agreement described below. In addition to expressing support for the applications, the NDA explains below that the South Parcel mining permits should be granted with the detailed monitoring plan for South Parcel mining submitted by CalPortland as part of its permit applications, and that the South Parcel permits are, according to the Settlement Agreement, legally effective upon the issuance of the Restoration Plan permits.

By way of background, the NDA and other members of the Environmental Caucus, along with the City of Dupont, CalPortland and the Washington Department of Ecology, are signatories to the *2012 Settlement Agreement for DuPont Mine, Restoration of the Sequalitchew Creek Watershed, and Preservation of Puget Sound Shorelands and Adjacent Open Space*. This Agreement was the culmination of over two years of settlement discussions, which included a public review process facilitated by the City of DuPont prior to entering the agreement and a Feasibility Study that evaluated alternatives for both mining of the South Parcel and restoration of Sequalitchew Creek. The Feasibility Study recognized that flows in Sequalitchew Creek have been adversely affected and significantly reduced by a variety of activities over the years, in particular the creation of a diversion canal by the U.S. Army Corps of Engineers in the 1950s. It also acknowledged that mining of the South Parcel will entail the temporary dewatering of the South Parcel to allow the removal of sand and gravel and a permanent reduction in groundwater levels, which without mitigation would likely have an indirect adverse impact on Creek flows.

Based on the Feasibility Study, the 2012 Settlement Agreement conceptually identified a series of restoration activities to address both the historic impacts to Sequalitchew Creek and the potential additional impacts that would result from the dewatering and mining of the South Parcel. The Agreement provided that these restoration activities would be refined through a stakeholder process facilitated by the South Puget Sound Salmon Enhancement Group and described in further detail, after additional study, in a Restoration Plan jointly developed and approved by CalPortland and the Environmental Caucus. The Agreement recognized that the

flow increases resulting from the Restoration Plan would be expected to more than mitigate for the impacts of dewatering and permanent sand and gravel removal, and are expected to result in a substantial improvement compared to existing Creek conditions.

In the nearly ten years since the Settlement Agreement was executed, the parties have worked diligently to implement its various terms. This included the development of a detailed Restoration Plan that we anticipate will be permitted and implemented over the next few years, in parallel with the permitting and implementation of South Parcel mining. A secure funding plan is also now in place for the Restoration Plan permitting and implementation. Furthermore, recognizing that an effective restoration plan will require the cooperation of Joint Base Lewis-McChord (JBLM), which operates the diversion canal that serves to reduce flows in the Creek, the parties to the 2012 Settlement Agreement have also entered into a Memorandum of Understanding with JBLM in an attempt to ensure that the activities it is already planning to allow additional flows from Sequalitchew Lake to Sequalitchew Creek will occur in parallel with the restoration activities that will occur within City limits, as detailed in the Restoration Plan. CalPortland has been a steady and reliable partner in all of these efforts.

With this background in mind, we have reviewed the applications CalPortland has submitted for the mining of the South Parcel. We believe the scope, limitations, methods, and adaptive management safeguards for mining accord with the terms of the 2012 Settlement Agreement. Moreover, the Monitoring Plan submitted to the City is the plan that the NDA and all other members of the Environmental Caucus reviewed and approved after lengthy technical discussions between the parties and our respective technical consultants.

The NDA and other members of the Environmental Caucus considered alternative opportunities for restoration and invested great care in consideration before entering agreements and approving the Restoration and Monitoring Plans. We are confident that the benefits of the restoration will more than compensate for the impact of the mining project on Sequalitchew Creek. Accordingly, Nisqually Delta Association wishes to register its support for the mining applications submitted by CalPortland. We look forward to the City's timely completion of the Environmental Impact Statement (as called for in the Settlement Agreement), and the issuance of permits as part of the implementation of our Settlement Agreement.

As noted above, the intention of the parties was that the permits for the South Parcel mining and Restoration Plan were to coincide. Therefore, the parties agreed in Sections 4.3.1 and 4.3.2 of the 2012 Settlement Agreement that the permits for the mining would not be effective until JBLM Consent is obtained (as defined in the Settlement Agreement and further clarified in the 2021 Funding Agreement between CalPortland and the Environmental Caucus) and the permits for the Restoration Plan were effective. NDA requests that those terms be included expressly in the South Parcel mining permits, as agreed to by all parties, including the City.

Finally, NDA is very proud of the above-referenced Monitoring Plan that was developed with the help of its experts and volunteers, and which has been submitted by CalPortland as part of its permit application. Section 7.3 of the 2012 Settlement Agreement specifies that the Monitoring Plan will "*... include a series of monitoring actions to allow a comparison of predicted and actual changes in groundwater draw-down levels, and a process for the Parties to*

meet and confer if groundwater monitoring results do not meet the criteria provided in the Monitoring Plan." The Monitoring Plan submitted by CalPortland was developed to meet that requirement. NDA urges the City to adopt the plan as submitted such that it must be followed as one of the permit conditions.

Thank you for this opportunity to comment. If you have any questions about the Settlement Agreement or its implementation, please feel free to contact our legal counsel, Brian Chestnut at (206) 448 1230.

Sincerely,

Ed Kenney

Ed Kenney
President

Attachment 9.c

10.26.21

PIONEER AGGREGATES SOUTH PARCEL PROJECT
EIS SCOPING COMMENT TALLY

Open House

- 21 people signed into the Open House. Four comment forms were submitted from the commenters listed below.
    - R. Buck
    - M. Gudaitis
    - S. Stugelmeyer
    - K. Walsh

Emails

- 56 emails were submitted from the commenters listed below. Of these emails, 20 were from unique commenters. Five commentors were from agencies, organizations, or tribes.
    - B. Beach (Nisqually Tribe)
    - M. & K. Burch
    - N. Damer (DNR)
    - A. Elfrank
    - B. Elliott (7)
    - R. Frederick (City of DuPont)
    - B. King
    - K. Kirkland (Tahoma Audubon Society)
    - K. Konrad
    - K. Kyer
    - T. L. & K. Merritt
    - Z. Meyer (Ecology) (2)
    - D. Russell (30)
    - A. Schmauder
    - K. Schneider
    - C. Shoup
    - P. Stoltz
    - S. Thayer
    - H. Thornton
    - K. Walsh

