Final Engineering Design Report
Bay Wood Products Cleanup Site
Everett, Washington

November 10, 2020

Prepared for

Port of Everett

LANDAU ASSOCIATES

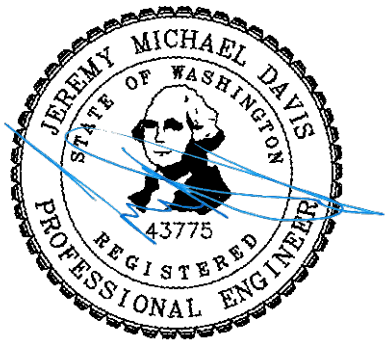
130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

Final
Engineering Design Report
Bay Wood Products Cleanup Site
Everett, Washington

This document was prepared by, or under the direct supervision of, the undersigned, whose seal is affixed below.

Name: Jeremy Davis, PE
WA/No. 43775

Date: November 10, 2020



Document prepared by: _____ Jeremy Davis, PE
Project Engineer

Document reviewed by: _____ Dylan Frazer, LG
Project Manager

Date: November 10, 2020
Project No. 0147053.010
File path: P:\147\053\R\EDR\LAI POE Bay Wood Final EDR_111020.docx
Project Coordinator: ljl

This page intentionally left blank.

TABLE OF CONTENTS

FIGURES

TABLE

APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

°F ..... degrees Fahrenheit
AO ..... Agreed Order No. DE-5490
BA ..... biological assessment
bgs ..... below ground surface
BMP ..... best management practice
BTEX ..... benzene, toluene, ethylbenzene, xylene
CMP ..... compliance monitoring plan
COC ..... contaminant of concern
cPAH ..... carcinogenic polycyclic aromatic hydrocarbon
CQA ..... construction quality assurance
CQC ..... construction quality control
DNR ..... Washington State Department of Natural Resources
Ecology ..... Washington State Department of Ecology
EDR ..... engineering design report
EFH ..... Essential Fish Habitat
ESA ..... environmental site assessment
FS ..... feasibility study
ft ..... feet, foot
GIS ..... geographic information system
HASP ..... health and safety plan
HPA ..... Hydraulic Project Approval
H:V ..... horizontal to vertical
IAWP ..... interim action work plan
ID ..... identification
IDP ..... inadvertent discovery plan
IHS ..... indicator hazardous substances
JARPA ..... Joint Aquatic Resources Permit Application
Kimberly-Clark ..... Kimberly-Clark Worldwide, Inc.
LAI ..... Landau Associates, Inc.
MDNS ..... mitigated determination of non-significance
MFR ..... Memorandum for the Record
MLLW ..... mean lower low water
MSL ..... mean seal level
MTCA ..... Model Toxics Control Act
ng/kg ..... nanograms per kilogram
OHWM ..... ordinary high water mark
PAH ..... polycyclic aromatic hydrocarbon
PCB ..... polychlorinated biphenyls

PCL ..... preliminary cleanup level
Port ..... Port of Everett
RAO ..... remedial action objective
RCW ..... Revised Code of Washington
REL ..... remediation level
RI ..... remedial investigation
Site ..... Bay Wood Products cleanup site
SL ..... screening level
SLR ..... SLR International Corporation
SMA ..... Shoreline Management Act
SVOC ..... semivolatile organic compound
TEQ ..... toxic equivalency
TESC ..... temporary erosion and sediment control
TPH ..... total petroleum hydrocarbons
TPH-D ..... diesel-range total petroleum hydrocarbons
VOC ..... volatile organic compound
W&W Investment ..... W&W Everett Investments, LLC
WAC ..... Washington Administrative Code
WDFW ..... Washington Department of Fish & Wildlife
WSDOT ..... Washington State Department of Transportation

1.0 INTRODUCTION AND PROJECT BACKGROUND

The Port of Everett (Port) is currently working in partnership with the Washington State Department of Ecology (Ecology) to conduct an interim action at the Bay Wood Products cleanup site (Site) in Everett, Washington (Figure 1). This engineering design report (EDR) is a required deliverable under the Agreed Order (AO) between the Port and Ecology (No. DE-5490, Amended February 4, 2020), and is intended to provide additional engineering details for the planned activities presented in the interim action work plan (IAWP; Landau Associates, Inc. [LAI] 2020). The cleanup activities are intended to achieve environmental cleanup, habitat restoration, and buffer enhancements along a majority of the perimeter of the property.

The Site is currently listed on the Ecology Cleanup List (Facility Site Identification [ID] 4438641, Cleanup Site ID 2581). The interim action is being conducted in accordance with the Model Toxics Cleanup Act (MTCA) requirements, as part of the above-referenced AO. The underlying AO requires the Port to conduct a remedial investigation (RI) to identify the nature and extent of contamination, and a feasibility study (FS) to develop and evaluate a range of remedial strategies. While the RI/FS activities are ongoing, it has become necessary to complete an interim action before those activities are finalized. As such, the February 2020 amendment to the AO requires the Port to conduct an interim action at the Site. Two related deliverables included in the amended AO, associated with the interim action, are the IAWP describing the general cleanup approach, and this EDR, providing additional design information for Ecology's review. The two documents together satisfy the requirements of Washington Administrative Code (WAC) 173-340-430(7), which governs the submittal requirements for MTCA Interim Actions.

The interim action will address near-shore cleanup activities that must be addressed prior to Site development. The interim action will be implemented in advance of selection of the final cleanup action for the Site and, as such, must not prevent the implementation of other reasonable alternatives for the final cleanup action (WAC 173-340-430[3][b]). This requirement was taken into account in designing the interim actions, as presented in this EDR.

The table below summarizes Site identification information and parties to the AO:

Site Name:	Bay Wood Products
Site Location:	200 West Marine View Drive Everett, Washington
Facility Site Identification No.:	4438641; Cleanup Site ID 2581
Agreed Order No.:	DE-5490
Effective Date of Order:	February 4, 2020
Parties to the Order:	Port of Everett
Current Property Owner:	Port of Everett

1.1 Site Description

The Site is located at 200 West Marine View Drive, near the confluence of the Snohomish River and Port Gardner Bay (Figure 1) and consists of approximately 41.3 acres of land owned primarily by the Port. The upland portion of the Site extends into Port Gardner Bay with a maximum elevation of approximately 15 feet (ft) above mean sea level (MSL). Although a portion of the Site may extend into Gardener Bay, into land owned by the State of Washington and managed by the Washington State Department of Natural Resources (DNR), all of the work proposed herein will occur upland of the inner harbor line on land owned by the Port. The southern portion of the Site lies within the 100-year floodplain of the Snohomish River, according to mapping completed in 2016. The in-water portion of the Site consists primarily of tideland mudflats ranging in elevation from approximately 0 to 6 ft mean lower low water (MLLW).

The Snohomish County parcel numbers associated with the Site, and owned by the Port, include 29050700101000, 29050700100300, and 29050700100500. The Site is bordered on the north by a vacant lot owned by Kimberly-Clark Worldwide, Inc. (Kimberly-Clark; parcel number 29050700100100) and bordered on the south by the parcel currently owned by W&W Everett Investments, LLC (W&W Investment; parcel number 29050700100400). The W&W Investment property is part of the "Jeld-Wen" MTCA site and is currently undergoing cleanup under an agreed order with Ecology. For the purposes of this report, this property is referred to as the W&W Investment parcel when referring to the property but is also referred to as the Jeld-Wen site when discussing MTCA actions related to this site.

The US Army Corps of Engineers (USACE) manages an easement measuring approximately 100 ft wide that is used to access a training wall that diverts the main flow of the Snohomish River north of Jetty Island. This easement encompasses approximately 4.1 acres of the Site, as shown on Figure 2.

At the southern end of the Site, there is a topographic Low Area that consists of a narrow surface depression approximately 15 ft wide elongated from east to west between the W&W Investment parcel and the Bay Wood Site. The depression widens to approximately 30–40 ft wide and extends north along West Marine View Drive (Figure 2). The east/west oriented portion of the Low Area is topographically bounded to the south by an approximately 2-ft-high retaining wall located on the W&W Investment parcel, and to the north by approximately 6 ft of fill in the upland portion of the Site; the north/south oriented portion of the Low Area is laterally bounded to the west by the fill on the upland portion of the Site, and to the east by West Marine View Drive. In 2017, it was observed that water was being pumped from a sump located in the W&W Investment parcel truck bay (North Truck Dock Sump Drain) into the Low Area (Port property; see Figure 3) without authorization from the Port. The discharge appeared to be derived from several sources including roof-water runoff, roadway stormwater drainage, and groundwater. Under the direction of Ecology, surface soil samples were collected by W&W Investment parcel from the Low Area in 2018 at both the discharge point and at the end of a conveyance pipe. Laboratory analysis of these samples indicated the presence of

carcinogenic polycyclic aromatic hydrocarbons (cPAHs), dioxins/furans, and oil-range total petroleum hydrocarbons (TPH-O) at concentrations above preliminary cleanup levels (PCLs) for the Site (SLR International Corporation [SLR] 2018).

1.2 Site History and Operations

The Site appears to have been owned by the Port for decades, but it has changed tenants on multiple occasions since 1936. Use of the Site was fairly consistent throughout the changes in tenancy and typically supported the lumber and timber industry.

The following bulleted list summarizes the time period, Site tenants, and general Site uses from approximately 1936 to present:

- **1936–1946**: Parker Lumber and Mill Company; saw milling
- **1946–1968**: Washington Wood Products;[1] saw milling in the eastern portion of the Site
- **1970–1976**: Publishers Forest Products Company; saw milling; added buildings (GeoEngineers 2018)[2]
- **1976–1978**: West Coast Orient Lumber Mills; saw milling
- **1978–1979**: West Coast Lumber Operations Company; saw milling
- **1979–1994**: Bay Wood Products;[3] log processing
- **1995–2020**: Port; Site vacant and unused, various upland cleanups conducted under MTCA.

Typical milling operations conducted at the Site included sawing, re-sawing, planing, kiln-drying, sorting, fabrication, storage, and transfer operations. The milling operations were primarily located on the eastern one-third of the Site, approximately. The western two-thirds of the Site, approximately, were used primarily for lumber and log storage. A log way was located on the southern portion of the Site and large log rafts were located to the northwest and north of the Site. Areas on the eastern, northern, and southern portions of the Site were filled in various stages beginning in the late 1800s or early 1900s when the adjacent railroad was being constructed along Port Gardner Bay.

In 1979, Bay Wood Products, Inc. began dismantling the sawmill, demolishing buildings, and using the Site primarily for log storage and processing. By 1985, the main operations building had been removed from the Site, with remaining buildings removed by 1994.

Currently, there are no operations utilizing upland or marine portions of the Site other than the USACE maintenance of the training wall on the dike. A detailed summary of historical development and operations is presented in the Draft RI/FS Report (GeoEngineers 2018).

[1] Later known as Washington Timber Products.
[2] New buildings shown in aerial photographs (GeoEngineers Draft RI/FS Addendum Figures 1 through 6).
[3] By 1991, Bay Wood Products had dismantled the sawmill operation and removed a majority of the buildings from the Site, including the boiler building, several dry kilns, and lumber sheds.

1.3 Historical Site Investigations and Reports

Several environmental investigations and associated cleanup actions have been completed at the Site to evaluate concerns first noted in the 1989 Phase I Environmental Site Assessment (ESA). Detailed information regarding the historical previous environmental studies and cleanup activities completed are presented in the Draft RI/FS (GeoEngineers 2018) and summary information in the IAWP (LAI 2020).

The following subsections summarize the more recent investigations, relevant to informing this EDR.

1.3.1 Shoreline Restoration Area

In April 2019, the Port conducted a soil investigation to evaluate materials that will be encountered during the grading activities for the Shoreline Restoration. Ten test pits were excavated allowing the collection of subsurface soil samples for laboratory analysis and geotechnical categorization of soil. Laboratory analyses included:

- Total petroleum hydrocarbons (TPH)
  - Diesel-range TPH (TPH-D) and TPH-O
- Volatile organic compounds (VOCs) associated with petroleum hydrocarbons
  - Benzene, toluene, ethylbenzene, xylene (BTEX)
- Metals
  - Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver
- Polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- Semivolatile organic compounds (SVOCs).

The results of the investigation are presented in the *Bay Wood Test Pit Findings and Materials Management Plan*, prepared for the Port by Shannon & Wilson, Inc. in July 2019. The results are discussed further in Section 2.2 below and summarized in Table 1.

In March 2020, the Port collected additional samples at the same test pit locations advanced in 2019 along the shoreline. This additional investigation refined the understanding of depth and thickness of the various soil types to support design of the Shoreline Restoration and facilitated additional soil characterization to support final disposition of soils planned for excavation. The test pits were distributed across the entirety of the shoreline restoration project and provided a representative sampling of the materials planned for removal.

The test pits confirmed that a thin layer of highly organic soil (referred to herein as *wood waste* for consistency with other project documents) is consistently found adjacent to the shoreline, beneath the more recently placed sand, used for dike construction. The wood waste layer is considered the

most likely to be impacted, because it was present at the ground surface when the Site was used for industrial purposes. It also represents the only materials exposed outside the engineered dike materials or imported dredge fill that will be encountered during the Shoreline Restoration.

In addition to visually identifying the layer, samples were collected for laboratory analysis of the material from test pit locations TP-2, TP-5, TP-6, TP-7, TP-9, and TP-10. Each of these samples were analyzed for all contaminants of concern that were identified during the RI. Additionally, because of the previous dioxins and furans results for marine sediment samples located offshore in the vicinity of TP-9 and TP-10, and the close proximity of these test pits to the Low-Area, these test pits samples were additionally analyzed for dioxins and furans.

The analytical list used for this evaluation and summarized below was conservatively protective because of analyzing even those COCs eliminated as indicator hazardous substances (IHS) because of Site-specific exposure or statistical evaluations; the IHS list has not yet been formally established by Ecology in a Cleanup Action Plan for the Site. These test pit samples were analyzed for:

- Petroleum hydrocarbons
  - TPH-D and TPH-O
- Metals
  - Arsenic, Cadmium, Nickel, Selenium, Silver, Thallium
- PCBs
- PAHs
- Dioxins/furans.

The analytical results were presented in the IAWP (LAI 2020) are further discussed in Section 2.0, and are summarized in Table 1

The results confirm the findings of previous investigations, indicating no contamination is present along most of the alignment where the Shoreline Restoration will occur. However, the investigation did confirm the presence of dioxins and furans in wood waste at the toe of and beneath the dike in the southeast portion of the Shoreline Restoration Area, near the Low Area. As described later in this EDR, this soil will be handled as contaminated, kept segregated from other materials excavated during the Shoreline Restoration, and will be disposed of offsite at a Subtitle D disposal facility.

The following recently completed documents and studies have established conditions in support of developing the interim action activities, and have been submitted to Ecology for review:

- *Draft Biological Evaluation, Bay Wood Shoreline Interim Cleanup and Restoration, Everett, Washington.* Prepared for the Port by Shannon & Wilson, Inc. September 2019. This report was prepared to address the requirements of Section 7 of the Endangered Species Act.

- *Habitat Assessment, Bay Wood Shoreline Interim Cleanup and Restoration, Everett, Washington.* Prepared for the Port by Shannon & Wilson, Inc. September 2019.
- *Bay Wood Test Pit Findings and Materials Management Plan, Everett, Washington*. Prepared for the Port by Shannon & Wilson, Inc. July 2019.
- *Tidal Hydraulics Study and 30% Design Report, Bay Wood Shoreline Interim Cleanup and Restoration, Everett, Washington*. Prepared for the Port by Shannon & Wilson, Inc. July 2019.
- *Memorandum: Restoration Design Criteria, Bay Wood Redevelopment and Shoreline Interim Cleanup and Restoration, Everett, Washington*. Prepared for the Port by Shannon & Wilson, Inc. June 2019.
- *North Truck Dock Stormwater Sump Investigation.* Prepared for the Port by SLR. August 2018.

1.3.2 Low Area

In 2018, W&W Investment conducted soil sampling in the Low Area of the Site to characterize soil impacts caused by the unauthorized discharge from the W&W Investment parcel. The results of this sampling indicated soil with TPH-D, cPAH, and dioxin/furan concentrations above Site screening levels (SLs; SLR 2018).

In 2019 through 2020, the Port further investigated soil quality in the Low Area related to the W&W Investment discharge onto the Site. The investigation was conducted in two phases, by excavating eight test pits and collecting samples. The investigation confirmed the presence of dioxins and furans above SLs. The analytical results were presented in the IAWP (LAI 2020), are presented in Section 2.0 and Table 2, and used in this EDR to design the Low Area cleanup remedy, which will be a combination of excavation and offsite disposal at a Subtitle D disposal facility, and construction of a containment system to prevent exposure to residual contaminants left in-place after the removal action.

2.0 ENVIRONMENTAL CONDITIONS AND REMEDIAL OBJECTIVES

This section provides a brief summary of the environmental conditions relevant to the interim action. A more comprehensive record of conditions relevant to other cleanup considerations is presented in previous Site reports, including the Draft RI/FS report (Anchor QEA and SLR 2011).

2.1 Local Geology and Hydrogeology

The City of Everett lies within the Puget Sound lowland, a geomorphic depression formed between the Olympic Mountains and the Cascade Range characterized by relatively thick accumulations of glacial and interglacial deposits overlying tertiary sedimentary and igneous rocks. The glacial deposits generally consist of a complex sequence of lacustrine sediments, advance outwash, drift, till, and recessional deposits. Interglacial deposits are characterized by river processes and include alluvial and estuarine stratified sediments comprised largely of sand, silt, and clay with considerable amounts of organic matter exceeding 90 ft in thickness in areas.

The upland area at the Site where the planned interim action will occur was primarily created by infilling a portion of the historical mudflat with dredged material generated from the Snohomish River and possibly other sources. Previous investigations completed at the Site have concluded that approximately 7–9 ft of sands and silts was placed over historical marine deposits (Anchor QEA and SLR 2011). Additionally, a shallow, unconfined groundwater-bearing zone was identified at depths ranging from 2.5 to 6 ft below ground surface (bgs). Based on the available information, the inferred groundwater flow is generally toward Port Gardner Bay to the west.

After the Port purchased the Site in 1995, the Port removed approximately 140,000 cubic yards of bark, rock, and wood chips from the northwest portion of the Upland area. Following removal of these materials, a dike was constructed around the shoreline perimeter of the Site where most of the interim action activities will be conducted. The dike construction material will be exposed and partially excavated along the waterward side of the dike to regrade the slope as part of the Shoreline Restoration. Outside and beneath the dike construction material is a layer of dark brown wood waste, appearing to be primarily heavily decomposed wood chips. Some of this material will also be excavated during the Shoreline Restoration efforts. The brown coloration makes the material readily identifiable and distinctly separate from the dike construction materials.

At the southern end of the Site, a topographic Low Area exists between the W&W Investment parcel and the Bay Wood site. This area is located just upland of an aging timber bulkhead, and adjacent to the eastern terminus of the dike.

2.2 Contaminants of Concern—Shoreline and Low Areas

Based on the historical investigations documented in the RI/FS, and the more recent investigations noted in Section 1.0, there are several areas where contaminants will be encountered and removed

during interim action in both the Shoreline Restoration Area and the Low Area. Figures 3 and 4 show the areas where contaminants will be encountered in plan-view, and the following paragraphs provide a summary of the data to inform material handling and disposal.

2.2.1 Shoreline Restoration Area

Table 1 presents the analytical results for soil samples collected in the Shoreline Restoration Area. Contaminants were not detected at concentrations above Site SLs in samples collected in April 2019, which were collected from the dike construction materials. Contaminants detected above Site SLs in the shoreline restoration area were limited in nature to dioxins and furans, and in extent to the wood waste layer in the area outlined on Figure 4. Dioxins and furans were detected in the wood waste layer at one March 2020 test pit location in this area (TP-9-20) at an elevated concentration of 42.4 nanograms per kilogram (ng/kg)—above the SL of 13 ng/kg. This finding was not unexpected because of the close proximity to similar contamination found in the Low Area from historical releases to the Site from the adjacent W&W Investment parcel. This finding is also consistent with historical sediment samples in the area as presented in the RI/FS. The material is readily identifiable visually because of the darker soil color caused by the presence of the decaying wood waste, so is straightforward to distinguish from the dike construction materials, determined to be uncontaminated. All soil excavated from the wood waste layer removed from this area will be handled as contaminated material, and disposed of offsite at a Subtitle D disposal facility as discussed later in this document, and detailed in the Test Pit Findings and Soil Management Plan (Appendix A) and the Restoration Plan (Appendix B).

2.2.2 Low Area

Table 2 presents the analytical results for soil samples collected in the Low Area. Contaminants detected above Site SLs were generally limited in nature to dioxins and furans, although some other contaminants were co-located with these detections in surface samples. The dioxins and furans and other co-located contamination will be addressed through targeted removal of surface and near-surface soils throughout the area shown on Figure 3. The source of contamination appears to be the W&W Investment parcel discharge pipe that historically discharged wastewater from the W&W Investment parcel onto the Site surface. The extent of contamination appears consistent with the spreading from the terminal end of the pipe and an additional area where the discharge pipe was disconnected. Wastewater with dioxins and furans appears to have settled throughout the topographic low area. Based on the high affinity of dioxins and furans to organic soil particles, this contaminant does not typically migrate significant distances over soil surfaces or infiltrate deep into soil. The limited extent of contamination observed in the Low Area is consistent with these known transport characteristics.

Because of the extremely high cost and extended time required for dioxin/furan analysis compared to other analyses, the extent of contamination was conservatively estimated to be located well beyond the actual detections. The extent of the planned excavation area was developed with this consideration in coordination with Ecology during preparation of the IAWP and was extended from

the locations of detected contamination to the adjacent physical barriers and topographic changes that directed or impeded the flow of water at the ground surface. The excavation will remove the contaminated soil from within the extent of the area shown on Figure 3. Based on the analytical results showing contamination rapidly declines with depth, it is estimated that stripping 1 ft of soil throughout most of the area and stripping 2 and 3 ft, respectively, within two smaller portions of the area will achieve a dioxin/furan toxic equivalency (TEQ) remediation level (REL) of 13 ng/kg throughout the area. The deeper excavations will be conducted in the areas of test pits TP-4 and TP-6, which were excavated during soil characterization activities in the Low Area. At TP-4, soil characterization analytical results indicated dioxin/furan TEQ concentrations greater than the REL in the 0–0.5-ft and the 1–2-ft samples, but less than the REL in a sample collected from 2–3 ft; excavation will be completed to 2 ft bgs in this area. At TP-6, the analytical results indicate dioxin/furan TEQ concentrations are greater than the REL in depths ranging from 0–0.5 ft, 1–2 ft, and 2–3 ft; excavation will be extended to 3 ft bgs in this area. Based on the potential for low levels of contamination to remain in-place after the removal, comprehensive monitoring will be conducted to document conditions, and a soil containment cap with ecological barrier will be installed after the excavation is complete.

2.3 Remedial Action Objectives

The remedial action objectives (RAOs) for the interim cleanup activities are summarized below:

- **RAO-1:** Prevent human and terrestrial ecological receptors from being exposed to hazardous substances through direct contact with contaminated soil**.**
- **RAO-2:** Prevent hazardous substances in soil from migrating (by erosion) to marine sediment.
- **RAO-3:** Restore and improve shoreline, habitat, and wetland functionality.

3.0 INTERIM ACTION—PLAN OVERVIEW

This section provides a conceptual-level summary for the interim action in the Low Area and the Shoreline Restoration Area that was presented in the IAWP. Further detail regarding the engineering basis of design and construction requirements will follow in Sections 4.0 and 5.0, respectively. Construction plans are provided in Appendix C. A detailed cost estimate for interim action activities is also presented in Appendix D.

The elements and general sequencing discussed in this section are similar between the Low Area and Shoreline Restoration Area, except as noted. Compliance monitoring will be conducted throughout the activities in accordance with the compliance monitoring plan (CMP; LAI 2020). The following bullets summarize the primary components of the interim action:

- Permitting
- Contractor Mobilization and Site Preparation
- Removal Activities
- Backfilling and Site Restoration Activities
- Demobilization and Reporting.

3.1 Project Permitting

The interim action is required under the Port's AO with Ecology. As such, the activities are typically exempt from requiring further authorization by local government through permits or approvals, although the action must still comply with the substantive requirements of such permits or approvals. In order to determine the substantive requirements, it may be necessary to coordinate with typical permitting agencies through the typical permitting application process. In preparation for the cleanup activities, the Port has secured the authorizations discussed below.

- **State Environmental Policy Act (SEPA), Chapter 43.21C Revised Code of Washington (RCW)**
  - The interim action requires compliance with SEPA, Chapter 43.21C RCW. This was achieved by conducting SEPA review in accordance with applicable regulatory requirements, including WAC 197-11-268, and Ecology guidance as presented in Ecology Policy 130A (Ecology 2004). Ecology and the Port conferred and agreed that the Port would act as the SEPA lead agency for this project. A Mitigated Determination of Non-Significance (MDNS) was issued on September 19, 2019 under Port SEPA reference number 2019-01.
- **Joint Aquatic Resources Permit Application (JARPA)**
  - The Port has prepared a JARPA for the interim action, and applied for a City of Everett shoreline permit, and USACE Section 404/Section 10 permits. As part of the JARPA, a habitat assessment and a biological assessment (BA) were prepared for the project to evaluate potential project impacts on habitat, species listed as threatened or endangered in the action area under the Endangered Species Act, and Essential Fish Habitat (EFH) pursuant to the Magnuson-Stevens Act. Determinations of "no effect" or

"not likely to adversely affect" were made. The project would not be expected to impact EFH.

- **Hydraulic Project Approval (HPA)**
  - An HPA was issued by the Washington Department of Fish & Wildlife (WDFW).
- **USACE Section 401 and 408**
  - Some of the activities in this IAWP will occur below mean high water, so the need for a Section 10/404 permit is also anticipated. The USACE anticipates issuing coverage under the Nationwide Permit 38 program. The State of Washington has already certified activities covered under this program, so individual Section 401 Water Quality Certification review is not required. Federal permitting will include Section 106 consultation between the USACE and State Historic Preservation Officer (SHPO) under the National Historic Preservation Act. Because of the presence of the USACE easement and structure in the vicinity of the project, the Port initiated consultation under the USACE's Section 408 program. A Memorandum for the Record (MFR) was issued on April 11, 2019 stating that the project would not warrant Section 408 review.
- **Shoreline Management Act (SMA; Chapter 90.58 RCW and WAC 173-26-201)**
  - This regulation establishes permitting and other requirements for substantial development occurring within waters of the US or within 200 ft of a shoreline and requires that the activities in coastal zones be consistent with local regulations. MTCA exempts cleanup projects being conducted under an enforceable order or consent decree from the requirement of obtaining the shoreline permit; however, the cleanup must be conducted in accordance with the substantive requirements of the regulation. The permitting package was also provided to the City of Everett and it concluded that it would meet substantive requirements of the Shoreline Master Program and is, therefore, exempt from permit issuance.

3.2 Contractor Mobilization and Site Preparation

The Port may elect to conduct both the Shoreline Restoration Area and Low Area portions of the interim action under one bidding process or may solicit separate bids from construction contractors and implement the cleanup work in two phases. The work in the Low Area and the Shoreline Restoration Area are unique in design, schedule requirements, and only the Shoreline Restoration work will require in-water work. The Low Area Remediation is relatively straightforward in concept and design and can be accomplished from the uplands without any work occurring in marine surface water. The Shoreline Restoration is more complex in nature, based on the need for in-water work, precise shoreline regrading requirements to support the successful establishment of mid-shore wetlands, upper-shore grasses and shrubs, and a riparian zone along the shoreline crest, with invasive species removal and approximately 20,000 new plantings. This work is planned to begin later in the fall of 2020 and will be conducted during the permitted window for working in-water that extends from July to February. For both phases of work, mobilization and Site preparation will generally include the following elements:

1. Establish and maintain Site control and security using existing security fencing, lockable gates, and informational signage.
2. Setup a temporary restroom for Site workers.
3. Establish temporary erosion and sediment control (TESC) measures prior to conducting earthwork activities and will be maintained and adjusted in accordance with changing conditions or activities to remain effective throughout the project.
4. Implement traffic controls as necessary to maintain roadway access to prevent disruption to nearby operations.
5. Setup a wheel wash system and decontamination area or other measures to ensure vehicles exiting from the fenced area will not cause soil to be tracked offsite during construction.

3.3 Removal Activities

Removal activities will include removing vegetation (grubbing), debris (wood waste including but not limited to dimensional lumber and sawdust, rip-rap, bulkheads, abandoned marine infrastructure, and miscellaneous debris laying on the sediment surface near-shore), and soil removal. As presented in the IAWP, soil removal will directly reduce the quantity of contamination at the Site and is anticipated to eliminate all known pathways for direct contact exposure to contamination, addressing RAO-1 and RAO-2 (LAI 2020). Activities in the Shoreline Restoration Area are described in detail in the *Restoration Design Criteria, Bay Wood Redevelopment and Shoreline Interim Cleanup and Restoration* prepared by Shannon & Wilson, Inc, which is included as Appendix E.

Excavation boundaries shown on Figures 3 and 4 will be identified in the field using survey equipment per the project plans to guide the removal activities. The soil excavation will be conducted with standard construction equipment (e.g., track-mounted excavators and front-end loaders), and it is anticipated that soil to be disposed of offsite will be loaded directly into dump trucks or intermodal containers. A bulk of the soil-loading activity is expected to occur in the "contractor staging area" shown on Figure 4; any trucking within the Site will be limited to landward of the "reusable fill stockpile area." In the event that direct-loading cannot be conducted, excavated material will be temporarily stockpiled on Site and, if stockpiles are placed on clean soil surfaces, the surface will be adequately protected to prevent surface contamination (e.g., placed on plastic sheeting and covered with plastic sheeting held down with rope-connected sandbags or tires, if necessary). Soil to remain on Site as reusable fill and placed in the "reusable fill stockpile area" will be transported using dump trucks or front-end loaders. Further distinction between soil to be removed from the Site and reusable fill is described in Section 4.1.

Removal activities will be observed by Port representatives to ensure the planned removal is achieved and to observe and field screen both the removed and remaining soil. The exposed soils or sediments will be field screened for evidence of potential contamination (e.g., VOCs, sheen, visual, and olfactory observations) and deposits of wood waste (e.g., sawdust, dimensional lumber) by Port representatives. If evidence of contamination or wood waste deposits is observed at the lowest

elevation of planned excavation in the Shoreline Restoration Area, over-excavation may be conducted based on consultation between the Port and Ecology. Based on this consultation, it is possible that up to an additional 1 ft of soil may be excavated prior to collection of confirmation samples. Also, if unanticipated conditions are observed, the Port and Ecology will be notified. In the event that potential cultural resources are observed, personnel will follow procedures provided in the Inadvertent Discovery Plan (IDP) prepared for intrusive activities at the Site.

The construction contractor will survey both horizontal and vertical limits of material removal to provide data for compliance monitoring and for documentation of final conditions before placement of fill. Compliance monitoring will also be completed by the construction contractor and/or Port representatives in accordance with the CMP and will consist of protection monitoring throughout the construction process (protection of human health and the environment) and performance monitoring after completion of removal activities (verifying the physical limits of the excavation is attained and collection of confirmation soil samples).

Where removal for Shoreline Restoration work overlaps with Low Area excavation work, the cleanup will be sequenced so that contaminated soil will be excavated and removed from the Site prior to proceeding with grading along the shoreline. Work in this area will also be conducted under the direction of Port representatives to observe conditions in the field and direct the contractor where needed to ensure compliance with this EDR and the project plans. Construction sequencing, which is detailed in Sheet 25 of the project plans (Appendix C), is summarized as follows:

1) Excavate the Low Area to the planned depths (1, 2, or 3 ft bgs depending on the area). Excavation in the western portion of the Low Area, where Shoreline Restoration grading would intercept the fill layer to be placed over the Low Area, will be deepened as needed so that the final Low Area fill soil surface is below the maximum excavation depth for Shoreline Restoration grading; this detail is illustrated with a deep excavation depth adjacent to the existing timber bulkhead on the conceptual geologic profile alignment B-B[1] on Sheet 25 of the project plans.
2) Install geotextile and steel mesh stabilization/ecological barrier at the base of the Low Area excavation.
3) Add a minimum of 2 ft of fill over the stabilization/ecological barrier to the planned final elevations, which are graded to result in a final surface similar to the existing surface, but with minor adjustments prevent stormwater runoff toward the roadway to the east; the final elevations are shown on Sheet 24 of the project plans.
4) Remove the existing timber bulkhead at the western end of the low area and proceed with Shoreline Restoration construction activities. Shoreline Restoration plans are presented in Sheets 1 through 23 of the project plans.

As referenced above, details regarding sequencing in these overlap areas are provided in the project plans included in Sheets 24 and 25 of the project plans, which are included in Appendix C. Additionally, the full project plan set is included in Appendix C.

3.4 Backfilling, Capping, and Restoration Activities

After removal is complete in the Low Area, a surface containment cap will be constructed to further reduce the potential for direct-contact exposure or contaminant migration. The cap serves as a secondary cleanup contingency because the removal is anticipated to achieve RAO-1 and RAO-2. However, based on the simplicity of implementation and low-incremental additional cost for this protective measure, the Port will undertake this action so it could contain trace levels of contamination. This surface cap will consist of a geotextile and steel mesh layer that will serve as both a soil stabilization/ecological barrier and as a physical indication of excavation limits in the event of future earthwork in the vicinity. In areas where this excavation extends to adjacent property boundaries and a barrier wall does not currently exist (e.g., south east boundary with the W&W Investment parcel), this geotextile/mesh barrier will also be placed along excavation sidewalls. Following final grading, the soil will be covered with straw for stormwater runoff protection (see Sheet 24 of the project plans).

After removal activities in the Shoreline Restoration Area, the shoreline slopes will be graded and dressed to support habitat restoration. This will include application of soil to provide shoreline stability, topsoil to support native plantings, placement and anchoring of large woody debris. The slopes have been designed to range between approximately 4 ft horizontal to 1 ft vertical (4H:1V) to approximately 10H:1V, and a 2 percent grade in the riparian area above and the toe below new shoreline slopes; these slopes are illustrated in detail in the cross-sections included in Sheets 14 through 17 of the project plans (Appendix C). The restoration activities will achieve RAO-3.

4.0 ENGINEERING BASIS FOR DESIGN—MTCA REQUIREMENTS

The following sections present the engineering basis and design rationale for the interim action. The discussion below provides typical design criteria, assumptions used in developing the preliminary design details, MTCA-required design considerations, and the rationale for how and why the interim action will achieve the RAOs and other MTCA requirements.