Online Portal

- 26 comment entries were made onto the online portal from the commenters listed below. Of these entries, 25 were from unique commenters.
    - B. Ashendorf
    - R. Barrow
    - L. Behnet
    - R. Buck
    - E. Bundt
    - E. & J. Chandler
    - C. Colvin
    - S. David
    - B. Elliott (2)
    - R. Forbes
    - M. Gudiatis
    - C. Harlow
    - J. Hilsbery
    - A. Marrow
    - C. Mitchell
    - H. Muir
    - K. Nolan
    - W. Noland
    - K. Novak
    - T. Merritt
    - J. Norris
    - N. Slattery
    - S. Stugelmeyer
    - M. C. Walsh
    - M. Winkler

Attachment 9.d

City of DuPont
1700 Civic Drive
DuPont, WA 98327

Phone: (253) 964-8121
www.dupontwa.gov

March 21, 2022

Report & Summary of the Scoping Process for the Pioneer Aggregates South Parcel Project Environmental Impact Statement

1. Introduction & Background Information

The purpose of this document is to summarize the comments received during the State Environmental Policy Act (SEPA) scoping period for the ***Pioneer Aggregates South Parcel Project*** Environmental Impact Statement (EIS), and to establish and document the areas of investigation that will be included in the EIS. This document also provides background information on the current proposal and the City's land use review process.

This report contains a detailed summary of the EIS scoping process, a summary of the comments received during the scoping comment period, and any revisions to the EIS scope based on public input received through the scoping process. **Attachment A** includes a table that shows the comment topics in each comment letter. **Attachment B** provides a table that lists specific comment themes. Additional information, including records of public notice actions, a complete mailing list, and a list of all the commenters on the EIS scope during the scoping period are available for review at the City of DuPont.

Project Background

CalPortland's original sand and gravel mine ("Existing Mine") was permitted in 1997 (355 acres). An EIS and Supplemental EIS were prepared for that proposal, which included construction of a dock at Tatsolo Point for shipment of mined material by barge. In 2006, the City amended its Comprehensive Plan to revise its overall land use plan to expand the City's Mineral Resource Overlay. The expanded Mineral Resource Overlay includes an approximately 200-acre area leased by CalPortland southeast of the Existing Mine ("South Parcel") and an approximately 201-acre area located north of the existing mine ("North Parcel'). After the City issued a Supplemental EIS (SEIS) for the South Parcel in 2007, CalPortland submitted permit applications to mine the South Parcel. In 2009, a group of environmental and conservation organizations formally disputed the South Parcel activities and mitigation measures proposed at the time. This dispute process resulted in the

2011 Settlement Agreement for DuPont Mine, Restoration of Sequalitchew Creek Watershed, and Preservation of Puget Sound Shorelands and Adjacent Open Space (2011 Settlement Agreement) that set forth a process for the submittal and review of permit applications (including SEPA review) for the North Parcel first and then the South Parcel. The Settlement Agreement was signed by a contingent of stakeholders, referred to as the environmental caucus, which consists of CalPortland, City of DuPont, Washington State Department of Ecology, Nisqually Delta Association, Washington Environmental Council, People for Puget Sound, Black Hills Audubon Society, Tahoma Audubon Society, Seattle Audubon Society, and the Anderson Island Quality of Life Committee. The Settlement Agreement also prescribed the process for the development, funding, and implementation of a Sequalitchew Creek Restoration Plan to help restore and enhance the Sequalitchew Creek watershed, including flows along the length of the Sequalitchew Creek. As provided for in the 2011 Settlement Agreement, in 2013 CalPortland applied for permits to allow mining within the North Parcel. Following publication of a Final EIS ("North Parcel EIS") in 2013, the North Parcel mining expansion was permitted in 2014. The North Parcel EIS contemplated mining the South Parcel as an independent but related proposal and evaluated the cumulative impacts of mining both the North and South Parcels. In May 2021, CalPortland applied for permits to allow mining within the South Parcel, as described below.

Current Proposal & Determination of Significance (DS)

The City of DuPont is the lead agency for SEPA review for projects within the city and is responsible for performing the statutory duties required for the ***Pioneer Aggregates South Parcel Project***. Barbara Kincaid, the City Community Development Director, is the designated Responsible Official for conducting SEPA review.

Based on review of the May 2021 application materials submitted on the current project, the City of DuPont, as SEPA lead agency, determined that this project may have significant adverse impacts on the environment, and that an EIS should be prepared, consistent with RCW 43.21C.030 (2)(c). The EIS will address probable significant adverse environmental impacts of the proposed ***Pioneer Aggregates South Parcel Project*** and will build upon the information and analysis in other environmental review for the mines, including the 1992 *Pioneer Aggregates Mining Facility and Reclamation Plan EIS,* 2006/2007 *Glacier Northwest Dupont Mining Area Expansion and North Sequalichew Resoration Project SEIS*, and the 2013 *CalPortland DuPont North Parcel Mining EIS*.

The City of DuPont initiated the EIS scoping process for the ***Pioneer Aggregates South Parcel Project*** on September 17, 2021, by carrying out the following actions:

- Issued a SEPA DS/Request for Comments on the Scope of the EIS. The DS/Request for Comments included notification of a public meeting on September 30, 2021, to provide the public with an opportunity to become more familiar with the proposal and to comment on the scope of the EIS. It also gave notice of the 30-day extended scoping period, ending on October 20, 2021 (the statutory requirement is for a 21-day scoping period). The DS/Request for Comments is available for review at:

https://www.dupontwa.gov/DocumentCenter/View/4891/Pioneer-Aggregates-So-Parcel-DS_PLNG2021-006

- Mailed copies of the DS/Request for Comments to federal, state, regional and local agencies, and tribes;
- Published the DS/Request for Comments in the WA State Department of Ecology's SEPA Register;
- Posted the DS/Request for Comments on the City of DuPont's website;
- Published the DS/Request for Comments in the *Tacoma News Tribune* (on September 18, 2021); and,
- Posted on the City of DuPont bulletin board

The EIS Scoping notification actions meet or exceed all applicable noticing requirements.

The DS/Request for Comments *preliminarily* identified two alternatives for analysis in the EIS:

- **Alternative 1 – No Action Alternative** – Assumes no mining on the South Parcel within the context of existing conditions.
- **Alternative 2 – Proposed South Parcel Project** (With Restored Sequalitchew Creek) – Implementation of proposed South Parcel Project within the context of creek restoration.