4.1 General Design Criteria

The general design criteria for this action will include the following:

- As described below and laid out in the project Contract documents, there are various written plans that the contractor will need to submit and receive Port and Agency approval on prior to beginning work on the Site. These plans include, but are not limited to, a Materials and Waste Management Plan, Demolition Plan, Soil Handling Plan, Disposal Records, and Import Material Analytical.
- **Removal of Debris and Vegetation**
  - Removal and offsite disposal of debris and vegetation is detailed in the soil management plan and construction plans (Appendices A, B, and C).
- **Soil Excavation and Backfilling Plans**
  - All excavation (Shoreline Restoration and Low Area Remediation) will be conducted from the uplands using typical excavation equipment.
  - Backfilling requirements for the Shoreline Restoration are complex and detailed in the construction plans (Appendices B and C). Contractor will be required to provide analytical data representative of proposed import for comparison to Site cleanup levels, and fill sources will be subject to approval by the Port.
  - Backfilling in the Low Area will create a surface containment cap to prevent future direct-contact exposures or soil migration. A steel mesh/geotextile combination layer will be placed at the bottom surface of the excavation, and a 2-ft thick layer of backfill material will be placed and compacted above the steel mesh/geotextile layer.
    - A steel mesh layer as an ecological barrier, consisting of a PVC-coated steel fencing with 1-inch openings, will be placed over the geotextile stabilization layer to prevent burrowing animals from accessing subgrade soil after completing construction. Product is manufactured by Critterfence, or other as approved by the Port and Ecology.
    - A geotextile layer for soil stabilization and a physical barrier for terrestrial receptors, conforming to Table 3 of Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction 2020 Section 9-33.2(1), will be placed at the base of the excavation, prior to backfill. Geotextile placement will be in accordance with WSDOT Standard Specifications for Road, Bridge, and Municipal Construction 2020 Section 2-12.

        - The excavation will be backfilled generally in accordance with WSDOT Standard Specifications for Road, Bridge, and Municipal Construction 2020 Section 2-09.3(1)E, with reusable fill generated during Shoreline Restoration. However, if any fill is imported for this purpose, the contractor will be required to provide analytical data representative of proposed import for comparison to Site cleanup levels, and fill sources will be subject to approval by the Port.

- **Protection of Adjacent Structures**
    - Structures adjacent to areas of soil excavation and bulkhead demolition will be protected during cleanup activities.
        - Excavation in the Low Area will be relatively shallow (between 1 and 3 ft bgs) and is not expected to encounter the base of the retaining wall along the southern boundary of the Low Area. If the base of this retaining wall is encountered, the excavation will be cut back with a 1:1 slope to the final excavation depth to avoid compromising structural integrity of the wall.
        - Removal of this timber bulkhead will be conducted under direction of the Port in a manner to protect adjacent structures, and will follow a demolition plan prepared in advance of this work. This demolition plan will be prepared by the construction contractor and will be provided to Ecology for review and approval prior to commencing these removal activities.
- **TESC Measures**
    - TESC measures are detailed in the construction plans (Appendices B and C).
- **Management Plan for Excavated Soils**
    - Several soil types will be encountered during the Shoreline Restoration as detailed in the associated soil management plan (Appendix A).
    - The various soil types and general disposition for soil and debris removed during the Shoreline Restoration include:
        - Surface layer (dispose of offsite)
        - Reusable fill (dike construction material; reuse onsite)
        - Wood waste landward of special waste handling boundary, along most of the alignment (dispose of offsite without restriction)
        - Wood waste waterward of special waste handling boundary, along most of the alignment (dispose of offsite—Subtitle D)
        - Soil with high wood content along southern portion of shoreline (dispose of offsite—Subtitle D; see Figure 4)
        - Marine structure demolition (dispose of offsite without restriction)
        - Marine structure demolition with creosote (dispose of offsite—Subtitle D)
        - Opportunistic debris removal (dispose of offsite—Subtitle D)
- **Wetland Restoration and Creation, Vegetation Planting, and Buffer Enhancements**

– Detailed plans for these activities are presented in Appendix B.

4.2 MTCA-Required Design Considerations

This section describes Site-specific design considerations required in WAC 173-340-400(4) pertinent to the design, construction, and operation of the action. Specifically, this section addresses the relationship between the proposed interim action and the Site geographic features, subsurface conditions, existing structures, and current and future Site operations.

4.2.1 Facility Characteristics Affecting the Action

Much of the Site surface in the vicinity of the shoreline where restoration will occur, and in the low area where contaminated soil will be excavated, is currently overgrown with invasive plant species including Himalayan blackberry and scotch broom. The shoreline is currently littered with remnants of marine industrial structures, timber bulkheads, piers, rip-rap, asphalt and concrete debris, steel pipe log skids, trash, tires, and wood debris. These materials will be removed from the low area and the shoreline. Some of this debris observed in the marine environment will be removed if it is readily visible resting above the sediment surface and reasonably accessible/removable from the uplands using an excavator during low tide.

Each of the existing marine structures, including timber bulkheads and steel log skids in the interim action cleanup area, will be removed and the shoreline slope regraded in those areas to be less steep. Removal of these structures will be completed in coordination with grading activities in the shoreline area, and will be subject to the same sequencing and TESC requirements, which include removing the structures and backfilling the resulting voids in the dry and completing this demolition and backfilling within the same low tide so as to prevent disturbed areas from being inundated before completion. A marine structure (timber bulkhead) will also be removed where Shoreline Restoration work overlaps with Low Area excavation; consistent with other work where the two areas overlap, removal of this bulkhead will be conducted under direction of the Port. Specifically, an engineer or geologist of record will be on-Site during this work and will provide support to the contractor with decisions regarding excavation and backfilling in areas of aged infrastructure. Further details on the proposed demolition and grading of slopes are shown on the project plans (Appendix C).

A low retaining wall is present along the south boundary of the low area, along the property line with the adjacent W&W Investment parcel. Excavation in the Low Area will be relatively shallow (between 1 and 3 ft bgs) and is not expected to encounter the base of this retaining wall. As mentioned in Section 4.1, if the base of this retaining wall is encountered, the excavation will be cut back with a 1:1 slope to the final excavation depth to avoid compromising structural integrity of the wall.

A riprap and pile “training wall” is also present along the northern shoreline, but this structure is outside the scope of this project.

4.2.2 Controls to Prevent Hazardous Material Releases

The following controls will be implemented to prevent releases of hazardous materials during excavation and handling of contaminated soils:

- Installing and maintaining TESC measures and implementing best management practices (BMPs). These controls and BMPs include wetting of soil (if necessary) during earthwork activities to control dust; silt fencing to control sediment run-off in stormwater; tire washing of haul trucks to prevent tracking of soil to neighboring roads; applying crushed rock over exposed soil to create a stable working surface (if necessary); and managing stormwater drainage away from working areas, away from surface waters, and toward suitable infiltration areas.
- Properly covering and securing loads during hauling operations.
- Conducting shoreline earthwork activities work during low tide.

4.2.3 Flooding

Along the shoreline, the Site is subject to ocean tide fluctuations that are below the finished grades of the Site. Flooding is, therefore, unlikely to impact the Site unless an extreme storm event impacts the Site. Based on the proposed depth of excavation, it is anticipated that stormwater runoff from even high-intensity events during the action will be completely contained.

4.2.4 Seismic Activity

The Site is located in a seismically active zone. However, the proposed excavations are generally shallow, should not require shoring, and are not anticipated to be a hazard in the event of an earthquake. The potential for hazard is further lowered by the Shoreline Restoration work creating slopes that are less steep.

4.2.5 Temperature Extremes and Physical Hazards

The interim action consists of excavation, backfilling, and planting activities, in the generally mild climate of the Pacific Northwest. Although no extreme temperatures are expected, higher temperatures (i.e., above 80 degrees Fahrenheit [°F]) or cold temperatures (i.e., below 35°F) could affect the health and safety of the construction workers. Other hazards to mitigate include working near water; slips, trips, and falls; and working with or near earthmoving equipment such as excavators, loaders, and haul-trucks. These hazards will be mitigated through management of an organized worksite with controlled traffic and equipment routes, and through other project-specific actions that will be specified in the contractor's Site-specific health and safety plan (HASP). This plan will be a required element of the construction project. In addition to the contractor's health and safety program, Site visits for implementing the compliance monitoring plan will be conducted following safety procedures presented in the HASP provided in Appendix F.

4.2.6 Existing and Future Site Uses

The Site is currently vacant and unused. After the interim action, future Site use is anticipated to change, as the Site will be developed to allow for construction of commercial buildings, parking areas, limited public access, and the utilities associated with development. The development currently proposed for the Site includes a distribution, manufacturing, and office facility with associated infrastructure. Approximately 12.8 acres of the 38.63-acre Site is developable or landward of the ordinary high water mark (OHWM) and associated buffer. Reusable fill generated during Shoreline Restoration grading will be stockpiled on the Site; this fill will be placed landward of the riparian zone boundary and slopes of these stockpiles will be limited to 3H:1V slopes.

4.2.7 Local Planning and Development Issues

The current zoning for the project area is a combination of Heavy Manufacturing (M-2) and Marine Services (M-S) with the adjacent tidelands zoned as Aquatic per the City Planning and Community Development geographic information system (GIS) map dated January 6, 2017. The City Shoreline Master Program published in July 2016 (City of Everett 2016) designates the upland shorelines of the Site as Urban Industrial. The tidelands area southwest of the Site is designated as Aquatic Conservancy. The tidelands area north of the Site is designated as Aquatic. The purposes of these designations are similar and are to protect the unique characteristics and resources of the aquatic environment by managing use activities to prioritize preservation and restoration of natural resources, navigation, recreation, and commerce, by assuring compatibility between upland and aquatic uses. There are no known local development issues that would prevent the proposed action.

4.2.8 Public Access

The Site will generally be closed to public access during the cleanup construction period. Contractor activity will ensure that the cleanup activities can be staged and implemented in a manner that stages equipment and hauling trucks without blocking roadways. No noticeable impacts are anticipated for local businesses, and the public will be kept safe distances from areas of excavation.

The development currently proposed on the Site, which will be conducted after and separately from the Interim Action, will consist of a single building with a footprint of approximately 265,000 square feet. The building will be primarily used for distribution and manufacturing, and less than a quarter of the space in the building will be for office use. Surface parking will surround the building on all sides. The development will be responsible for establishing a public gravel (or other material type) nature trail that will be built within the north shore shoreline buffer to enhance public access and recreation in accordance with the City of Everett's Shoreline Public Access Plan. The current proposed nature trail location is included on the project plans in Appendix C. This nature trail will be 8-ft wide and Americans with Disabilities Act (ADA) accessible. Clean fill material will be imported to support the development with the intent to raise elevation by 3–5 ft.

4.2.9 Future Sea Level Rise Considerations

Site cleanup activities will not significantly change elevation of the Site, and the shoreline will be graded shallower slope (between 4H:1V to 10H:1V). The shoreline regrading will somewhat improve Site resilience to rises in marine sea level by providing a gentler slope, engineered to resist erosion. The shoreline crest elevation will be approximately 13–14 ft MLLW, which is anticipated to be sufficiently high to prevent run-up of marine water to the upland portion of the Site. Sea level rise mitigation in excess of these improvements would require consideration outside the scope of this EDR. Sea level rise is not a consideration for achieving cleanup standards.

4.2.10 Contingency Beach and Shellfish Bed Closure

No in-water work will be conducted as part of the interim action that would impact beaches or shellfish beds. No closures are in consideration.

4.3 Efficacy of the Interim Action

Excavation of contaminated soil from the Low Area is a rapid and efficient method to immediately reduce Site contamination and risks of exposure or migration. Soil excavation will reduce the risks posed to human health and the environment by removing potential exposure pathways to human and environmental receptors. Surface containment will be constructed to prevent exposure to residual contamination that could potentially remain in-place after the removal; although it is anticipated that the removal will result in attainment of cleanup standards.

Efficacy of the interim action related to chemical contamination will be assessed through compliance monitoring as detailed in the CMP—the results of which will be carried forward and considered in a comprehensive manner when completing Site cleanup. Additional monitoring requirements for the Shoreline Restoration are presented in Appendix B.

5.0 GENERAL CRITERIA AND CONSTRUCTION REQUIREMENTS

The following section provides a description of the construction documents that will be prepared for the interim action, the quality assurance and control procedures that will be implemented to monitor and document the implementation of the interim action, the procedures that will be implemented to prevent releases of hazardous substances during construction, and the health and safety requirements that will be applied during implementation of the interim action.

5.1 Construction Drawings and Specifications

Details of the interim action are provided in the design construction plans in Appendix C of this EDR. The construction plans are prepared in conformance with currently accepted engineering practices and WAC 173-340-400 (4)(b), and provide:

- A general description of the project that details the interim action, including work to be done, a summary of Site environmental conditions, a summary of design criteria, an existing facility map, adequate Site surveying, and a copy of permits and approvals
- Detailed plans and specifications necessary for construction, construction materials storage, construction waste storage and management, utility locations within cleanup areas, surface drainage, materials, backfill, and change in grades
- A description of construction impact controls (including dust, stormwater, traffic, and noise)
- Construction documentation including specific quality control tests such as soil density/in-place compaction, moisture content, material gradation, subgrade strength, depth measurements, frequency of tests, and acceptable results.

5.2 Construction Quality Control/Quality Assurance

Day-to-day construction quality control (CQC) will be performed by the contractor, consistent with the requirements of the construction contract specifications for the interim action. The Port will have a construction quality assurance (CQA) representative on Site during construction to confirm that the work is being performed in accordance with the intent of the plans and specifications. CQC will include the necessary elements to ensure that the provisions of the contaminated materials handling plan are being followed. In accordance with WAC 173 340 400(7)(b), all aspects of construction will be performed under the supervision of a professional engineer registered in the State of Washington or a qualified technician under the direct supervision of the engineer.

The Port CQA, with assistance from project engineers, will monitor:

- Adequacy of construction submittals
- General construction methods and equipment
- Field engineering and survey methods
- Fill gradation, quality, and consistency
- Fill placement and compaction

- Suitability, quality, and installation of structural elements
- Stormwater runoff and erosion control measures
- Decontamination procedures
- Traffic controls
- Contractor quality control methods and documentation
- As-built dimensions of completed work.

Specific quantitative measures and performance requirements have been established for each of the above-noted CQC/CQA parameters and will be incorporated into the construction specifications and the CQA plan for the interim action.

5.3 Control of Hazardous Materials, Accidental Discharges, and Stormwater

Procedures to control and, as appropriate, respond to spills from construction equipment and fueling operations are required elements of the contractor's plans. During Site cleanup, the materials most likely to be spilled include equipment fuel and oil, or contaminated soil. Additionally, stormwater runoff has the potential to convey water and soil off the Site. The contractor will prepare construction, equipment decontamination, and stormwater management plans in accordance with project- and Site-specific requirements set forth in the plans and specifications that adequately address environmental protection measures. The contractor will be required to perform work involving the handling of the above-noted materials in accordance with these plans. These plans will be subject to review and comment by the Port's CQA representative prior to initiating the work.

The contractor's project construction plan will describe the overall sequence and construction methods that will be used to complete the cleanup action. The contractor's stormwater management plan will provide construction details and operation procedures for collection, conveyance, and treatment and disposal of stormwater runoff, and for erosion and sediment control measures, as required to ensure that materials are properly managed and maintained within the Site boundary. This plan will also address procedures for handling and storage of hazardous materials used for construction purposes (e.g., fuel, oil, etc.), and for prevention and, as appropriate, response to hazardous material spills or accidental discharges.

5.4 Health and Safety

The following design features will be implemented as part of the cleanup action to ensure the safety of Site workers and the public:

- A HASP will also be prepared by the contractor for use by its workers before beginning work on the Site. The contractor's HASP will be required to be at least as protective as the HASP provided in Appendix F and meet requirements of WAC 173-340 810; the Occupational Safety and Health Act of 1970 (29 US Code. Sec. 651 et seq.); and the Washington Industrial Safety

and Health Act (Chapters 296-24, 296-62, and 296-155 WAC). All workers at the Site will be required to read and sign the applicable HASP. A health and safety meeting will be conducted with the contractor, subcontractors, construction testing personnel, and appropriate Port employees before starting work at the Site.

- Load Covering—All loads of excavated soil will be properly secured and covered to prevent release and exposure of contaminated materials during hauling operations.
- Excavation Safety—Any areas of the excavation that exceed 4 ft in depth will be sloped or benched to reduce the potential for sidewall collapse.

5.5 Compliance Monitoring

Compliance monitoring is a required element of any MTCA cleanup action. Compliance monitoring will be conducted in accordance with WAC 173-340-410 to confirm that cleanup standards have been achieved and to confirm the long-term effectiveness of cleanup actions at the Site. Compliance monitoring in the Shoreline Restoration Area will include field screening and collection of a minimum of seven compliance monitoring samples for analysis and comparison to Sediment Management Standards cleanup standards for contaminants specified in the CMP. Compliance monitoring in the low area excavation will consist of field screening and collection of six discrete bottom samples and five sidewall samples. If excavation beneath TP7 and TP8 contacts a pavement layer, no bottom samples will be collected from that area.

Detailed monitoring requirements are presented in a CMP under separate cover, as an attachment to the IAWP (LAI 2020). Additional monitoring requirements related to the Shoreline Restoration are provided in Appendix B.

5.6 Construction Completion Report

Upon completion of finish grading activities, the Port will prepare and submit a construction completion report for the upland cleanup in accordance with WAC 173-400 (6)(b). The construction completion report will include:

- A statement that the construction has been performed under the oversight of a State of Washington-licensed professional engineer or by qualified technicians under their direct supervision, and in substantial compliance with the plans and specifications.
- A narrative describing the aspects of the work performed including construction techniques and materials used, items installed, and tests and measurements performed. The narrative will be supplemented with daily reports and photographs in the appendices.
- Results of the compliance monitoring documenting the contaminated soil removal efforts, and offsite disposal records.
- As-built drawings documenting the extent of excavation and grading performed at the Site, including the following details:
  - Existing Site grades and locations and elevations of pertinent features

- Excavation elevations
- Backfill material types and grades
- Vegetation plantings
- Field changes of dimensions and details.