The DS/Request for Comments *preliminarily* identified the following elements of the environment for analysis in the EIS:

- **Earth**
- **Air Quality**
- **Surface Water and Groundwater**
- **Fisheries**
- **Plants & Animals**
- **Noise**
- **Land & Shoreline Use**
- **Aesthetics**
- **Cultural Resources**
- **Transportation**

2. EIS Scoping Process

Scoping provides notice to agencies, tribes, and the public that an EIS will be prepared for a proposal that is likely to cause a significant impact to the environment. The intent of scoping is to identify public, agency, and tribal comments and concerns on the environmental issues and alternatives that should be addressed in detail in the EIS.

The ***Pioneer Aggregates South Parcel Project*** scoping process provided opportunities for agencies, tribes, and interested members of the public to submit written comments via mail or email, a portal on the City's website, or on comment forms provided at a public open house.

A public scoping open house was held on September 30, 2021, from 6:00 to 8:00 at the City of DuPont Council Chambers. A total of 21 attendees signed in at the open house (the actual number of attendees may have been greater because not everyone may have elected to sign in). The open house was set up with boards representing the SEPA process and project. A continuous opportunity to provide written comments was provided throughout the open house. City staff and Pioneer

Aggregates representatives were available throughout the open house to answer questions about the SEPA process and the proposal, respectively.

Meeting materials were made available online at:
https://www.dupontwa.gov/619/Pioneer-Aggregates-Project-Portal

3. Scoping Comments Received

This section of the report provides a high level and general summary of the range of comments received during the EIS scoping process. More specific information about the categories of issues raised and the number of comments received for each category, is contained in **Appendix A** and **B**.

During the EIS scoping period, a total of 88 comment letters were received from 43 unique commenters (some individuals provided multiple comment letters). Comments were largely submitted by individuals (82 letters), with 6 letters from public agencies, Tribes, and organizations. Of the comment letters, 58 were received via email, 4 at the public open house, and 26 through the City's website portal.

All comment letters are available for review at City of DuPont.

Comments on SEPA Process

Several commenters had questions about the EIS Scoping process, including how to provide comments. Others requested that the EIS update technical information and analysis, and identify new, appropriate mitigation measures.

Comments on Alternatives

A couple of commenters requested that the EIS consider new alternatives. These comments included the following suggestions:

- Reduce the size of the proposed mining on the South Parcel and/or Existing Mine; and,
- Eliminate dewatering by wells and create a groundwater interceptor channel adjacent to the southeast shore of Edmond Marsh.

Comments About Impacts to the Environment

Most commenters expressed concerns about impacts that the proposal could cause to various elements of the environment. The chart below summarizes the number of letters received containing comments about a particular element of the environment (see **Appendix A** for details). More details about the comment themes are provided in **Appendix B**.

	Number of comment letters with comments on each element
Comments by SEPA Element of the Environment	
• Earth	16
• Surface Water & Groundwater	34
• Plants & Animals	27
• Air Quality/Greenhouse Gas Emissions	19
• Noise	11
• Land Use/Relationship to Plans and Policies	16
• Aesthetics	6
• Cultural Resources	9
• Parks and Recreation	5
• Transportation	6
• Public Services – fire service	4
• Utilities – potable water	6
• Economic/Fiscal Impacts	9

Following is a brief, high-level overview of concerns expressed in the comments.

Impacts to the Natural Environment

The project's impacts on the natural environment were a concern of the largest number of commenters. These concerns included impacts from mining and stormwater runoff on waterbodies on-site and in the vicinity (e.g., Sequalitchew Creek, Edmond Marsh, groundwater riparian seeps, and Puget Sound offsite, and the kettle wetland onsite). The indirect impacts of the project on aquatic species, including salmon and orca, in these waterbodies were noted by several commenters. The impacts of removing forest habitat onsite, including on Threatened, Endangered, Sensitive, Candidate, and Proposed (TESCP) species, was also mentioned.

Impacts to Land Use/Parks & Recreation

The compatibility of the proposed mining with surrounding and nearby uses, including residential uses (e.g., the Creekside Apartments) and recreational uses (e.g., the Sequalitchew Creek Trail) were a concern of many commenters. These commenters questioned the type of use, the increased activity level, and the buffers/ screening that would be provided

Impacts to Aesthetic Character/Scenic Experience

Several commenters questioned whether the project would affect the scenic and natural qualities of the DuPont area, particularly views of wooded areas.

Impacts to Cultural Resources

A couple of commenters requested an update to the cultural resources analysis to account for the potential impacts of the project on newly listed cultural resources located on and offsite.

Impacts to Public Infrastructure/Facilities, Air Quality, & Noise

A number of comments related to increased activity levels with the proposed project, including impacts on transportation/traffic, air quality, and noise. The air quality and noise impacts on nearby residential and recreational areas were a particular concern. A few comments centered on how the proposal would place a burden on existing public services and infrastructure and facilities, including fire service, roads/transportation facilities, and the City's and Joint Base Lewis-McChord's (JBLM's) water system.

Impacts to Economic & Fiscal Conditions

Several commenters expressed concern about the proposal's fiscal and economic impacts on City of Dupont. Questions were raised about the impacts of the project on businesses and tourism in DuPont, and on the ability of the City to attract new investment. Several commenters worried about the effects of the project on property and home values. Comments were also made about increased costs to the City (e.g., for maintenance of parks and open space due to blockage of flows in waterways and intrusion by invasive species, and maintenance of roads) without an increase in revenues from the project.

Comments Outside the Scope of SEPA

Support for or Opposition to the Proposal

Many commenters expressed general opposition to or support for the proposed project (Alternative 2). A total of 16 commenters indicated opposition to the proposal; no commenters expressed support for the proposal during the Scoping comment period (a comment letter in support of the project was received after the comment period ended). Expressions of support for or opposition to the proposal itself do not address environmental issues or provide information about the scope of the EIS, which are the focus of the scoping process. These comments are outside the scope of an EIS.

4. Conclusions/Revisions to the EIS Scope

This section of the report contains the City's conclusions about the scope of the EIS. These conclusions are based on consideration of public, agency, and Tribal comments submitted during the scoping process, and the requirements of SEPA.