6.0 OPERATION AND MAINTENANCE OF THE INTERIM ACTION

It is anticipated that the cleanup action will achieve the cleanup standards and that institutional controls will not be required following completion of the interim action.

If the restoration time frame is longer than estimated, institutional controls will be implemented to provide the following protections until the Site is restored:

- Require maintenance of the Site's containment systems
- Ensure the proper management of excavated soil and appropriate worker safety associated with any future intrusive activities through implementation of a soil and groundwater management plan until cleanup standards are achieved in accordance with WAC 173-340-440.

These issues will be addressed during completion of Site cleanup. If the interim action requires more time than currently estimated, institutional controls, potentially including a restrictive covenant, will be implemented to ensure that the integrity of the capping system and other cleanup equipment is maintained to prevent contact with contaminated media and protect the integrity of the cleanup action until the Site cleanup standards are achieved.

In addition, a Maintenance and Monitoring Plan (prepared by Shannon & Wilson, Inc.), which is included in the *Bay Wood Shoreline Interim Cleanup and Restoration Plan*, describes long-term performance goals, a monitoring and maintenance schedule, and contingency actions after completion of the interim action.

Planned development at the Site currently includes installation of a stormwater outfall that could extend below the geotextile/steel mesh stabilization and ecological barrier installed in the Low Area. Though, based on soil characterization data collected in the vicinity of the planned stormwater outfall, residual contamination is not expected to be left in place in this area, and the geotextile/steel mesh stabilization layer will be present in this area. Following implementation of the Interim Action, and prior to Site development, a soil and groundwater management plan will be prepared for Ecology's review. This plan will present all analytical data of soil left in-place following the Interim Action and will guide development activities that may encounter residual contamination and/or the stabilization and ecological barrier. Exposed soil will be covered with straw following grading of the stabilization/ecological barrier to provide stormwater runoff protection until Site development commences, which is expected to be in 2021. However, the barrier was designed to provide basic runoff protection by minimizing steep slopes and ponding, and future development is not a requirement for long-term functionality.

7.0 USE OF THIS REPORT

This EDR has been prepared for the exclusive use of the Port of Everett and the Washington State Department of Ecology for specific application to the planned remedial action at the Bay Wood Products cleanup site in Everett, Washington. Any reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

8.0 REFERENCES

Anchor QEA and SLR. 2011. Draft Remedial Investigation and Feasibility Study, Former Bay Wood Products Site, Everett, Washington. Anchor QEA and SLR International Corporation. April.

City of Everett. 2016. Shoreline Master Program. Effective July 11.

Ecology. 2004. Toxics Cleanup Program Policy 130A. Coordination of State Environmental Policy Act and Model Toxics Control Act. Washington State Department of Ecology. July 28. https://fortress.wa.gov/ecy/publications/documents/0409101.pdf.

GeoEngineers. 2018. DRAFT Remedial Investigation and Feasibility Study Addendum, Bay Wood Products Site, Everett, Washington, Agreed Order No. DE-5490. September 26.

LAI. 2020. Draft Final Interim Action Work Plan, Bay Wood Products Cleanup Site, Everett, Washington. Landau Associates, Inc. June 19.

SLR. 2018. Soil Sampling Summary - Port of Everett Property, North Truck Dock Stormwater Sump Investigation - Source Control Evaluation Work Plan, Former E.A. Nord Facility, Everett, Washington. SLR International Corporation. August 16.

N

0 0.5 1

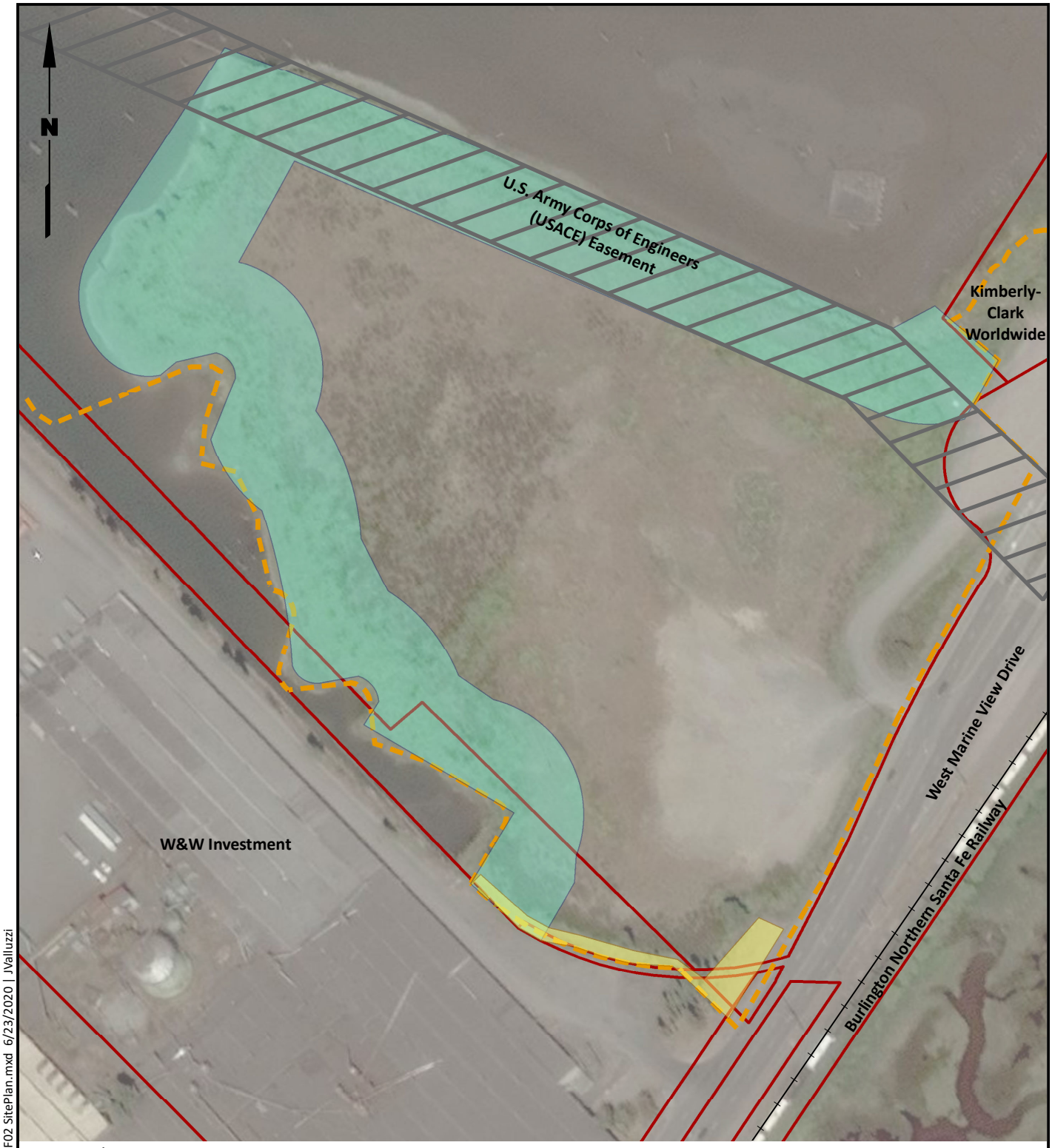
Miles

Data Source: Esri 2012

G:\Projects\147\053\010\013\F01 VicMap.mxd 4/24/2020

LANDAU ASSOCIATES

Baywood Products Engineering Design Report Everett, Washington	**Vicinity Map**	Figure 1



Legend

- Site Boundary (RI/FS 2018)
- Parcel Boundary
- Low Area
- Shoreline Restoration Area

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 170 340

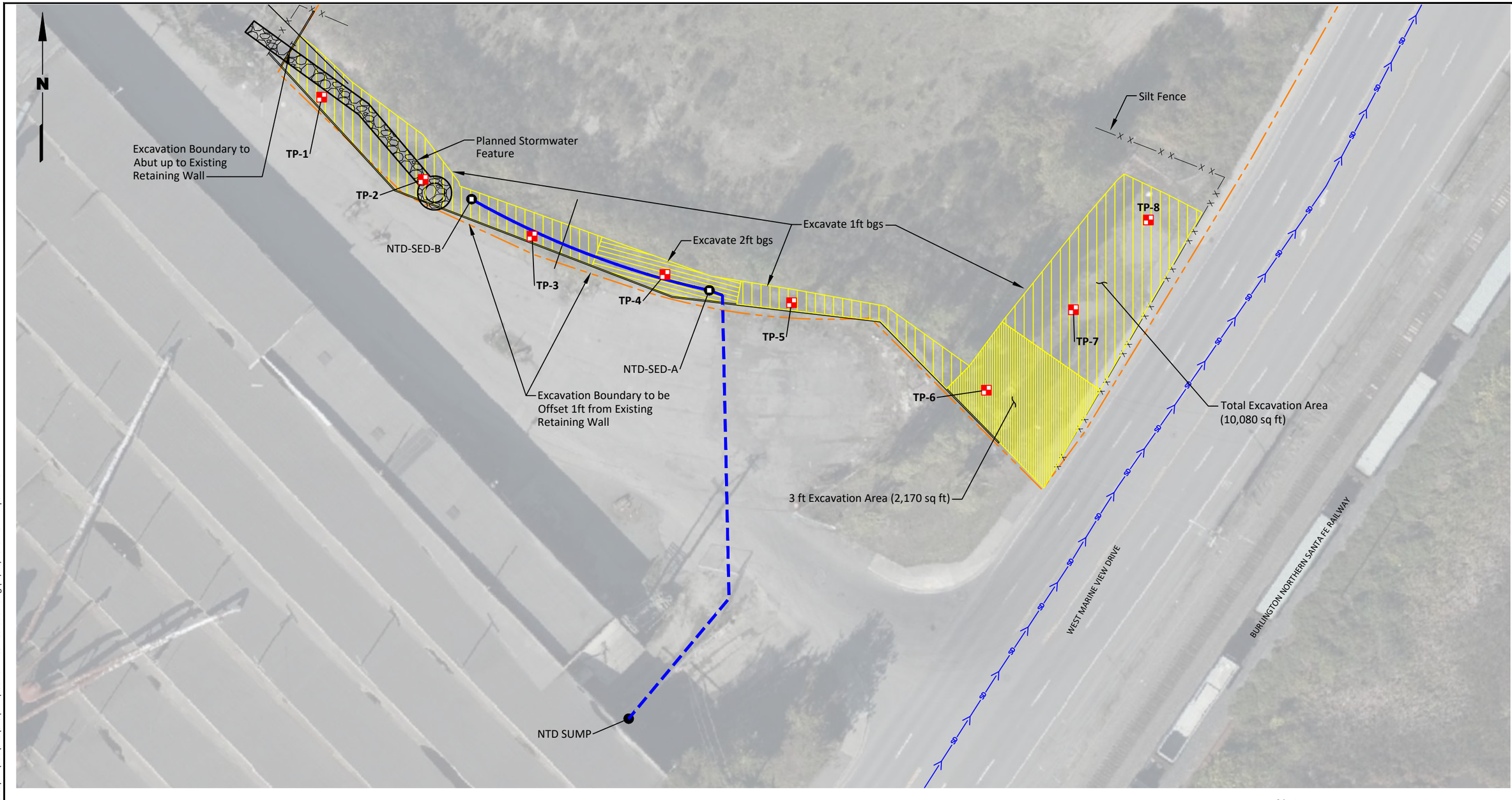
Scale in Feet

Data Source: Shannon & Wilson, Inc.; 2019; Geoengineers, 2018
Base Map Source: ESRI World Imagery, 2020

G:\Projects\147\053\010\016\EDR\F02 SitePlan.mxd 6/23/2020 | JValluzzi

LANDAU ASSOCIATES

Baywood Products Engineering Design Report Everett, Washington	**Site Plan**	Figure 2



Legend

- Test Pit Location
- Soil Sample Location (SLR 2018)
- Approximate Excavation Boundaries (To Be Further Delineated in the Engineering Design Report)
- City of Everett Stormdrain
- Aboveground Stormwater Conveyance
- Underground Stormwater Conveyance
- Silt Fence
- Site Boundary

0 40 80

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: GeoEngineers 2018; Metron 2018; SLR 2018; ©Bing 2019

LANDAU ASSOCIATES

Baywood Products Engineering Design Report Everett, Washington	**EDR - Low Area Excavation**	Figure 3

0 100 200

Scale in Feet

N

LEGEND

- MAJOR CONTOUR (5')
- MINOR CONTOUR (1')
- SPECIAL MATERIAL HANDLING BOUNDARY
- RIPARIAN BUFFER LIMIT
- ORDINARY HIGH WATER (OHW)
- WETLAND BOUNDARY
- EXTREME TIDE (8.6')
- MHHW (5.4')
- TOP OF BANK
- PROPERTY LINE
- EXISTING MATERIAL
- FENCE
- OVERHEAD POWER UTILITY
- EDGE OF PAVEMENT
- MINOR DESIGN CONTOUR (1')
- MAJOR DESIGN CONTOUR (5')
- GRADING LIMITS
- MATERIAL REMOVAL OUTLINE
- OPPORTUNISTIC DEBRIS REMOVAL
- SPECIAL WASTE HANDLING BOUNDARY
- RIPARIAN BUFFER LIMIT
- CITY OF EVERETT STORMWATER
- REUSABLE FILL STOCKPILE AREA
- OPPORTUNISTIC DEBRIS REMOVAL AREA
- SPECIAL WASTE HANDLING AREA
- 1' EXCAVATION AREA

U.S. ARMY CORPS OF ENGINEERS EASEMENT AREA

OHW LINE

PEDESTRIAN TRAIL

PRESERVE WETLAND BENCH. BEGIN EXCAVATION AT LANDWARD EDGE OF WETLAND

CONSTRUCTION ZONE BOUNDARY

SILT FENCE

REUSABLE FILL STOCKPILE AREA

OPPORTUNISTIC DEBRIS REMOVAL AS DIRECTED BY PORT

SPECIAL WASTE HANDLING SOUTH AND WEST OF BOUNDARY

DEMOLISH MARINE STRUCTURE

OPPORTUNISTIC DEBRIS REMOVAL AS DIRECTED BY PORT

PROPERTY LINE

CONTRACTOR STAGING AREA

LOW AREA WORK

SOIL WITH HIGH WOOD CONTENT ALONG SOUTHERN PORTION OF SHORELINE (DISPOSE OF OFFSITE - SUBTITLE D)

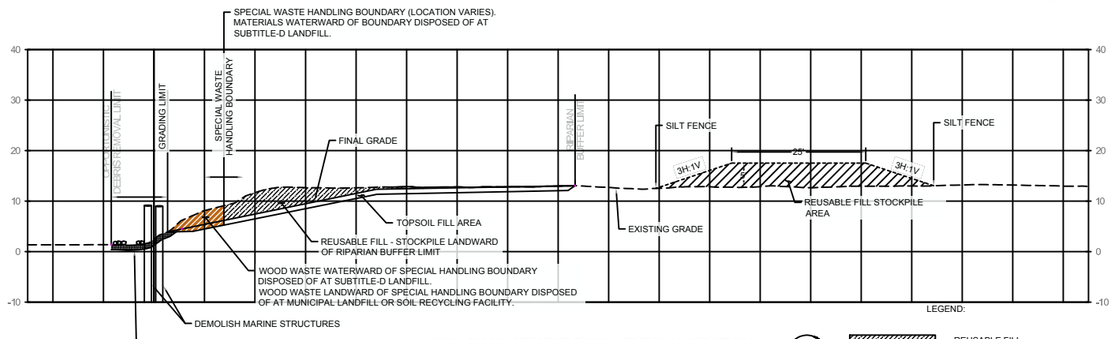
B 12

A 12

ZONE A

ZONE B

ZONE C



SOIL MANAGEMENT PLAN - TYPICAL SECTION

Source: Shannon & Wilson, Shoreline Restoration Plan, 90% Design Grading Plan, June 2020

LANDAU ASSOCIATES

Baywood Products Engineering Design Report Everett, Washington	**Summary of EDR Shoreline Restoration**	Figure 4

Table 1
Shoreline Restoration Area—Soil Analytical Results
Bay Wood Products Cleanup Site
Everett, Washington

Analyte	RI/FS soil screening level (a)	Field Sample ID, Laboratory SDG, Sample Date									
		TP-1 (2.5-11.0) EV19040167 4/23/2019	TP-1 (Shoreline) EV19040167 4/23/2019	TP-2-20 (TOE) EV20030117 3/19/2020	TP-3 (Shoreline) EV19040167 4/23/2019	TP-5-20 EV20030117 3/19/2020	TP-6-20 (3-4) EV20030117 3/19/2020	TP-7-20 (3-6) EV20030117 3/19/2020	TP-9-20 (4) EV20030118 3/19/2020	TP-10-20 (0-6) EV20030118 3/19/2020	Composite TP-1, 6, 7 EV19040167 4/23/2019
Total Petroleum Hydrocarbons (mg/kg; NWTPH-Dx)											
Diesel-Range Organics	2,000	--	--	180 U	--	**200**	**81**	**65**	**50**	25 U	25 U
Oil-Range Organics	2,000	--	--	**1,100**	--	**710**	**2,000**	**1,100**	**180**	**82**	50 U
Total Metals (mg/kg; SW-846 6020/7471)											
Arsenic	NL	--	**1.6**	**1.8**	**3.8**	**4.1**	**4.6**	**4.2**	**16**	**5.5**	**4.1**
Barium	NL	--	**40**	--	**41**	--	--	--	--	--	**61**
Cadmium	NL	--	0.10 U	0.10 U	**0.21**	**0.14**	**0.26**	0.13	0.10 U	0.10 U	0.10 U
Chromium, Total	NL	--	**10**	--	**37**	--	--	--	--	--	**34**
Copper	NL	--	--	**12**	--	**55**	**37**	**60**	**74**	**20**	--
Lead	NL	--	**4.1**	--	**5.2**	--	--	--	--	--	**5.1**
Nickel	NL	--	--	**6.7**	--	**15**	**22**	**26**	**37**	**37**	--
Selenium	NL	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Silver	NL	--	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11	0.10 U	0.10 U
Thallium	NL	--	--	0.89 U	--	0.82 U	0.80 U	0.91 U	1.0 U	0.37 U	--
Mercury	NL	--	**0.050**	--	**0.079**	--	--	--	--	--	**0.042**
Polychlorinated Biphenyls (mg/kg; SW-846 8082A)											
Aroclor 1016	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Aroclor 1221	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Aroclor 1232	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Aroclor 1242	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Aroclor 1248	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Aroclor 1254	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Aroclor 1260	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Aroclor 1268	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Total PCBs	NL	--	--	--	--	--	--	--	0.10 U	0.10 U	0.10 U
Volatiles (mg/kg; SW-846 8260)											
Benzene	0.014	0.005 U	0.005 U	--	0.005 U	--	--	--	--	--	--
Toluene	NL	0.010 U	0.010 U	--	0.010 U	--	--	--	--	--	--
Ethylbenzene	NL	0.010 U	0.010 U	--	0.010 U	--	--	--	--	--	--
m,p-Xylene	NL	0.020 U	0.020 U	--	0.020 U	--	--	--	--	--	--
o-Xylene	NL	0.010 U	0.010 U	--	0.010 U	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (mg/kg; SW-846 8270D SIM)											
1-Methylnaphthalene	NL	--	--	0.020 U	--	0.020 U	**0.027**	0.020 U	0.020 U	0.020 U	--
2-Methylnaphthalene	NL	--	--	0.020 U	--	0.020 U	**0.022**	0.020 U	0.020 U	0.020 U	--
Acenaphthene	NL	--	--	**0.028**	--	0.020 U	**0.043**	0.020 U	0.020 U	0.020 U	--
Acenaphthylene	NL	--	--	0.020 U	--	0.020 U	0.020 U	0.020 U	0.020 U	**0.022**	--
Anthracene	NL	--	--	**0.028**	--	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	--
Benzo(a)anthracene	NL	--	--	**0.078**	--	0.020 U	**0.061**	0.020 U	0.020 U	**0.051**	0.020 U
Benzo(a)pyrene	NL	--	--	0.020 U	--	0.020 U	0.020 U	0.020 U	**0.022**	**0.043**	0.020 U
Benzo(b)fluoranthene	NL	--	--	**0.031**	--	0.020 U	**0.036**	0.020 U	**0.053**	**0.140**	0.020 U
Benzo(g,h,i)perylene	NL	--	--	**0.11**	--	0.020 U	**0.079**	**0.022**	**0.024**	**0.074**	--
Benzo(k)fluoranthene	NL	--	--	0.020 U	--	0.020 U	0.020 U	0.020 U	0.020 U	**0.031**	0.020 U
Chrysene	NL	--	--	**0.063**	--	0.020 U	**0.028**	0.020 U	**0.022**	**0.073**	0.020 U
Dibenzo(a,h)anthracene	NL	--	--	0.020 U	--	0.020 U	0.020 U	0.020 U	0.020 U	**0.020**	0.020 U

Table 1
Shoreline Restoration Area—Soil Analytical Results
Bay Wood Products Cleanup Site
Everett, Washington

Analyte	RI/FS soil screening level (a)	Field Sample ID, Laboratory SDG, Sample Date									
		TP-1 (2.5-11.0) EV19040167 4/23/2019	TP-1 (Shoreline) EV19040167 4/23/2019	TP-2-20 (TOE) EV20030117 3/19/2020	TP-3 (Shoreline) EV19040167 4/23/2019	TP-5-20 EV20030117 3/19/2020	TP-6-20 (3-4) EV20030117 3/19/2020	TP-7-20 (3-6) EV20030117 3/19/2020	TP-9-20 (4) EV20030118 3/19/2020	TP-10-20 (0-6) EV20030118 3/19/2020	Composite TP-1, 6, 7 EV19040167 4/23/2019
Fluoranthene	NL	--	--	**0.200**	--	0.020 U	**0.180**	0.020 U	**0.024**	**0.058**	--
Fluorene	NL	--	--	**0.038**	--	0.020 U	**0.061**	0.020 U	0.020 U	0.020 U	--
Indeno(1,2,3-cd)pyrene	NL	--	--	**0.026**	--	0.020 U	**0.034**	0.020 U	0.020 U	**0.057**	0.020 U
Naphthalene	0.25	--	--	0.020 U	--	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	--
Phenanthrene	NL	--	--	**0.075**	--	0.020 U	**0.130**	0.020 U	0.020 U	**0.033**	--
Pyrene	NL	--	--	**0.120**	--	0.020 U	**0.150**	0.020 U	**0.021**	**0.047**	--
cPAH TEQ (ND = 0)	0.14	--	--	**0.01413**	--	0.020 U	**0.013**	0.020 U	**0.028**	**0.074**	0.020 U
Semivolatiles (mg/kg; SW-846 8270)											
1,2,4-Trichlorobenzene	NL	--	--	--	--	--	--	--	--	--	0.100 U
1,2-Dichlorobenzene	NL	--	--	--	--	--	--	--	--	--	0.100 U
1,3-Dichlorobenzene	NL	--	--	--	--	--	--	--	--	--	0.100 U
1,4-Dichlorobenzene	NL	--	--	--	--	--	--	--	--	--	0.100 U
1-Methylnaphthalene	NL	--	--	--	--	--	--	--	--	--	0.250 U
2,3,4,6-Tetrachlorophenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
2,4,5-Trichlorophenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
2,4,6-Trichlorophenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
2,4-Dichlorophenol	NL	--	--	--	--	--	--	--	--	--	0.500 U
2,4-Dimethylphenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
2,4-Dinitrophenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
2,4-Dinitrotoluene	NL	--	--	--	--	--	--	--	--	--	0.100 U
2,6-Dichlorophenol	NL	--	--	--	--	--	--	--	--	--	0.250 U
2,6-Dinitrotoluene	NL	--	--	--	--	--	--	--	--	--	0.100 U
2-Chloronaphthalene	NL	--	--	--	--	--	--	--	--	--	0.100 U
2-Chlorophenol	NL	--	--	--	--	--	--	--	--	--	0.250 U
2-Methylnaphthalene	NL	--	--	--	--	--	--	--	--	--	0.250 U
2-Methylphenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
2-Nitroaniline	NL	--	--	--	--	--	--	--	--	--	0.100 U
2-Nitrophenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
3&4-Methylphenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
3,3'-Dichlorobenzidine	NL	--	--	--	--	--	--	--	--	--	0.250 U
3-Nitroaniline	NL	--	--	--	--	--	--	--	--	--	1.000 U
4,6-Dinitro-2-methylphenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
4-Bromophenyl-phenylether	NL	--	--	--	--	--	--	--	--	--	0.100 U
4-Chloro-3-methylphenol	NL	--	--	--	--	--	--	--	--	--	0.500 U
4-Chloroaniline	NL	--	--	--	--	--	--	--	--	--	1.000 U
4-Chlorophenyl-phenylether	NL	--	--	--	--	--	--	--	--	--	0.100 U
4-Nitroaniline	NL	--	--	--	--	--	--	--	--	--	0.250 U
4-Nitrophenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
Acenaphthene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Acenaphthylene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Aniline	NL	--	--	--	--	--	--	--	--	--	0.100 U
Anthracene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Azobenzene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Benzo(a)anthracene	NL	--	--	--	--	--	--	--	--	--	0.100 U

Table 1
Shoreline Restoration Area—Soil Analytical Results
Bay Wood Products Cleanup Site
Everett, Washington

Analyte	RI/FS soil screening level (a)	Field Sample ID, Laboratory SDG, Sample Date									
		TP-1 (2.5-11.0) EV19040167 4/23/2019	TP-1 (Shoreline) EV19040167 4/23/2019	TP-2-20 (TOE) EV20030117 3/19/2020	TP-3 (Shoreline) EV19040167 4/23/2019	TP-5-20 EV20030117 3/19/2020	TP-6-20 (3-4) EV20030117 3/19/2020	TP-7-20 (3-6) EV20030117 3/19/2020	TP-9-20 (4) EV20030118 3/19/2020	TP-10-20 (0-6) EV20030118 3/19/2020	Composite TP-1, 6, 7 EV19040167 4/23/2019
Benzo(a)pyrene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Benzo(b)fluoranthene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Benzo(g,h,i)perylene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Benzo(k)fluoranthene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Benzoic Acid	NL	--	--	--	--	--	--	--	--	--	1.000 U
Benzyl Alcohol	NL	--	--	--	--	--	--	--	--	--	0.100 U
bis(2-Chloroethoxy)methane	NL	--	--	--	--	--	--	--	--	--	0.250 U
bis(2-Chloroethyl)ether	NL	--	--	--	--	--	--	--	--	--	0.250 U
bis(2-Chloroisopropyl)ether	NL	--	--	--	--	--	--	--	--	--	0.250 U
bis(2-Ethylhexyl)phthalate	NL	--	--	--	--	--	--	--	--	--	0.100 U
Butylbenzylphthalate	NL	--	--	--	--	--	--	--	--	--	0.100 U
Carbazole	NL	--	--	--	--	--	--	--	--	--	0.250 U
Chrysene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Dibenzo(a,h)anthracene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Dibenzofuran	NL	--	--	--	--	--	--	--	--	--	0.100 U
Diethylphthalate	NL	--	--	--	--	--	--	--	--	--	0.100 U
Dimethylphthalate	NL	--	--	--	--	--	--	--	--	--	0.100 U
Di-n-butylphthalate	NL	--	--	--	--	--	--	--	--	--	0.100 U
Di-n-octylphthalate	NL	--	--	--	--	--	--	--	--	--	0.100 U
Fluoranthene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Fluorene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Hexachlorobenzene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Hexachlorobutadiene	NL	--	--	--	--	--	--	--	--	--	0.500 U
Hexachlorocyclopentadiene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Hexachloroethane	NL	--	--	--	--	--	--	--	--	--	0.100 U
Indeno(1,2,3-cd)pyrene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Isophorone	NL	--	--	--	--	--	--	--	--	--	0.100 U
Naphthalene	0.25	--	--	--	--	--	--	--	--	--	0.100 U
Nitrobenzene	NL	--	--	--	--	--	--	--	--	--	0.100 U
N-Nitrosodimethylamine	NL	--	--	--	--	--	--	--	--	--	0.100 U
N-Nitroso-di-n-propylamine	NL	--	--	--	--	--	--	--	--	--	0.250 U
N-Nitrosodiphenylamine	NL	--	--	--	--	--	--	--	--	--	0.100 U
Pentachlorophenol	NL	--	--	--	--	--	--	--	--	--	0.500 U
Phenanthrene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Phenol	NL	--	--	--	--	--	--	--	--	--	0.100 U
Pyrene	NL	--	--	--	--	--	--	--	--	--	0.100 U
Pyridine	NL	--	--	--	--	--	--	--	--	--	0.200 U
Dioxins/Furans (ng/kg; SW-846 1613B)											
2,3,7,8-TCDD	NL	--	--	--	--	--	--	--	2.04 U	0.500 U	--
1,2,3,7,8-PeCDD	NL	--	--	--	--	--	--	--	5.87 U	2.50 U	--
1,2,3,4,7,8-HxCDD	NL	--	--	--	--	--	--	--	8.76 U	**0.971 J**	--
1,2,3,6,7,8-HxCDD	NL	--	--	--	--	--	--	--	**105**	1.50 U	--
1,2,3,7,8,9-HxCDD	NL	--	--	--	--	--	--	--	**24.5**	0.919 U	--
1,2,3,4,6,7,8-HpCDD	NL	--	--	--	--	--	--	--	**1,240**	**30.2**	--

Table 1
Shoreline Restoration Area—Soil Analytical Results
Bay Wood Products Cleanup Site
Everett, Washington

Analyte	RI/FS soil screening level (a)	Field Sample ID, Laboratory SDG, Sample Date									
		TP-1 (2.5-11.0) EV19040167 4/23/2019	TP-1 (Shoreline) EV19040167 4/23/2019	TP-2-20 (TOE) EV20030117 3/19/2020	TP-3 (Shoreline) EV19040167 4/23/2019	TP-5-20 EV20030117 3/19/2020	TP-6-20 (3-4) EV20030117 3/19/2020	TP-7-20 (3-6) EV20030117 3/19/2020	TP-9-20 (4) EV20030118 3/19/2020	TP-10-20 (0-6) EV20030118 3/19/2020	Composite TP-1, 6, 7 EV19040167 4/23/2019
OCDD	NL	--	--	--	--	--	--	--	**7,920**	**230**	--
2,3,7,8-TCDF	NL	--	--	--	--	--	--	--	3.82 U	**1.31**	--
1,2,3,7,8-PeCDF	NL	--	--	--	--	--	--	--	**4.15 J**	2.50 U	--
2,3,4,7,8-PeCDF	NL	--	--	--	--	--	--	--	**10.8**	2.50 U	--
1,2,3,4,7,8-HxCDF	NL	--	--	--	--	--	--	--	**11.6**	0.831 U	--
1,2,3,6,7,8-HxCDF	NL	--	--	--	--	--	--	--	**8.25**	0.398 U	--
1,2,3,7,8,9-HxCDF	NL	--	--	--	--	--	--	--	3.75 U	2.50 U	--
2,3,4,6,7,8-HxCDF	NL	--	--	--	--	--	--	--	**16.5**	0.585 U	--
1,2,3,4,6,7,8-HpCDF	NL	--	--	--	--	--	--	--	**491**	**9.86**	--
1,2,3,4,7,8,9-HpCDF	NL	--	--	--	--	--	--	--	**15.3**	**1.16 J**	--
OCDF	NL	--	--	--	--	--	--	--	**952**	**82.2**	--
Total Tetra-Dioxins	NL	--	--	--	--	--	--	--	**6.31**	**12.8**	--
Total Penta-Dioxins	NL	--	--	--	--	--	--	--	**28.2**	**18.2**	--
Total Hexa-Dioxins	NL	--	--	--	--	--	--	--	**460**	**37.1**	--
Total Hepta-Dioxins	NL	--	--	--	--	--	--	--	**2,220**	**53.7**	--
Total Tetra-Furans	NL	--	--	--	--	--	--	--	**9.08**	**12.0**	--
Total Penta-Furans	NL	--	--	--	--	--	--	--	**143**	**2.29 J**	--
Total Hexa-Furans	NL	--	--	--	--	--	--	--	**599**	**5.57**	--
Total Hepta-Furans	NL	--	--	--	--	--	--	--	**1,480**	**35.5**	--
Total TEQ (ND = DL/2)	13 (b)	--	--	--	--	--	--	--	**42.4**	**1.41**	--

Notes:

Results originally reported in Test Pit Findings and Soils Management Plan, Bay Wood Shoreline Restoration, Everett, Washington (Shannon & Wilson 2019)
U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
Bold text indicates detected analyte.
(a) Vadose zone and saturated zones soil screening levels presented in draft RI/FS Table 4, Preliminary Soil Cleanup Levels, GeoEngineers. June 22, 2018.