SEPA Process

The City of DuPont used "reasonable methods" to inform the public and other agencies that an EIS is being prepared and a public scoping open house was being held. The City followed the noticing requirements listed in WAC 197-11-510 and the City Municipal Code.

The City has expressed its intent and commitment to prepare an EIS that is thorough and complete, but that also uses existing environmental information to the extent that it is relevant and valid. Use of existing environmental information is encouraged by the SEPA rules and is logical in the situation of the revised mining proposal.

The EIS will use and demonstrate the following approach for each element of the environment: (1) summarize existing conditions, updating as necessary; (3) identify any changes to regulations that may affect the current proposal; (4) indicate impacts of the current proposal; and (5) identify mitigation applicable to the current proposal.

The technical analyses that will be prepared in support of the EIS will be conducted by the Applicant's technical team using up-to-date methodologies and will comply with current regulations. The City has hired a team of highly-qualified technical professionals to provide peer review of the studies prepared by the Applicant's technical team. The peer review team will ensure that the studies have been prepared using appropriate methods and assumptions and are adequate and complete for purposes of SEPA review.

The City anticipates that the Applicant will provide analysis that is sufficient to prepare a project-specific EIS for the proposed project. To the extent that project-level analysis can be prepared in the EIS, future environmental review should not be necessary unless there are substantial changes to the proposal or if additional detailed information (e.g., detailed engineering due to monitoring results) is necessary in the future. The City will determine whether impacts have been addressed sufficiently in the EIS, or whether and what type of additional review is required by SEPA.

EIS Alternatives

The City of DuPont has determined that the two EIS alternatives initially identified for study in the EIS (**Alternative 1 – No Action Alternative**, and **Alternative 2 – Proposed South Parcel Project**) represent a reasonable number and range of alternatives for analysis in the EIS, as defined by the SEPA rules (WAC 197-11-440(5).

Alternative 1 – No Action Alternative

This alternative is typically defined as what would most likely happen if the proposal does not move forward. According to the SEPA Rules, "no action" does not necessarily mean that nothing (no development in this case) would occur. The No Action Alternative that will be studied in this EIS will include discussion of possible future development of the South Parcel and Existing Mine properties in accordance with existing zoning. While it is unlikely that the Sequalitchew Creek Restoration Plan would be implemented if the proposal does not occur, it is possible that other funding (e.g., grants) could be obtained to carry out the Restoration Plan. Therefore, the No Action Alternative will reference the potential for the Sequalitchew Creek Restoration Plan to be implemented without the project.

Alternative 2 – Proposed South Parcel Project

The EIS will analyze the proposed South Parcel Project described in *Section 1* of this Scoping Summary. It is assumed that the Sequalitchew Creek Restoration Plan is not part of the proposal and, therefore, will not be analyzed as a component of the project. The Restoration Plan will be analyzed in the context of mitigation for the project's impacts on Sequalitchew Creek and associated water resources.

Possible Additional Alternatives

Reference will be made in the EIS to two possible additional alternatives that could reduce impacts on certain elements of the environment relative to the proposal: (1) less mining on the South Parcel and/or at the Existing Mine (e.g., less areal extent and/or depth of mining), and (2) no dewatering by wells for mining and creation of an interceptor channel southeast of Edmond Marsh to preserve the hydrology of the wetlands and Sequalitchew Creek. The EIS will indicate whether these are reasonable alternatives,[1] that are feasible and meet the Applicant's objectives at a lower environmental cost, requiring analysis in the EIS. In addition, in the course of EIS analysis mitigating measures will be identified. If a series of feasible mitigating measures taken together would constitute an alternative course of action, such an alternative may be identified in the course of EIS preparation.

Elements of the Environment

The greatest number of comments received during the public EIS scoping period expressed concerns regarding: **Earth**, **Surface Water & Groundwater**, **Plants & Animals**, **Air Quality, Noise,** and **Land Use/Relationship to Plans and Policies**. Other comments related to Aesthetics, Cultural Resources, Parks and Recreation, Transportation, Public Services (Fire Service), Utilities (Potable Water), and Fiscal/Economic Impacts**.** Most of the concerns fall within elements of the environment which were identified in the scoping notice for detailed study in the EIS.

Many comments raised specific concerns or variations on issues within the broadly defined EIS topic areas. These specific concerns have been used to expand or refine the scope of analysis for some environmental elements that were already identified for analysis. The scope additions include the following:

- Potential impacts on City of DuPont's and JBLM's potable water quantity and quality, including possible need for new water rights (this will be addressed in **Surface Water & Groundwater**); and
- Potential for increased fire hazard due to drying of Sequalitchew Creek ravine & climate change (this will be addressed in **Surface Water & Groundwater** and **Plants & Animals**).

An additional element of the environment, **Economic & Fiscal Conditions,** was identified by commenters for study in the EIS. This element will be added to the EIS, including analysis of the project's impacts on the local economy (e.g., jobs) and fiscal conditions (e.g., costs and revenues) in the City of DuPont.

[1] Per WAC 197-11-786, 197-11-440(5).

Other Elements of the Environment

The purpose of EIS scoping is to narrow the focus of an EIS to significant environmental issues and to eliminate insignificant impacts from detailed study (WAC 197-11-408). Thus, a SEPA EIS is not required to review every element of the environment listed in WAC 197-11-444 or DMC 23.01.110, or to review every concern that may be evaluated by decision-makers in making a decision about a project.

Several concerns expressed in scoping comments relate to the project's possible impacts on "quality of life" and property/housing values. Quality of life concerns will generally be addressed in the EIS under the elements of the environment currently identified for analysis, including the elements of Land Use, Air Quality, Noise, Transportation, and Plants & Animals. While property/housing values types of concerns may be considered and accounted for during the overall decision-making process for a project, a SEPA document is not required to evaluate them. Other considerations that are deemed outside the purview of SEPA include: methods of financing proposals, economic competition, profits and personal income and wages (WAC 197-11-448(3)), and monetary costs and benefits (WAC 197-11-450).

DMC 23.01.110 identifies economy, cultural factors, and social policy analysis as additional elements of the environment that may be studied in an EIS. The ***Pioneer Aggregates South Parcel Project*** EIS will include analyses of the project's potential impacts on cultural resources, and on the local economy and fiscal conditions in City of DuPont. The project is not expected to have significant impacts on social policy (e.g., environmental justice). Therefore, this element has not been included for analysis in the EIS.

Conclusion

In conclusion, the City of DuPont has determined the following:

1. The EIS will evaluate two alternatives: **Alternative 1 – No Action Alternative**, and **Alternative 2 – Proposed South Parcel Project**. Two other possible alternatives (1- less mining on the South Parcel and/or at the Existing Mine, and 2- no dewatering by wells for mining and creation of an interceptor channel southeast of Edmond Marsh) will be referenced in the EIS.
2. The EIS will analyze the following elements of the environment: **Earth, Air Quality, Surface Water & Groundwater, Fisheries, Plants & Animals, Noise, Land & Shoreline Use, Aesthetics, Cultural Resources** and **Transportation**. The City has also added the issue of **Fiscal & Economic Conditions** to the EIS. Two areas of the EIS analyses will be expanded: the Surface & Groundwater analysis will include the potential impacts on City of DuPont and JBLM's potable water quantity and quality; and the Surface & Groundwater and Plants & Animals analyses will include the potential for increased fire hazard in the Sequalitchew Creek ravine.

ATTACHMENT A

Public Scoping Comment Topic Areas

PIONEER AGGREGATES SOUTH PARCEL PROJECT EIS
Public Scoping Comment Topic Areas

	SEPA Process	Planning/ Approvals	Mitigation Measures	For/Against	EIS Alts.	Earth	Surface Water & Ground-water	Plants & Animals	Air Quality/ GHGs	Noise	Land Use/ P & P	Aesthetics	Cultural Resources	Parks & Recreation	Transpor-tation	Public Services (Fire)	Utilities (Potable Water)	Economic/ Fiscal
Agencies, Tribes, Organizations																		
DNR (N. Damer)																		
Ecology (Z. Meyer) (2 letters)		X				X	X	X										
City of Dupont (R. Frederick)					X		X											
Nisqually Tribe (B. Beach)	X		X										X					
Tahoma Audubon (K. Kirkland)	X																	
Individuals																		
B. Ashendorf				X (A)		X*			X*	X*	X*							
R. Barrow		X*	X		X*	X	X	X	X		X*						X	
L. Behnert				X (A)			X	X			X*							
R. Buck (2 letters)					X		X	X	X*									
E. Bundt				X (A)							X							
M. & K. Burch				X (A)		X	X	X	X	X					X		X	
E. & J. Chandler			X*			X	X	X*	X	X		X						
J. Colvin											X				X			
S. David				X (A)		X	X		X									
A. Elfrank							X	X	X							X		
B. Elliott (8 letters)	X	X	X			X	X	X	X	X	X					X		X
R. Forbes							X*				X*							
M. Gudaitis (2 letters)		X*	X*		X*		X	X*	X*				X*					
C. Harlow				X (A)			X					X	X				X	
J. Hillsbery				X (A)		X*	X*	X*		X	X	X*		X				
B. King	X		X	X (A)	X		X	X	X	X			X		X	X	X	X
K. Kyer	X																	
K. Konrad				X (A)			X	X						X				X
A. Marlow				X (A)			X	X		X*	X*	X	X*					X
T., L., & K. Merritt (2 letters)		X*	X*		X*	X*	X	X	X	X	X	X	X*		X*			X
C. Mitchell						X*	X	X*	X*		X							X
H. Muir		X*			X*		X	X*			X			X				
W. Noland		X*	X*				X*				X*							
K. Nolan							X		X									
J. Norris							X	X*	X	X							X	
K. Novak			X		X		X	X	X	X				X		X		
K. Reidinger							X	X					X					
D. Russell (30 letters)				X (A)		X	X	X										
K. Schneider						X	X	X	X									
A. Schmauder					X		X											
C. Shoup (2 letters)				X (A)			X	X									X	X
N. Slatterly		X*	X*	X (A)	X*	X*	X*	X*	X*		X*	X*	X*		X*			
P. Stoltz		X																
S. Stugelmeyer				X (A)		X	X	X*	X		X*		X					
S. Thayer				X (A)			X	X										X
H. Thornton	X																	
K. Walsh (3 letters)				X (A)	X	X	X	X*	X	X				X	X			X
M. Winkler						X*	X	X			X							

X Specific comment(s) were made.
*X Topic area was noted on Comment Form, but specific comments were not made.

ATTACHMENT B

Public Scoping Comment Themes

PIONEER AGGREGATES SOUTH PARCEL PROJECT EIS

Public Scoping Comment Themes

Topic Area	Specific Themes
SEPA Process	
	• *Questions regarding noticing of EIS scoping*
	• *Update EIS information & analysis, & identify new, appropriate mitigation measures*
	• *Interaction between previous EIS, previous agreements, & new EIS*
	• *Cumulative impacts*
Alternatives	
	• *EIS Alternative with less mining on South Parcel &/or Existing Mine*
	• *EIS Alternative with no dewatering for mining & intercepting groundwater southeast of Edmond Marsh to preserve hydrology of wetlands & Sequalitchew Creek*
Permitting	
	• *Need for permits for potential impacts on wetlands, solid waste management, toxics cleanup, water quality/industrial operations, & air quality.*
Earth	
	• *Impacts of removing topsoil & subsoil, including erosion & sedimentation*
	• *Potential for earth settlement & sink holes with dewatering*
Surface Water & Groundwater	
	• *Potential mining & groundwater dewatering/diversion impacts on waterbodies (e.g., Sequalitchew Creek, Edmond Marsh, on-site kettle wetland, groundwater riparian seeps), including impacts of groundwater drawdown & creation of North Sequalitchew Creek channel*
	• *Validity of groundwater modeling, including its application & assumptions (including historic hydrology & climate change assumptions)*
	• *Impacts of project on Sequalitchew Creek Restoration*
	• *Water quality impacts (e.g., on Sequalitchew Creek & Puget Sound), including pollution & increased temperature in the creek, saltwater intrusion into the aquifer, & desalination of the Sound*
	• *Potential for proposed stormwater infiltration facilities to silt up & cause flooding (causing impacts on City of DuPont's stormwater/flood management infrastructure)*
	• *Suggestions for water resources mitigation*
Plants & Animals	
	• *Impacts to threatened Endangered Sensitive Candidate & Proposed (TESCP) plant & animal species*
	• *Need for a more thorough survey of on-site wetland vegetation*
	• *Need for a comprehensive plant & wildlife survey*