Abbreviations and Acronyms:

cPAH = carcinogenic polycyclic aromatic hydrocarbon
ID = Identification
mg/kg = milligrams per kilogram
NL = not listed
NWTPH = Northwest Total Petroleum Hydrocarbon
PCBs = polychorinated biphenyls
RI/FS = remedial investigation/feasibility study
SDG = sample delivery group
SIM = selected ion monitoring
TEQ = toxicity equivalency quotient

Table 2
Low Area—Soil Analytical Results
Bay Wood Products Cleanup Site
Everett, Washington

Analyte	RI/FS soil screening level (a)	Field Sample ID, Laboratory SDG, Sample Date																
		TP-1 (0 TO 0.5FT) EV20020103 2/18/2020	TP-1 (1 TO 2FT) EV20020103 2/18/2020	TP-1 (2 TO 3FT) EV20020103 2/18/2020	TP-2 (0 TO 0.5FT) EV19120046 12/6/2019	TP-2 (1 TO 2FT) EV20020103 2/18/2020	TP-2 (2 TO 3FT) EV20020103 2/18/2020	TP-3 (0 TO 0.5FT) EV19120046 12/6/2019	TP-4 (0 TO 0.5FT) EV19120046 12/6/2019	TP-4 (1 TO 2FT) EV20020103 2/18/2020	TP-4 (2 TO 3FT) EV20020103 2/18/2020	TP-5 (0 TO 0.5FT) EV19120046 12/6/2019	TP-6 (0 TO 0.5FT) EV19120046 12/6/2019	TP-6 (1 TO 2FT) EV20020103 2/18/2020	TP-6 (2 TO 3FT) EV20020103 2/18/2020	TP-7 (0 TO 0.5FT) EV20020103 2/18/2020	TP-8 (0 TO 0.5FT) EV20020103 2/18/2020	TP-8 (1 TO 2FT) EV20020103 2/18/2020
Total Petroleum Hydrocarbons (mg/kg; NWTPH-Dx)																		
Diesel-Range Organics	2,000	--	--	--	50 U	--	--	25 U	**410**	--	--	25 U	54 U	--	--	--	--	--
Oil-Range Organics	2,000	--	--	--	**690**	--	--	50 U	**1,400**	--	--	**170**	**540**	--	--	--	--	--
Carcinogenic Polycyclic Aromatic Hydrocarbons (mg/kg; SW-846 8270D SIM)																		
Benzo(a)anthracene	NL	--	--	--	**0.052**	--	--	0.02 U	0.02 U	--	--	0.02 U	**0.033**	--	--	--	--	--
Benzo(a)pyrene	NL	--	--	--	**0.065**	--	--	0.02 U	**0.021**	--	--	0.02 U	**0.045**	--	--	--	--	--
Benzo(b)fluoranthene	NL	--	--	--	**0.15**	--	--	**0.028**	**0.045**	--	--	0.02 U	**0.11**	--	--	--	--	--
Benzo(k)fluoranthene	NL	--	--	--	**0.036**	--	--	0.02 U	0.02 U	--	--	0.02 U	**0.029**	--	--	--	--	--
Chrysene	NL	--	--	--	**0.11**	--	--	0.02 U	**0.03**	--	--	0.02 U	**0.089**	--	--	--	--	--
Dibenzo(a,h)anthracene	NL	--	--	--	**0.026**	--	--	0.02 U	0.02 U	--	--	0.02 U	0.02 U	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NL	--	--	--	**0.082**	--	--	0.02 U	**0.024**	--	--	0.02 U	**0.047**	--	--	--	--	--
cPAH TEQ (ND = 0)	0.14	--	--	--	**0.101**	--	--	**0.003**	**0.028**	--	--	0.02 U	**0.068**	--	--	--	--	--
Dioxins/Furans (ng/kg; SW-846 1613B)																		
2,3,7,8-TCDD	NL	1.01 U	0.578 U	0.585 U	**1.45**	0.612 U	0.590 U	0.532 U	**0.639**	0.621 U	0.506 U	0.548 U	**15.2**	**3.45**	**2.10**	**2.20**	0.607 U	**0.715**
1,2,3,7,8-PeCDD	NL	**15.8**	1.04 U	**0.851 J**	**9.19**	2.54 U	0.268 U	0.225 U	**6.11**	**3.87**	2.53 U	**1.30 J**	**42.8**	**9.77**	**6.09**	**16.3**	**3.33**	**3.89**
1,2,3,4,7,8-HxCDD	NL	**79.5**	**2.09 J**	**1.49 J**	**22.7**	**4.97**	**0.374 J**	**0.402**	**31.4**	**12.9**	1.06 U	**2.42 J**	**170**	**76.2**	**57.6**	**33.8**	**8.03**	**2.51 J**
1,2,3,6,7,8-HxCDD	NL	**173**	**8.11**	**4.32**	**60.2**	**17.5**	0.898 U	2.66 U	**102**	**35.7**	**8.58**	**5.28**	**289**	**40.2**	**178**	**89.6**	**27.4**	**8.91**
1,2,3,7,8,9-HxCDD	NL	**96.6**	**4.78**	**2.55 J**	**42.5**	**10.4**	0.679 U	**0.893 J**	**45.9**	**18.0**	**4.12**	**4.76**	**163**	**17.9**	**82.3**	**64.1**	**14.4**	3.61 U
1,2,3,4,6,7,8-HpCDD	NL	**5,960**	**278**	**137**	**1,830**	**498**	**27.1**	**33.7**	**7340**	**1,320 J-**	**244**	**146**	**13,000 J**	**2,090**	**12,300**	**2,590**	**1,050**	**215**
OCDD	NL	**41,600**	**2,890**	**1,330**	**17,000 J-EC**	**5,060 J-EC**	**253**	**260**	**100,000**	**12,900 J-EC**	**2,620**	**1,530**	**168,000 J**	**60,300 J-EC**	**93,600**	**24,600 J-EC**	**12,500 J-EC**	**2,580**
2,3,7,8-TCDF	NL	**3.53**	0.391 U	0.585 U	**2.20**	0.549 U	**0.234 J**	**0.257 J**	**1.74**	0.616 U	0.197 U	0.548 U	**5.24**	2.51 U	0.663 U	**2.48**	0.945 U	0.586 U
1,2,3,7,8-PeCDF	NL	3.62 U	0.508 U	0.373 U	**2.84 J**	0.971 U	0.268 U	0.206 U	**3.69**	1.55 U	0.331 U	**0.524 J**	**11.7**	1.99 U	0.850 U	**2.84 J**	**1.12 J**	**1.12 J**
2,3,4,7,8-PeCDF	NL	8.95 U	0.856 U	0.478 U	**6.88**	1.93 U	0.411 U	**0.259 J**	**10.0**	**3.85**	**0.721 J**	0.709 U	**24.9**	**5.98**	**2.13 J**	**7.32**	**4.14**	**4.79**
1,2,3,4,7,8-HxCDF	NL	**23.6**	**2.11 J**	**1.12 J**	**14.3 J**	**3.37**	0.450 U	**0.348 J**	**19.5**	**8.07**	**0.960 J**	**1.35 J**	**73.4 J**	**5.75**	**3.72**	**18.4**	**6.62**	**8.59 J**
1,2,3,6,7,8-HxCDF	NL	**23.8**	**1.90 J**	**1.21 J**	**16.0**	3.17 U	0.445 U	2.66 U	**16.3**	**6.99**	**0.866 J**	1.23 U	**75.4**	**7.13**	**3.30**	**15.4**	**4.37**	2.94 U
1,2,3,7,8,9-HxCDF	NL	**7.52**	2.89 U	2.92 U	**3.77**	2.74 U	2.95 U	2.66 U	4.58 U	3.09 UJ	2.53 U	0.516 U	**13.2**	2.80 U	0.752 U	3.57 U	3.03 U	**4.66**
2,3,4,6,7,8-HxCDF	NL	**33.1**	**2.49 J**	**1.62 J**	**22.9**	**4.97**	0.310 U	0.448 U	**23.4**	10.7 UJ	**1.33 J**	**2.11 J**	**94.0**	**13.1**	**6.30**	**23.8**	**5.72**	**3.65**
1,2,3,4,6,7,8-HpCDF	NL	**495**	**42.2**	**24.5**	**347**	**87.4**	**5.26**	**6.73**	**484**	**165 J-**	**27.6**	**28.9**	**1,400**	**101**	**62.4**	**455**	**108**	**26.9**
1,2,3,4,7,8,9-HpCDF	NL	**33.0**	**3.00**	**1.77 J**	**20.6**	**6.03**	0.404 U	0.306 U	**27.9**	8.46 UJ	1.17 U	**2.28 J**	**92.9**	**14.6**	**6.84**	**30.6**	**6.31**	**3.49**
OCDF	NL	**1,000**	**114**	**64.0**	**908**	**233**	**19.2**	**21.5**	**1,740**	**479**	**91.1**	**77.2**	**3,430**	**264**	**208**	**1420**	**358**	**72.5**
Total Tetra-Dioxins	NL	**15.9**	**0.960**	0.585 U	**9.51**	0.612 U	0.590 U	**0.939**	**9.26**	**1.97**	**1.44**	0.548 U	**135**	**103**	**18.1**	**6.16**	**5.45**	**9.98**
Total Penta-Dioxins	NL	**190**	2.89 U	**2.28 J**	**53.7**	**6.83**	2.95 U	**1.91 J**	**42.6**	**16.5**	**3.11**	**2.33 J**	**368**	**239**	**133**	**63.8**	**22.5**	**47.1**
Total Hexa-Dioxins	NL	**2,120**	**52.6**	**26.7**	**444**	**110**	**3.41**	**12.0**	**797**	**265**	**69.0**	**35.0**	**2,160**	**781**	**2970**	**710**	**211**	**75.4**
Total Hepta-Dioxins	NL	**13,100**	**506**	**255**	**3,360**	**955**	**46.6**	**63.6**	**10,600**	**3,370**	**498**	**264**	**19,000**	**5,350**	**18,700**	**5,890**	**2,320**	**431**
Total Tetra-Furans	NL	**25.4**	**1.97**	0.585 U	**29.5**	**0.581**	**0.570 J**	**1.01**	**24.7**	**1.47**	**1.49**	**1.64**	**88.9**	**43.5**	**3.73**	**17.9**	**12.0**	**18.3**
Total Penta-Furans	NL	**95.5**	**10.0**	**5.74**	**120**	**17.3**	2.95 U	**3.35**	**145**	**48.8**	**6.30**	**6.77**	**479**	**59.3**	**21.3**	**122**	**44.0**	**25.0**
Total Hexa-Furans	NL	**623**	**53.4**	**29.5**	**470**	**99.3**	**3.73**	**8.62**	**595**	**222**	**30.6**	**31.4**	**1,950**	**148**	**84.1**	**518**	**139**	**45.7**
Total Hepta-Furans	NL	**1,320**	**122**	**65.3**	**1,030**	**253**	**13.6**	**19.7**	**1,730**	**506**	**88.1**	**80.0**	**3,680**	**304**	**206**	**1,290**	**355**	**80.7**
Total TEQ (ND = DL/2)	13 (b)	**138**	**6.51**	**4.29**	**58.6**	**12.3**	**0.706**	**0.956**	**143**	**32.6**	**5.48**	**5.50**	**351**	**71.4**	**194**	**84.2**	**27**	**12.2**

Notes:

EC = The reported concentration exceeds the calibration range of the instrument.
U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or impre
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity and the result may be biased low.
Bold text indicates detected analyte.
Green shading indicates detected analyte exceeds applicable cleanup level.
(a) Vadose zone and saturated zones soil screening levels presented in draft RI/FS Table 4, Preliminary Soil Cleanup Levels, GeoEngineers
(b) Dioxin/furan TEQ soil screening level in the low area is based on the MTCA Method B human health direct contact pathway (13 ng/kg); the Site-wide for dioxin/furan TEQ based on background concentrations is 5.2 ng/kg

Abbreviations and Acronyms:

cPAH = carcinogenic polycyclic aromatic hydrocarbon
ID = Identification
mg/kg = milligrams per kilogram
ng/kg = nanograms per kilogram
NL = not listed
NWTPH = Northwest Total Petroleum Hydrocarbon
RI/FS = remedial investigation/feasibility study
SDG = sample delivery group
SIM = selected ion monitoring
TEQ = toxicity equivalency quotient

APPENDIX A

Test Pit Findings and Soil Management Plan (Shannon & Wilson 2019)

SUBMITTED TO:
Port of Everett
1205 Craftsman Way,
Suite 200
Everett, WA 98201

BY:
Shannon & Wilson, Inc.
400 N. 34th Street, Suite 100
Seattle, WA 98103

(206) 632-8020
www.shannonwilson.com

TEST PIT FINDINGS AND SOILS MANAGEMENT PLAN

Bay Wood Shoreline Restoration

EVERETT, WASHINGTON

SHANNON & WILSON

November 20, 2019

Shannon & Wilson No: 102336-007

Submitted To: Port of Everett
1205 Craftsman Way, Suite 200
Everett, WA 98201
Attn: Ms. Laura Gurley

Subject: TEST PIT FINDINGS AND SOILS MANAGEMENT PLAN, BAY WOOD SHORELINE RESTORATION, EVERETT, WASHINGTON

Shannon & Wilson prepared this report and participated in this project as a consultant to the Port of Everett. Our scope of services was specified in Proposal for Permit and Engineering Support for Bay Wood Project, prepared by Shannon & Wilson and dated April 4, 2019. Our scope of services was authorized and notice to proceed was given by Ms. Gurley.

This report presents findings from test pits conducted to evaluate materials that will be encountered during grading of the Bay Wood property shoreline. This report also presents a soils management plan that outlines the actions to be taken if contamination is encountered or suspected during grading.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.

Ryan Peterson, PE
Environmental Engineer

Scott Gaulke, PE, LHG
Vice President

RBP:SDP:SWG:DRC/rbp

EXECUTIVE SUMMARY

The Bay Wood project (Project) includes a shoreline restoration and critical area buffer reduction request to the City of Everett (City) and the Washington State Department of Ecology (Ecology) for future upland development of the Bay Wood property (Property). The area that will be graded for the Bay Wood project shoreline restoration is defined as the Project Area.

This report presents findings from test pits conducted to evaluate materials that will be encountered during grading of the shoreline in the Project Area. This report also presents a Soils Management Plan that outlines the actions to be taken if contamination is encountered or suspected during grading.

Previous investigations completed by others have confirmed the presence of contaminants (carcinogenic polycyclic aromatic hydrocarbons [cPAHs], diesel/heavy oil range organics, copper, nickel, silver, and thallium) at concentrations exceeding preliminary cleanup levels in soil stockpiles, subsurface soil, and groundwater. Soil exceedances were detected on the eastern half of the Property where the former sawmill and soil stockpiles were placed and are outside of the Project Area (Anchor QEA, LLC, 2011).

We collected soil samples from ten test pits located in the Project Area to evaluate for the presence of contamination. Each soil horizon was tested, except for the shallowest horizon of brown, Poorly Graded Sand with Silt, which was reportedly evaluated previously and does not contain contaminants of potential concern (COPCs) above regulatory criteria. In addition to the test pit samples, we collected two samples of wood debris layers exposed on the shoreline. Selected samples were tested for COPCs and results were less than regulatory criteria.

Based on the available information, there is no known soil contamination in the Project Area; however, we provide guidance for management of contaminated soils in the Soils Management Plan (Section 6) should it be encountered. Based on the 30% grading design, we do not expect to encounter groundwater during grading activities.

We estimate that approximately 12,830 cubic yards of material will be removed by shoreline grading landward of the Jeld-Wen cleanup sediment boundary. The excavation material consists of sand, silt, cobbles, and wood debris. In our opinion, placement of the excavated materials onto the Property, rather than disposal offsite, is a practical alternative if contamination is not identified during grading.

CONTENTS

Exhibits

Figures

Appendices

µg/L	micrograms per liter
bgs	below ground surface
City	City of Everett
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
COPCs	contaminants of potential concern
Ecology	Washington State Department of Ecology
lidar	light detection and ranging
PID	photoionization detector
Project	Bay Wood project
Project Area	area graded for the Bay Wood project shoreline restoration
Property	Bay Wood property
WAC	Washington Administrative Code

CONTENTS

1 SITE AND PROJECT DESCRIPTION

The Property is located at 200 West Marine View Drive in Everett, Washington, near Maulsby Mudflats where the Snohomish River and Port Gardner Bay meet. The Property was used for sawmilling prior until 1979 and then log handling, storage, and processing until 1994 (Anchor QEA, LLC, 2011). In 1995, the Port of Everett removed bark, rock, and wood chips from the uplands area. Apparently, marine wood debris (timber piles, bulkheads, and wood chip waste) near the shoreline was not removed as part of this action. Excavated areas were backfilled with dredge sediments from the Snohomish River to match the surrounding grade. Buildings on the Property were demolished as part of this removal action and the Property has been vacant since. Soil and sediment, which were excavated from the Port of Everett's 14th Street Bulkhead replacement project, were placed on the Property, but outside of the Project Area, in 2005 and 2006.

The Project includes a shoreline restoration and critical area buffer reduction request to the City and Ecology for future upland development. The Project Area includes shoreline restoration grading areas, as shown in Figure 1. The upland development and cleanup of known contamination outside of the Project Area are not addressed by this report.

This report presents findings from test pits conducted to evaluate materials that will be encountered during grading of the shoreline in the Project Area. This report also presents a Soils Management Plan that outlines the actions to be taken if contamination is encountered or suspected during grading.

2 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Previous investigations completed by others have confirmed the presence of contaminants (cPAHs, diesel/heavy oil range organics, copper, nickel, silver, and thallium) at concentrations exceeding preliminary cleanup levels in soil stockpiles, subsurface soil, and groundwater (Anchor QEA, LLC, 2011). These exceedances were detected on the eastern half of the Property where the former sawmill and soil stockpiles were placed and are outside of the Project Area, except for boring PB-3D.

Boring PB-3D was advanced near Sections A and B of the Project Area. Soil collected from boring PB-3D tested less than preliminary cleanup levels for the contaminants of concern. Groundwater collected immediately after advancing boring PB-3D tested slightly greater than the preliminary cleanup level for cPAHs. Monitoring well MW-3D was installed near boring PB-3D to further evaluate for the presence of contaminants identified in boring

PB-3D. At MW-3D, the concentrations of dissolved metals, total metals, and cPAHs were less than the preliminary cleanup levels, except for dissolved copper (6.55 micrograms per liter [µg/L]), which slightly exceeded the preliminary cleanup level of 2.4 µg/L (Anchor QEA, LLC, 2011). However, the detected concentration of dissolved copper in groundwater is less than the Model Toxics Control Act Method B Non Cancer cleanup level of 640 µg/L and therefore should not adversely affect worker health (Ecology, 2015).

3 FIELD OBSERVATIONS

We observed ten test pits on the Project Area during April 23, 2019. We collected samples and visually described the soil horizons that will be excavated during shoreline grading. The test pits were located as shown in Figure 1 and advanced to 10 feet below ground surface (bgs) or until groundwater was encountered, whichever was shallower. Excavation was completed using a track hoe and contractor under contract with the Port of Everett.

We recorded depths and descriptions of soil horizons in accordance with Shannon & Wilson's standard operating procedures. The soil horizon depths and composition were not consistent throughout the test pits; however, in most test pits, the shallowest horizon consisted of brown, Poorly Graded Sand with Silt (approximately 2 to 4 feet thick), underlain by gray sand with few cobbles and trace wood debris (approximately 2 feet thick), and underlain by cobbles or sand. However, horizons of gray silt and red-brown, silty sand were observed in some test pits. Debris consisting of metal straps, concrete, and asphalt was also observed.

Groundwater was observed at 10 to 11 feet bgs in five test pits and not observed in the remaining test pits. No obvious indications of contamination were observed in the test pits. Test pit logs are provided as Figure 2.

4 SAMPLE COLLECTION AND TESTING

We collected one soil sample from each test pit to evaluate for the presence of contamination. Each soil horizon was tested, except for the shallowest horizon of brown, Poorly Graded Sand with Silt, which was reportedly evaluated previously and does not contain COPCs above regulatory criteria (Gerking, 2019). In addition to the test pit samples, we collected two samples of wood debris layers exposed on the shoreline.

Field screening helped to evaluate for the presence of contamination. Field screening methods consisted of visual and olfactory observations. Potential indications of contamination include gray or black discolorations, stressed vegetation, or unusual odors.

No gray or black discolorations, stressed vegetation, or unusual odors were observed during excavation or sampling. Soil was not intentionally smelled for contamination.

Sample collection and documentation were completed in accordance with Shannon & Wilson's standard operating procedures. Samples were collected using disposable sampling equipment, including nitrile gloves and stainless-steel spoons. New sample spoons and nitrile gloves were used by the sample handler during collection of each sample. Samples were placed into pre-cleaned laboratory-provided glassware and containerized sequentially. The sample container labels were completed using indelible ink. The samples were placed into a cooler with ice and maintained at less than or equal to 6 degrees Celsius. Sample information was recorded on chain-of-custody forms. Samples were maintained under chain-of-custody control until delivered to a laboratory under contract with the Port of Everett. The selected analyses are listed is Exhibit 4-1.

Exhibit 4-1: Measurements and Calculations for Sections

Sample Identification	Location	Selected Analytes and Analysis Methods	Purpose of Analysis
TP-1(2.5-11.0)	Collected at Test Pit TP-1 from 2.5 to 11.0 feet bgs.	BTEX (EPA 8260)	Characterize soil layers for disposal.
TP-1,6,7	Composited from samples TP-1 (2.5-11.0), TP-6 (4.0-10.0), and TP-7 (5.0-6.0).	RCRA 8 Metals (EPA 6020 and EPA 7471) Diesel and Lube-Oil-Range Hydrocarbons (NWTPH-Dx) PAHs (EPA 8270) PCBs Congeners (EPA 8082) SVOCs (EPA 8270)	Characterize soil layers for disposal.
TP-1 (Shoreline)	Wood debris layer exposed on shoreline bank near TP-1.	BTEX (EPA 8260) RCRA 8 Metals (EPA 6020 and EPA 7471)	Characterize wood debris for disposal.
TP-3 (Shoreline)	Wood debris layer exposed on shoreline bank near TP-3.	BTEX (EPA 8260) RCRA 8 Metals (EPA 6020 and EPA 7471)	Characterize wood debris for disposal.

NOTES:

RCRA 8 metals includes arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

BTEX = benzene, toluene, ethylbenzene, and xylenes; NWTPH-Dx = Northwest Total Petroleum Hydrocarbon-Diesel Extended; PAHs = polycyclic aromatic hydrocarbons; PCBs = polychlorinated biphenyls; RCRA = Resource Conservation and Recovery Act; SVOCs = semivolatile organic compounds

The laboratory results indicated that COPCs were not present above regulatory criteria in the soil samples. The laboratory report is provided as Appendix A.

5 SOIL TYPES AND QUANTITIES

Using our soil descriptions from the April 2019 test pits and shoreline grading 30% design, we estimated the volumes of soils that will be removed during grading of the shoreline. To

calculate soil volumes, we first placed seven alignments on the shoreline (A-A′ through G-G′). We measured the length of each section (A through G) at the shoreline's design grade top-of-bank using half the length to the adjacent alignments. For example, the length of Section B is half of the top-of-bank length from alignment B-B′ to A-A′ and half the top-of-bank length from alignment B-B′ to C-C′. The length of sections at the end of the shoreline grading area used the top-of-bank length to the end of the shoreline grading area.

Next, we created cross sections of the alignments using shoreline bank elevations from light detection and ranging (lidar) data (Puget Sound LiDAR Consortium, 2014). Soil horizons were overlaid onto the cross sections using the soil descriptions from the test pit that were closest to the alignment. The 30% design grade elevations and extents were overlaid on the cross sections. The cross sections are provided in Figure 3.

To calculate soil quantities that will be removed, we measured the area of each soil horizon that would be removed by the grading, as shown in the cross section, and multiplied by the length of the shoreline. Measurements and calculations are shown in Exhibit 5-1. We assumed that segregation of thin (less than 3 vertical feet) soil horizons will not be practical and therefore these horizons were grouped with others (Exhibit 5-2).

Exhibit 5-1: Measurements and Calculations for Sections

Section	Length of Top of Bank (feet)	Reference Test Pit	Area of Soil Horizon to be Removed (square feet)				Volume of Soil Horizon to be Removed (cubic yards)			
			1	2	3	4	1	2	3	4
A	108	TP-10	145	0	0	0	581	0	0	0
B	98	TP-9	191	0	0	0	693	0	0	0
C	92	TP-9	284	32	0	0	970	110	0	0
D	86	TP-8	243	45	0	0	776	144	0	0
E	62	TP-7	218	26	13	0	502	59	29	0
F	74	TP-6	72	61	47	140	197	167	129	384
G	104	TP-6	76	64	49	149	291	246	189	574
H	121	TP-5	181	139	45	81	816	629	202	366
I	135	TP-4	198	0	0	0	992	0	0	0
J	111	TP-3	156	21	18	41	637	84	75	168
K	110	TP-2	56	49	103	0	229	200	417	0
L	117	TP-1	85	42	100	0	372	184	437	0
M	88	TP-1	78	65	158	0	256	212	515	0
Total	1,308		1,983	544	533	411	7,310	2,034	1,994	1,492

NOTE:
Quantities are rounded.

Exhibit 5-2: Estimated Quantities Removed During Shoreline Grading

Material	Soil Horizons in Which Material was Observed	Volume [cubic yards]
Sand and/or silt, trace gravel, trace cobbles, trace wood pieces	TP-1, all soil types TP-2, all soil types TP-3, all soil types TP-4, Soil Types 1, 2, and 4 TP-5, all soil types TP-6, all soil types TP-7, Soil Types 1, 2, and 3 TP-8, Soil Type 1 TP-9, Soil Type 1 TP 10, Soil Types 1 and 2	12,600
Cobbles, trace silt, trace sand, trace gravel, trace wood pieces	TP-4, Soil Type 3 TP-7, Soil Type 4 TP-8, Soil Type 2 TP-9, Soil Type 2 TP-10, Soil Type 2	230

6 TEST PIT FINDINGS

We collected soil samples from ten test pits located in the Project Area to evaluate for the presence of contamination. Each soil horizon was tested, except for the shallowest horizon of brown, Poorly Graded Sand with Silt, which was reportedly evaluated previously and does not contain COPCs above regulatory criteria. In addition to the test pit samples, we collected two samples of wood debris layers exposed on the shoreline. Selected samples were tested for COPCs and results were less than regulatory criteria.

Based on the available information, there is no known soil contamination in the Project Area; however, we provide guidance for management of contaminated soils in the Soils Management Plan (Section 7) should it be encountered.

We estimate that approximately 12,830 cubic yards of material will be removed by shoreline grading. This material consists of sand, silt, cobbles, and wood debris. In our opinion, placement of the excavated materials onto the Property is a practical alternative if contamination is not identified during grading.

7 SOILS MANAGEMENT PLAN

This Soils Management Plan outlines the actions to be taken if contamination is encountered or suspected during the grading phase of the Bay Wood property shoreline restoration project. Shannon & Wilson is not responsible for implementing this Soils Management Plan and has not been identified as a responsible party for which action is required, since it is beyond the currently approved scope of services between Shannon & Wilson and the Port of Everett.

A health and safety plan is required for project work and the protection of the workers and the public. This plan should address working with potentially contaminated soil and groundwater. A health and safety plan is not included in this report. The Port of Everett will provide the health and safety plan.

Work involving known or suspected contaminated soil must be performed by workers with proper hazardous materials safety training as required by the Occupational Safety and Health Administration and the Washington Industrial Safety and Health Administration.

A flow chart, which outlines the steps to be followed for excavated soil, is provided in Figure 4 and is discussed below.

7.1 Monitoring of Grading

We assume that there is no known or suspected contamination in the Project Area; however, grading activities will be monitored for indications of contamination. The purpose of the monitoring is to:

- Provide on-site screening to assess soil contamination for segregation, removal, and/or stockpiling;
- To document remaining conditions; and
- Provide the Port of Everett with guidance on remedial actions and disposal of contaminated soil, if required.

The Port of Everett will screen excavated soil for indications of contamination. Field screening will consist of visual and olfactory observations and photoionization detector (PID) measurements. Indications of contamination include:

- Stained or discolored soil or stressed vegetation,
- Containers or debris indicating a release of hazardous substances may have occurred,
- Unusual odors, and/or
- Elevated PID measurements.

7.2 Contingency Plan for Unexpected Discovery of Contamination

Upon discovery of potentially contaminated soil, groundwater, or other materials, the following actions will be taken:

- Stop all earthwork where the suspected contamination has been observed.
- Notify the site supervisor.
- Cordon off area with a suitable barrier.

7.2.1 Sampling

The suspect contaminated material will be sampled and analyzed to evaluate for the presence of hazardous substances. Analytical testing depends on field observations, but may include cPAHs, diesel/heavy oil range organics, copper, nickel, silver, and thallium. If contamination is confirmed to be above regulatory criteria, Ecology will be notified consistent with reporting protocol.

7.2.2 Remedial Actions

Where contamination is confirmed in the Project Area, the Port of Everett will characterize the contamination by additional field observations and/or collection and analysis of samples. The results of the characterization will be reported to Ecology. The Port of Everett will evaluate and identify remedial actions to be taken.

7.2.3 Stockpiling Controls

If appropriate, the contaminated material will be segregated and stockpiled to limit delays to the Project. The following steps should be taken if stockpiling:

- Collect soil samples underneath the proposed stockpile to determine any baseline levels of contamination.
- Stockpiled materials shall be placed on intact plastic sheeting or similar material to prevent contamination of underlying soil.
- Stockpiled materials shall always be covered to prevent dust escape, odor emissions, and rainfall contact.
- A berm shall be installed around the stockpiled material to prevent runoff from leaving the area and stormwater from entering the stockpile area from other areas.
- Stockpiles shall not be placed near drains, watercourses, or other stormwater features.
- At the end of construction work, the area under the stockpile shall be tested to verify that stockpiling activities have not caused contamination of the area.

The covered bin or stockpiling area should be checked and maintained during storage to ensure that there are no releases to the environment.

7.2.4 Disposal

In our opinion, placement of the excavated materials onto the Property is a practical alternative if contamination is not identified during grading.

If contamination is encountered, the suspected contaminated material will be disposed off site. Prior to disposal, suspected contaminated materials will be sampled at a frequency consistent with Ecology's guidelines and/or criteria established by the facility receiving the soil. In accordance with Ecology guidance, Exhibit 7-1 provides the minimum number of samples needed prior to removal of petroleum-contaminated soil stockpiles (Ecology, 2016). Samples will be sent to an approved and certified laboratory for testing.

Exhibit 7-1: Minimum Number of Stockpile Samples

Volume of Soil (cubic yards)	Minimum Number of Samples
0 – 100	3
101 – 500	5
501 – 1,000	7
1,001 – 2,000	10
Greater than 2,000	10+1 for each additional 500 cubic yards

If the contaminated material is removed by excavation, confirmation samples will be collected and analyzed from the remedial excavation sidewalls and bottom to verify if residual contamination is present.

Upon completion of remedial actions and disposal, all equipment shall be cleaned and decontaminated prior to leaving the site. Water from wheel washes shall be collected and disposed of properly. Loose soil on equipment should be brushed onto a collection mat or tarpaulin and the soils transferred/included in any contaminated soils for proper disposal.

7.2.5 Transportation Guidelines

Transportation of contaminated soil must comply with Washington Administrative Code (WAC) 173-350-300. All transporters of dangerous waste must operate in accordance with WAC 173-303-240. Receipts documenting offsite disposal should be retained by the Port of Everett. The collection and transportation standards include:

- All persons collecting or transporting solid waste shall avoid littering at the loading point during transport and during proper unloading of the solid waste.

- Vehicles or containers used for the collection and transportation of solid waste shall be tightly covered or screened where littering may occur, durable and of easily cleanable construction. Where garbage is being collected or transported, containers shall be cleaned as necessary to prevent nuisance odors and insect breeding and shall be maintained in good repair.
- Vehicles or containers used for the collection and transportation of solid waste shall be loaded and moved in such manner that the containers will not fail and the contents will not spill or leak. Where such spillage or leakage does occur, the waste shall be picked up immediately by the collector or transporter and returned to the vehicle or container and the area properly cleaned.
- All persons commercially collecting or transporting solid waste shall inspect collection and transportation vehicles at least monthly. Inspection records shall be maintained at the facility normally used to park such vehicles or such other location that maintenance records are kept. Such records shall be kept for at least two years and be made available upon the request of the jurisdictional health department.

The transportation contractor will direct trucks to the appropriate receiving facility. Truck drivers should be made aware if their load has been determined to be contaminated.

7.2.6 Site Report

At the end of construction work, a Site Characterization Report will be prepared to provide a summary of the activities undertaken to manage contaminated materials discovered during construction work, including documentation of locations of discovery, disposal records, and testing/monitoring results. If any contaminated materials are left in situ, the report will also include any proposed future management measures of such materials.

8 LIMITATIONS

Within the limitations of scope, schedule, and budget, we have prepared this scope of services in a professional manner, using the level of skill and care normally exercised for similar projects under similar conditions by reputable and competent environmental consultants currently practicing in this area.

The scope of services was intended to evaluate only for materials, which may be encountered during the shoreline restoration project. The sampling effort served as a screening effort only. It was not intended to define the lateral or vertical extent of soil and/or groundwater contamination.

The data presented in this assessment are based on research and sampling at the subject property and should be considered representative at the time of our observations. We are

not responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time this assessment was prepared. We also note that the facts and conditions referenced in this assessment may change over time, and that the conclusions and recommendations set forth here are applicable to the facts and conditions described only at the time of this assessment. We believe that the conclusions stated here are factual, but no guarantee is made or implied.

This assessment was prepared for the exclusive use of the Port of Everett and their representatives. We do not guarantee that any agency or its staff will reach the same conclusions as presented in this assessment. To help you and others in understanding the limitations of this assessment, we have prepared an appendix, Important Information About Your Environmental Site Assessment/Evaluation Report.

9 REFERENCES

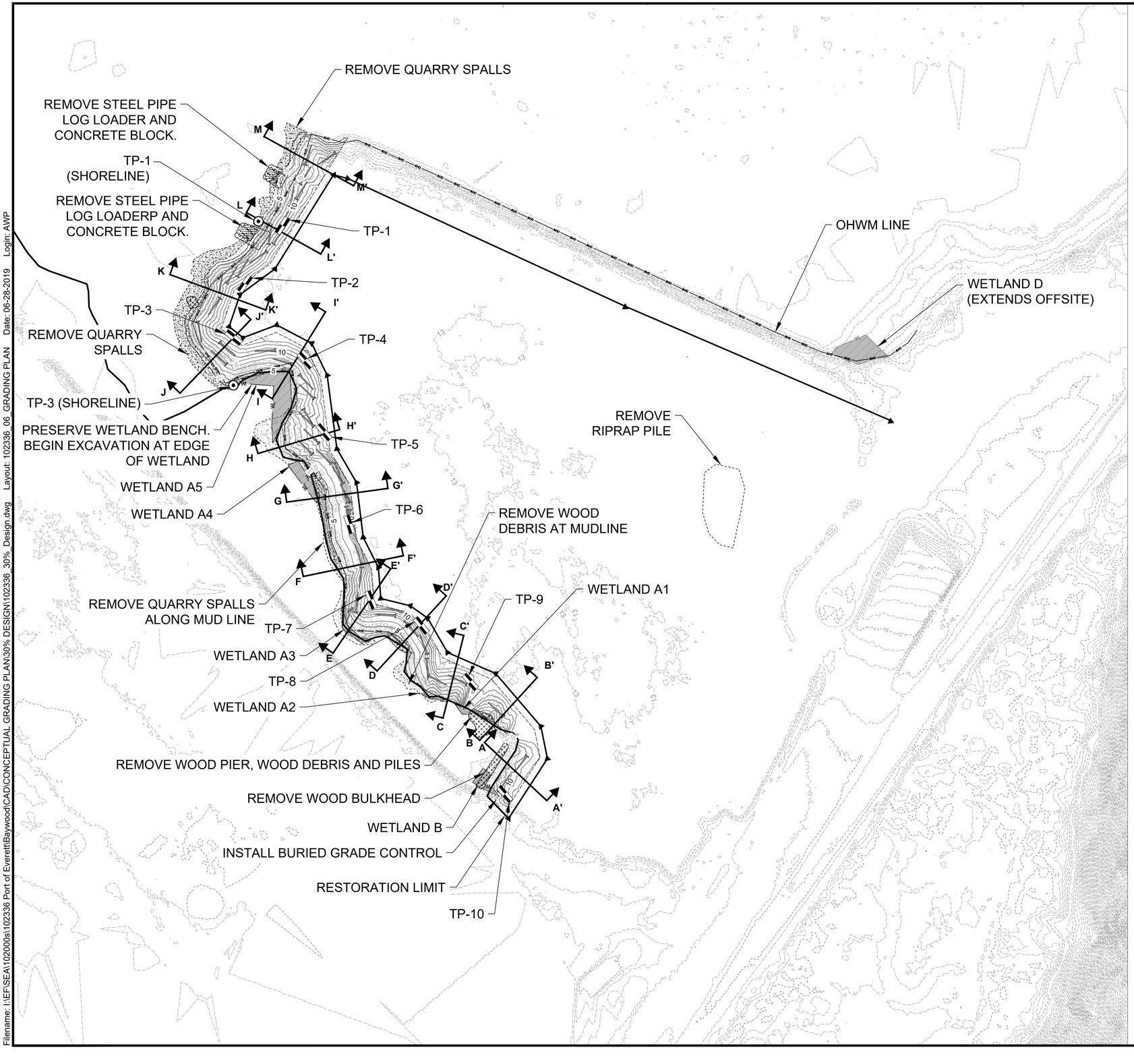
Anchor QEA, LLC, 2011, Draft remedial investigation and feasibility study, former Bay Wood Products site, Everett, Washington: Report prepared by Anchor QEA, LLC, Seattle, Wash., and SLR International Corp., West Linn, Oreg., 080546-01, for Port of Everett, Everett, Wash., and Washington State Department of Ecology, Olympia, Wash., April, available: https://fortress.wa.gov/ecy/gsp/DocViewer.ashx?did=4990.