Topic Area	Specific Themes
	• *Impacts on salmon habitat in Sequalitchew Creek*
	• *Impacts on plants (e.g., trees), fungi (mushrooms) & wildlife (e.g., deer, coyotes, bear, salmon, orca, seals, & water birds) onsite & in the site vicinity*
	• *Potential for introduction of invasive plant species in Edmond Marsh*
	• *Adequacy of proposed Wetland Mitigation Plan*
Air Quality/GHGs	
	• *Impacts of climate change in conjunction with proposed mining/groundwater dewatering plans*
	• *Dust impacts on nearby residential (e.g., Creekside Village) & recreational (e.g., Sequalitchew Creek Trail) areas*
	• *Suggestions for air quality mitigation*
Noise	
	• *Noise impacts on nearby residential (e.g., Creekside Village) & recreational (e.g., Sequalitchew Creek Trail) areas*
	• *Suggestions for noise mitigation*
Land Use/Plans & Policies	
	• *Impacts on nearby residential (e.g., Creekside Village & Edmond Village) & recreational (e.g., Sequalitchew Creek Trail) areas*
	• *Applicability of DuPont Critical Area Ordinance*
Aesthetics/Light & Glare	
	• *Impacts on scenic resources*
Cultural Resources	
	• *Update archaeological sites, roads, & paths on & near the site*
	• *Involve WA State Department of Archeology & Historic Preservation*
	• *Suggestions for cultural resources mitigation*
Parks & Recreation	
	• *Impacts on Sequalitchew Creek Trail users*
Transportation	
	• *Impacts of mining traffic on nearby road system & I-5 interchange*
Public Services	
	• *Potential for increased fire hazard due to drying of Sequalitchew Creek ravine & climate change*
Utilities	
	• *Impacts on City of DuPont's and JBLM's potable water quantity & quality, including possible need for new water rights*
Economic/Fiscal Impacts	
	• *Decrease in DuPont home values*

Topic Area	Specific Themes
	• *Impacts on DuPont businesses & tourism*
	• *Impacts on DuPont taxpayers*
	• *Impacts on ability of DuPont to attract new investment*
	• *City maintenance costs (e.g., from invasive plants, beaver dams, blockage in Sequalitchew Creek & Edmond Marsh, road maintenance)*

Attachment 10

RECEIVED
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CITY OF DUPONT

NOTICE OF APPEAL

Cascadia Law Group
ENVIRONMENTAL ATTORNEYS

June 4, 2025

Barbara Kincaid
Director of Community Development
1700 Civic Drive
DuPont, WA 98327

RE: Notice of Appeal, DMC 23.01.210 – Inadequate Final Environmental Impact Statement – File No. SEPA 2021-002

Dear Ms. Kincaid,

This firm represents the Nisqually Indian Tribe ("the Tribe"). This letter constitutes a formal Notice of Appeal of the City of DuPont ("the City's") issuance of a Final Environmental Impact Statement ("FEIS") for CalPortland's proposed Pioneer Aggregates South Parel Project. *See* DuPont Municipal Code § 23.01.210. A filing fee of $487.00, accompanies this appeal.

I. Appellant Identification

Name and Mailing Address of Appellant:

Brad Beach on behalf of Nisqually Indian Tribe
4820 She Nah Num Drive SE
Olympia, WA 98503
(360) 456-5221 x1277
Beach.brad@nisqually-nsn.gov

Representative Information:

Maia Bellon, WSBA No. 24777
Cascadia Law Group
606 Columbia Street NW, Suite 212
Olympia, WA 98501
(360) 556-8809
mbellon@cascadialaw.com

II. Appellant's Legal Residence or Principal Place of Business

Nisqually Indian Tribe
4820 She Nah Num Drive SE
Olympia, WA 98503

III. Decision Being Appealed

Notice of FEIS availability/determination dated May 22, 2025 (copy attached).
Final Environmental Impact Statement dated May 22, 2025.[1]

IV. Individual Grounds for Appeal

The Nisqually Indian Tribe appeals the FEIS on the following grounds:

Inadequate cultural resource review and analysis. The FEIS fails to adequately identify cultural resources of significance to the Tribe and analyze the proposed mine expansion's potential impacts on those resources.

Failure to consider all cultural resources. The FEIS does not assess, consider, or mitigate impacts to Nisqually cultural resources from the mine expansion. These include previously unrecorded archaeological resources and non-archaeological places of historical, cultural, and spiritual significance to the Tribe and its members.

Inadequate ethnographic and ethnohistoric studies. The FEIS fails to include adequate ethnographic and ethnohistoric research to account for the existence and variety of cultural resources significant to the Tribe.

Failure to mitigate impacts on cultural resources. The FEIS fails to include adequate mitigation measures to address the adverse impacts on cultural resources of significance to the Nisqually Tribe.

Improper geographic scope and failure to consider indirect and cumulative impacts. The FEIS improperly limits its cultural resource analysis to an "area of direct impacts" that is not a recognized concept under the State Environmental Policy Act (SEPA). Rather, SEPA recognizes that a proposal's impacts can be direct, indirect, or cumulative, and requires an EIS to analyze each. *See* WAC 197-11-060(4)(d), (e); WAC 197-11-792(2)(c). The FEIS fails to account for the full range of potential

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[1] Because of its length, the FEIS is incorporated by reference herein. The FEIS is viewable at https://www.dupontwa.gov/DocumentCenter/View/8843/Pioneer-Aggregates-South-Parcel-Project-Final-EIS---May-22-2025---FULL-DOCUMENT.

impacts that mining expansion will have on cultural resources. *See* WAC 197-11-440(6).

V. Factual and Legal Reasons for Appeal

The proposed mine expansion threatens to further desecrate an area of profound importance to the Tribe and its members. The Sequalitchew Ancestral Village Landscape (SAVL) is a Traditional Cultural Property (TCP) made up of numerous historic properties and cultural resources of historical, archaeological, cultural, and spiritual significance to the Tribe and its Members. *See* Karen Marie Capuder, Forked Tongues at Sequalitchew: A Critical Indigenist Anthropology of Place in Nisqually Territory (Ph.D. dissertation, University of Washington 2013).[2] The landscape, which includes saltwater, shorelands, tidelands, forested uplands, glacial outwash prairies, and a complex network of delicate glacial wetlands and kettle lakes, has supported the Nisqually people for countless generations. The archaeological record offers only a brief glimpse into this extensive history. The City of DuPont was built on this land.

The FEIS fails to analyze probable, significant adverse impacts of the proposed mine expansion on the Tribe's cultural resources. These include the numerous pre-contact and historic era archaeological and ethnographic sites, landscapes, and cultural resources that comprise the SAVL TCP, as well as the unique physical and spiritual character of the landscape and the associated cultural practices and teachings of the Tribe.

The statement that "impacts to cultural values, practices or non-human beings associated with these resources area are unknown, cannot be quantified or assessed in an EIS, and *are beyond the scope of SEPA*," FEIS p. 4-42, is egregiously false. Cultural resources are "elements of the environment" that SEPA requires an EIS to address. WAC 197-11-444. While SEPA does not define "cultural resources," the SEPA Checklist asks a project proponent to identify and describe "any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers," as well as "any landmarks, features, or other evidence of Indian or historic use or occupation" and "any material evidence, artifacts, or areas of cultural importance on or near the site." WAC 197-11-960, Question B.13.

All of these elements are present in the SAVL TCP. The SAVL TCP and each of its constituent TCPs are, by definition, *physical places on the landscape*, each with distinct boundaries. Among the cultural beliefs, customs, and practices rooted in their history and central to the maintenance of their cultural identity that render the SAVL

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[2] Dr. Capuder's dissertation is available at https://digital.lib.washington.edu/server/api/core/bitstreams/0a4b4460-51e4-4615-a78a-25629958a706/content.

TCP and the TCPs of which it is constituted eligible for listing on the National Register of Historic Places (NRHP) (36 CFR pt. 60) are the values, practices, and interactions with non-human beings associated with this landscape. Both tribal and nontribal third-party cultural resource professionals routinely undertake assessments of such values.

SEPA mandates analysis of "unquantified environmental amenities and values," RCW 43.21C.030(2), including cultural resources. The City's FEIS is not supported by adequate cultural resources studies. The cultural resource studies reflected in the FEIS focused on previously recorded historic and archaeological resources, neglecting the ethnographic elements the Tribe has identified. Further, the FEIS relies solely on a "desktop analysis" rather than a robust cultural resource survey that includes documentation and analysis of TCPs.

The Tribe submitted a comment letter on the Draft EIS on July 17, 2024, and an additional comment letter proposing potential mitigation measures on December 23, 2024. The FEIS responses to the Tribe's comments reflect a fundamental misunderstanding of the legal framework for protecting cultural resources. For example, the City writes off "impacts to spiritual aspects or associations of the physical environment" as "not deducible" because they cannot be quantified. It further asserts that spiritual and religious practices "are not 'elements of the environment' for discussion in an EIS." To the contrary, "spiritual aspects and associations of the physical environment" are, in fact, among the criteria for determining eligibility of TCPs for the NRHP and the Washington Heritage Register (WHR). Whether the "aspects and associations" that render these elements significant and eligible for listing are spiritual or mundane, SEPA requires the EIS to consider them.

The FEIS comment responses "recognize[ ] that the Tribe possesses unique information about Tribal customs, beliefs and practices that is not available elsewhere, including state and federal databases." However, the FEIS impermissibly places the burden of providing such information on the Tribe itself. ("As of this writing, the Nisqually Indian Tribe has not provided any documentation of the TCPs, including any evaluations, maps or reports depicting their locations and boundaries" (FEIS, p. 3.10-8).) As the SEPA lead agency, the City has the responsibility to gather sufficient information to analyze the impacts of the proposed mine expansion. RCW 43.21C.030; WAC 197-11-080(1) ("If information on significant adverse impacts essential to a reasoned choice among alternatives is not known, and the costs of obtaining it are not exorbitant, agencies shall obtain and include the information in their environmental documents."). The limited nature of the cultural resources studies and analysis of impacts to cultural resources do not provide sufficient information for the City to make a reasoned choice among alternatives.

Accordingly, the FEIS does not adequately address the significant adverse impacts of the proposed project on the Nisqually Indian Tribe's Treaty rights, cultural resources,

and natural environment. It also fails to propose adequate mitigation measures to address such impacts. *See* RCW 43.21C.031, WAC 197-11-440(5), (6).

Finally, the impacts of mine expansion are cumulative to previous degradations to the SAVL TCP. These began with the transformation of the prairies by Hudson's Bay Company and subsequent American settlers through animal husbandry, agriculture, and fire suppression; they continued with the construction, environmental contamination, and remediation from DuPont Power Works; the initiation and continuation of mining activities; and the sprawling development of Northwest Landing. The FEIS fails to adequately consider such cumulative impacts. WAC 197-11-792(2)(c).

VI. Nature and Intent of Relief Sought

All appropriate relief, including, but not limited to: Withdrawal of the City of DuPont's issued FEIS under File No. SEPA 2021-002; further evaluation of the environmental impacts of the Proposed Action in an FEIS addendum or Supplemental EIS; and appropriate additional mitigation conditions to address the probable, significant adverse impacts of the mine expansion on the Tribe's cultural resources.

VII. Verification

I, Brad Beach, have read this appeal and believe the contents to be true to the best of my knowledge, information, and belief.

Appellant Signature: Bradley Beach **Date:** 6/04/2025
Brad Beach on behalf of Nisqually Indian Tribe

Attorney Signature: Maia Bellon **Date:** 06/04/2025
Maia Bellon, WSBA No. 24777
Attorney for Appellant

Attachments

FEIS Notice of Availability
$487.00 filing fee payment

CITY OF DUPONT
1700 Civic Drive, DuPont, WA 98327
Telephone: 253.964.8121
www.dupontwa.gov

NOTICE OF AVAILABILITY OF FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

Notice is hereby given under WAC 197-11-460 and 197-11-510 that the City of DuPont is issuing the Final Environmental Impact Statement (Final EIS) for the proposed ***Pioneer Aggregates South Parcel Project.***

Project Name: Pioneer Aggregates South Parcel Project
Proponent: CalPortland
Lead Agency: City of DuPont Public Services Department
File Number: SEPA 2021-002
Final EIS Issuance Date: May 22, 2025

Description of the Proposal: The proposed *Pioneer Aggregates South Parcel Project* would occur on an approximately 313-acre site located on and to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont, southwestern Pierce County, sections 22, 23, and 26, Township 19 North, Range 1 East of the Willamette Meridian. The site includes areas previously undisturbed by mining (termed the "Expansion Area") and mining deeper within a portion of existing mine, referred to as the "Re- Mine Area". The Expansion Area is approximately 188 acres and is comprised of three subareas as follows: The Kettle Area is a 10.8-acre previously undisturbed area; the 9.2-acre Buffer Strip is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the South Parcel; and, the South Parcel Area is 168 acres located southeast of the original mine. The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where current mining activities are permitted above current groundwater levels.

A Draft Environmental Impact Statement (DEIS) was prepared and issued on June 14, 2024 with a 30-day comment period. Agencies, affected tribes, and members of the public were invited to comment on the DEIS through July 14, 2024. The DEIS process was provided pursuant to the Washington Administrative Code (WAC) 197-11-455. Information regarding the EIS process can be reviewed on the city's website at: https://www.dupontwa.gov/577/Pioneer-Aggregates-South-Parcel-Project

The DEIS analyzed the probable significant adverse environmental impacts associated with one alternative and one no action alternative, including:

- **Alternative 1 (Proposed Action)** – Horizontal expansion of mining into approximately 188 acres previously undisturbed by mining (Expansion Area) and vertical deepening of approximately 125 acres of the existing mine; and,

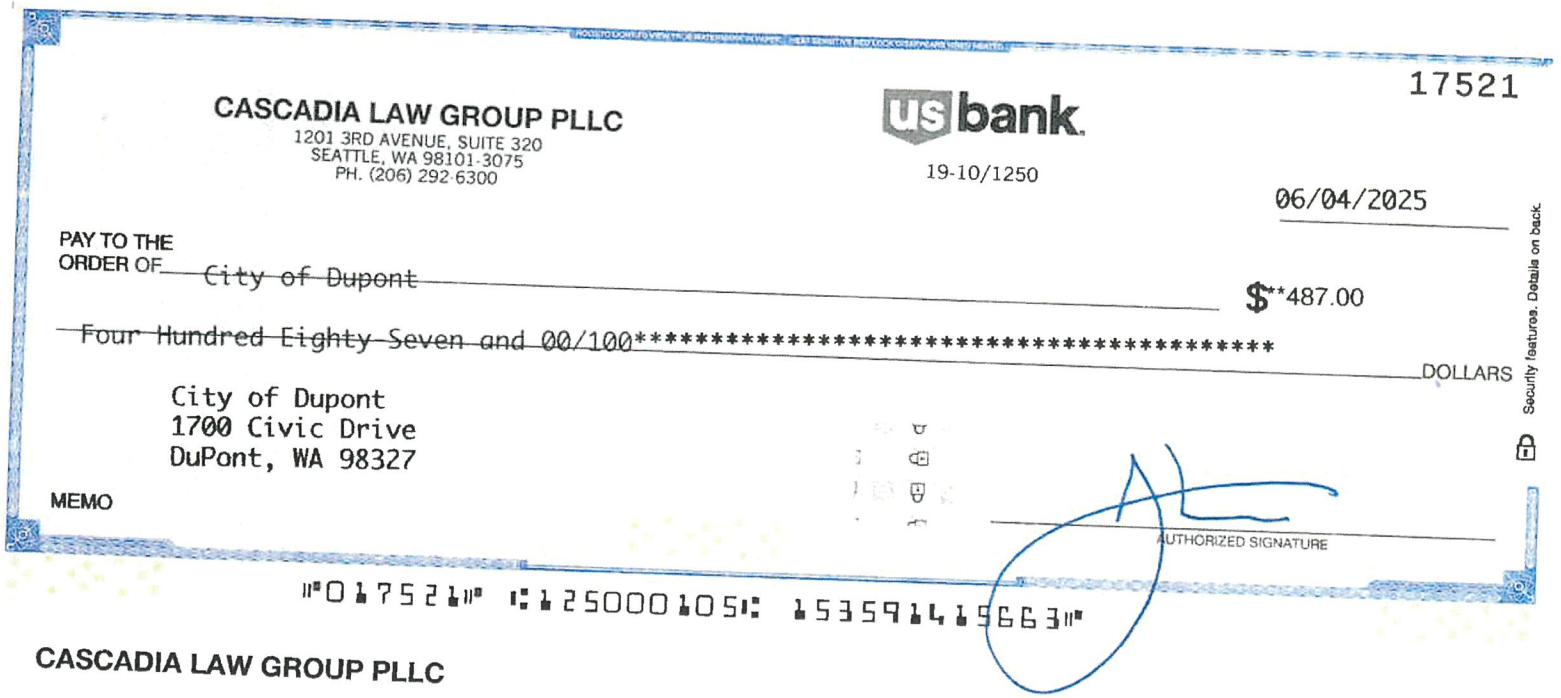
- **Alternative 2 – No Action Alternative**.

Mitigation: The Final EIS has identified impacts and mitigation measures for Alternative 1 (Proposed Action).

Availability of the FEIS and Background Materials: The Draft EIS and Final EIS may be viewed on the city's website at https://www.dupontwa.gov/719/Pioneer-Aggregates-South-Parcel-Project-

Appeal and Noticing: This notice of availability is provided in accordance with WAC 197-11-460. The City will not take action on the proposal for 7 days following the issuance date of this notice. The adequacy of this Final EIS may be appealed to the DuPont Hearing Examiner in accordance with the DuPont Municipal Code (DMC) 23.01.210. Timely appeals shall be delivered, with the appropriate appeal fee, to the SEPA Lead Agency by mail or by personal delivery before 5pm within 14-days of the issuance of this Final EIS, on or before June 5, 2025. Information for filing an appeal may be found on the city's website at this location: https://www.codepublishing.com/WA/DuPont/#!/DuPont23/DuPont2301.html#23.01.210 or by contacting the SEPA Lead Agency Contact.

SEPA Lead Agency Contact: Barb Kincaid, Public Services Director and SEPA Responsible Official, bkincaid@dupontwa.gov



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06/04/2025

PAY TO THE ORDER OF City of Dupont $**487.00

Four Hundred Eighty-Seven and 00/100********** DOLLARS

City of Dupont
1700 Civic Drive
DuPont, WA 98327

MEMO

AUTHORIZED SIGNATURE

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City of Dupont 06/04/25	Bill #	06/04/2025	17521 487.00

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