Gerking, Erik, 2019, Bay Wood Project: Personal communication (conversation) between Erik Gerking, Director of Environmental Programs, Port of Everett, Everett, Wash., and Ryan Peterson, Environmental Staff, Shannon & Wilson, Seattle, Wash., April 23.

Puget Sound LIDAR Consortium, 2014, Topographic LIDAR: Cedar River Watershed (delivery 1): Seattle, Wash., Puget Sound LIDAR Consortium, data set identification 50177, available: https://inport.nmfs.noaa.gov/inport/item/50177.

Washington State Department of Ecology (Ecology), 2015, Cleanup levels and risk calculation (CLARC) data tables: Olympia, Wash., Washington State Department of Ecology, July, available: https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx, accessed April 1, 2019.

Washington State Department of Ecology (Ecology), 2016, Typical number of samples needed to adequately characterize stockpiled soil (1) *in* Guidance for remediation of petroleum contaminated sites (rev.): Olympia, Wash., Washington State Department of Ecology Toxics Cleanup Program, publication no. 10-09-057, Table 6.9, June, available: https://fortress.wa.gov/ecy/publications/documents/1009057.pdf.



N

0 75 150

Scale in Feet

NOTES

1. GRADE SHORELINE AREAS PER FINISHED CONTOURS PLUS 3 FEET OF OVEREXCAVATION, SEE SHEET13.

LEGEND

- MINOR DESIGN CONTOUR (1')
- MAJOR DESIGN CONTOUR (5')
- EXISTING MINOR CONTOUR (1')
- EXISTING MAJOR CONTOUR (5')
- GRADING LIMITS
- DEVELOPMENT BOUNDARY
- EXISTING EXTREME TIDE (8.6')
- EXISTING MHHL (5.4')
- OHWM LINE
- RESTORATION LIMIT
- MATERIAL REMOVAL OUTLINE
- WETLANDS
- QUARRY SPALL REMOVAL (MACHINE)
- QUARRY SPALL REMOVAL (SPECIAL HANDLING)
- MARINE WOOD DEBRIS REMOVAL (SPECIAL HANDLING)
- MARINE WOOD & STEEL STRUCTURE REMOVAL (MACHINE)
- LARGE WOODY DEBRIS (LWD)
- TP-1 — TEST PIT, APPROXIMATE LOCATION
- TP-1 (SHORELINE) — GRAB SAMPLE, APPROXIMATE LOCATION

TITLE: BAYWOOD SITE 30% DESIGN

CLIENT: PORT OF EVERETT

S & W JOB NUMBER: 102336-009

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

30% DESIGN GRADING PLAN

DAVID R. CLINE — STATE OF WASHINGTON — 9326 — REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

Fig. 1

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\102336_30%_Design.dwg Layout: 102336_06_GRADING PLAN Date: 06-28-2019 Login: AWP

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-1

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

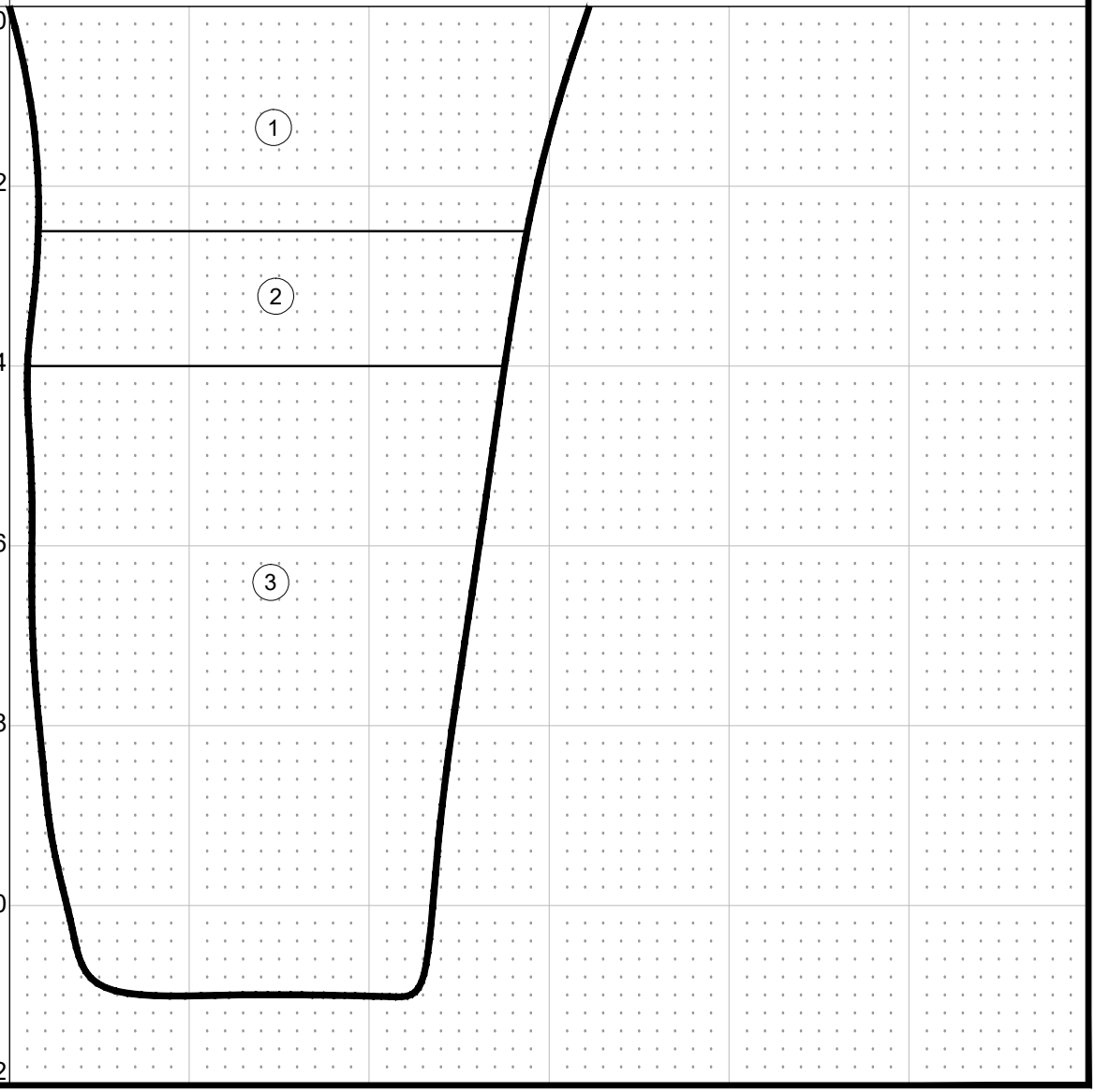
PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION	Ground Water	% Water Content	Samples	Depth, Ft.
(1) Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; trace to few rounded gravel.	None Observed			0
(2) Gray, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few gravels and subangular to subrounded cobbles; 2" Metal Strap at 3'.				2
(3) Gray, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few wood pieces, typically >1' long.				4
				6
				8
				10
				12

Sketch of Northeast Pit Side

Surface Elevation: Approx. Top of Bank

Horizontal Distance in Feet



NOTES

- Pit set back 3' from top of bank.
- Composited environmental Sample TP-1 (2.5-11.0).

FIG 2
Sheet 1 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-2

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION	Ground Water	% Water Content	Samples
(1) Gray-brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few rounded to angular gravel.	None Observed		
(2) Gray, *Poorly Graded Sand with Silt, Gravel and Cobbles (SP-SM)*; moist; fine to coarse sand; few gravel; little woody debris; little subrounded to subangular gravel and cobbles; 2" metal strap at 3'.			
(3) Gray, *Well Graded Sand (SW)*; moist; trace silt; fine to coarse sand; little wood debris; 2 abandoned wires and 1" diameter metal pipe at 7'.			

NOTES

- Pit located 5' from top of bank.
- Composited environmental Sample TP-2 (2.5-10.0).

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

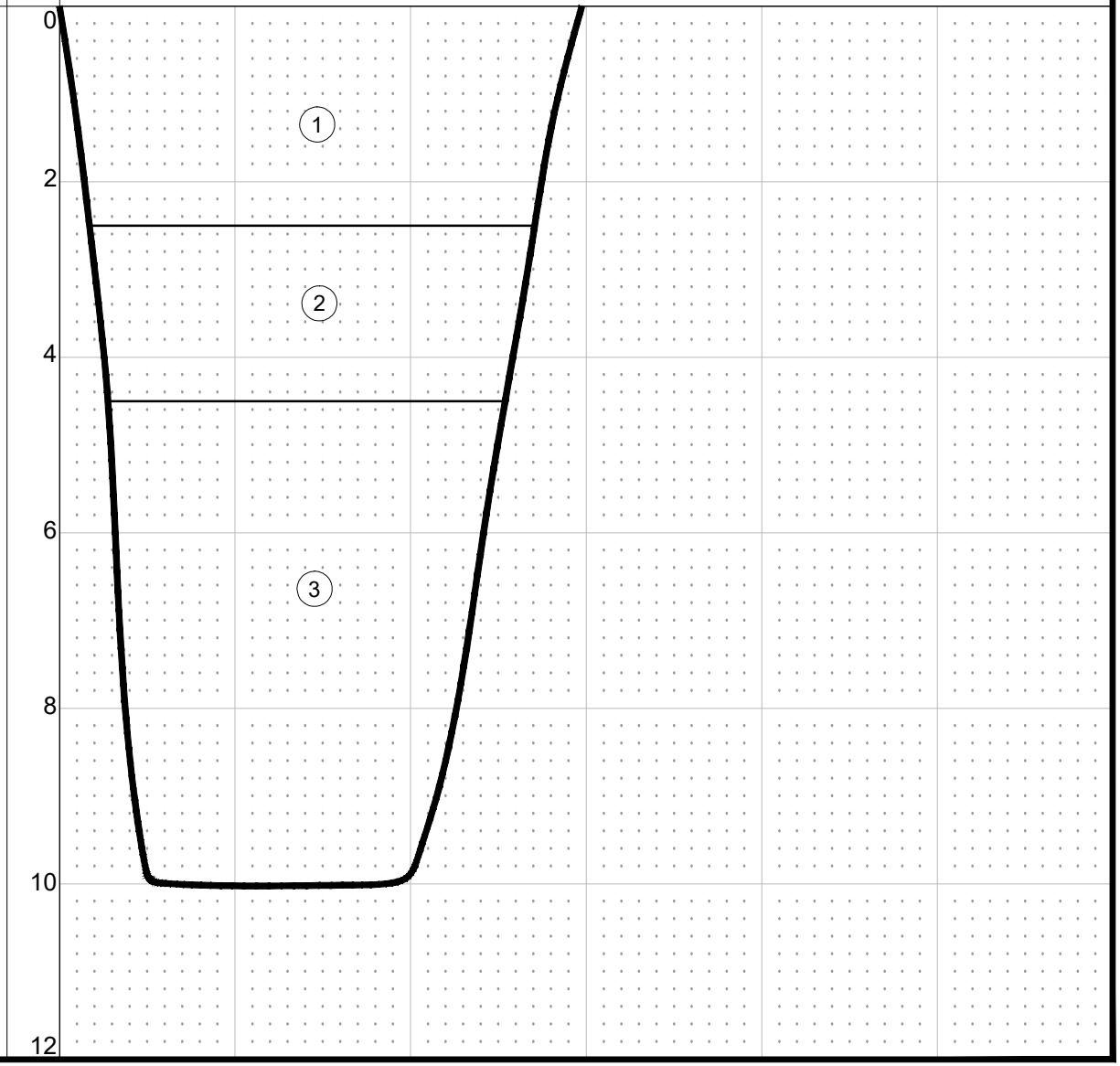


FIG 2
Sheet 2 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-3

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION

1. Brown, *Poorly Graded Sand (SP)*; moist; trace silt; fine to medium sand; trace gravel; braided synthetic rope at 4'.
2. Brown, *Poorly Graded Sand with Gravel and Cobbles (SP)*; moist; trace silt; fine to medium sand; trace gravel; little cobbles.
3. Red-brown, *Silty Sand with Gravel and Cobbles (SM)*; moist; little subangular to subrounded gravel and cobbles; one branch found at 6'.
4. Gray, *Well Graded Sand (SW)*; moist; trace silt; fine to coarse sand.

NOTES

- Pit located 5' from top of bank.
- Composited environmental Sample TP-3 (6.0-7.0).

Ground Water ▽

% Water Content

Samples

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

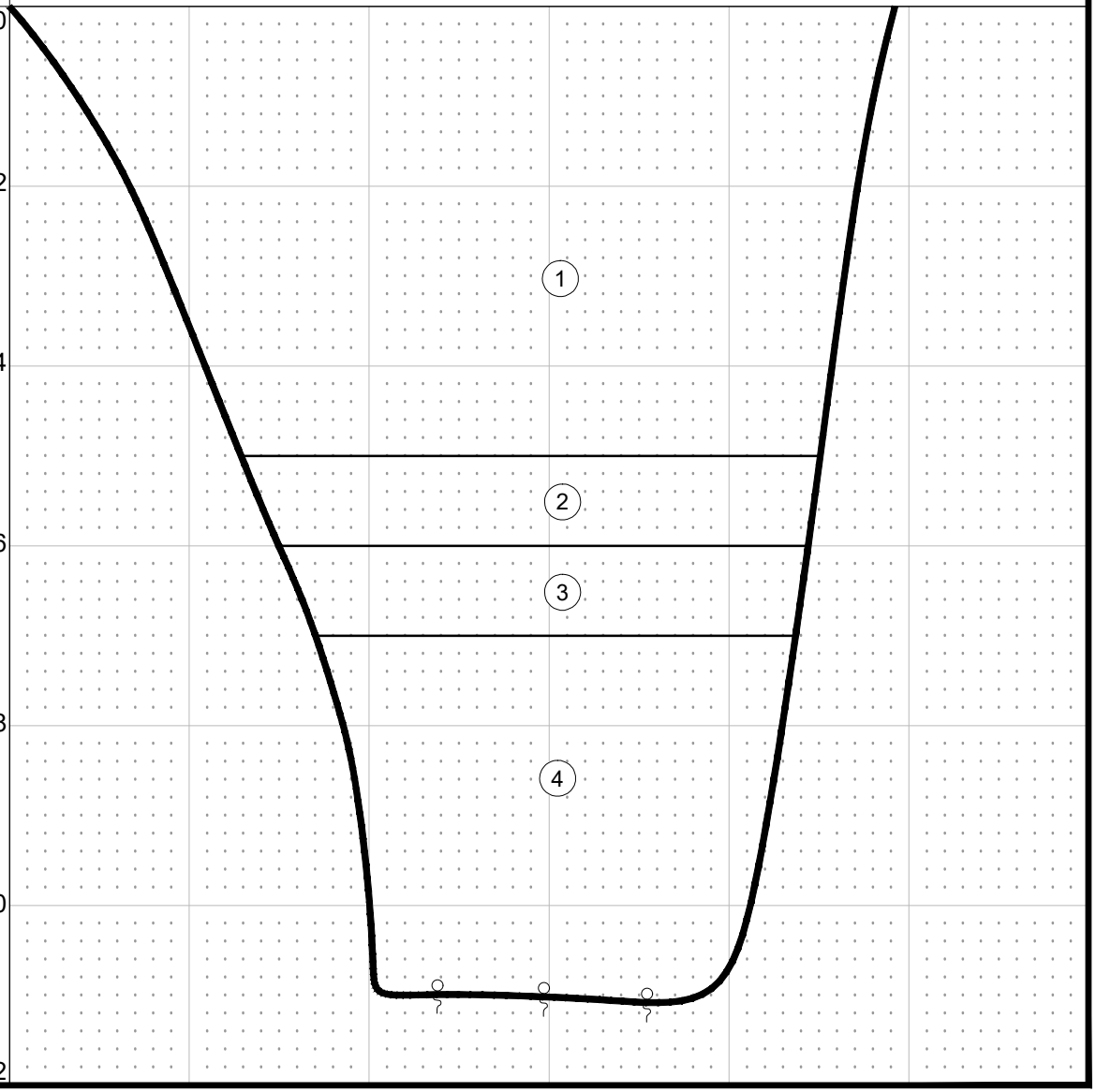


FIG 2
Sheet 3 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-4

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION

(1) Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand.

(2) Red-brown, *Silty Sand (SM)*; moist.

(3) Mostly rounded to angular cobbles, some wood pieces, black fabric at 4'.

(4) *Poorly Graded Sand (SP)*; moist; trace silt; fine to medium sand; trace gravel; few wood pieces.

NOTES

- Pit located 3' from top of bank.
- Composited environmental Sample TP-4 (7.0-10.0).

Ground Water | % Water Content | Samples | Depth, Ft.

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

Horizontal Distance in Feet

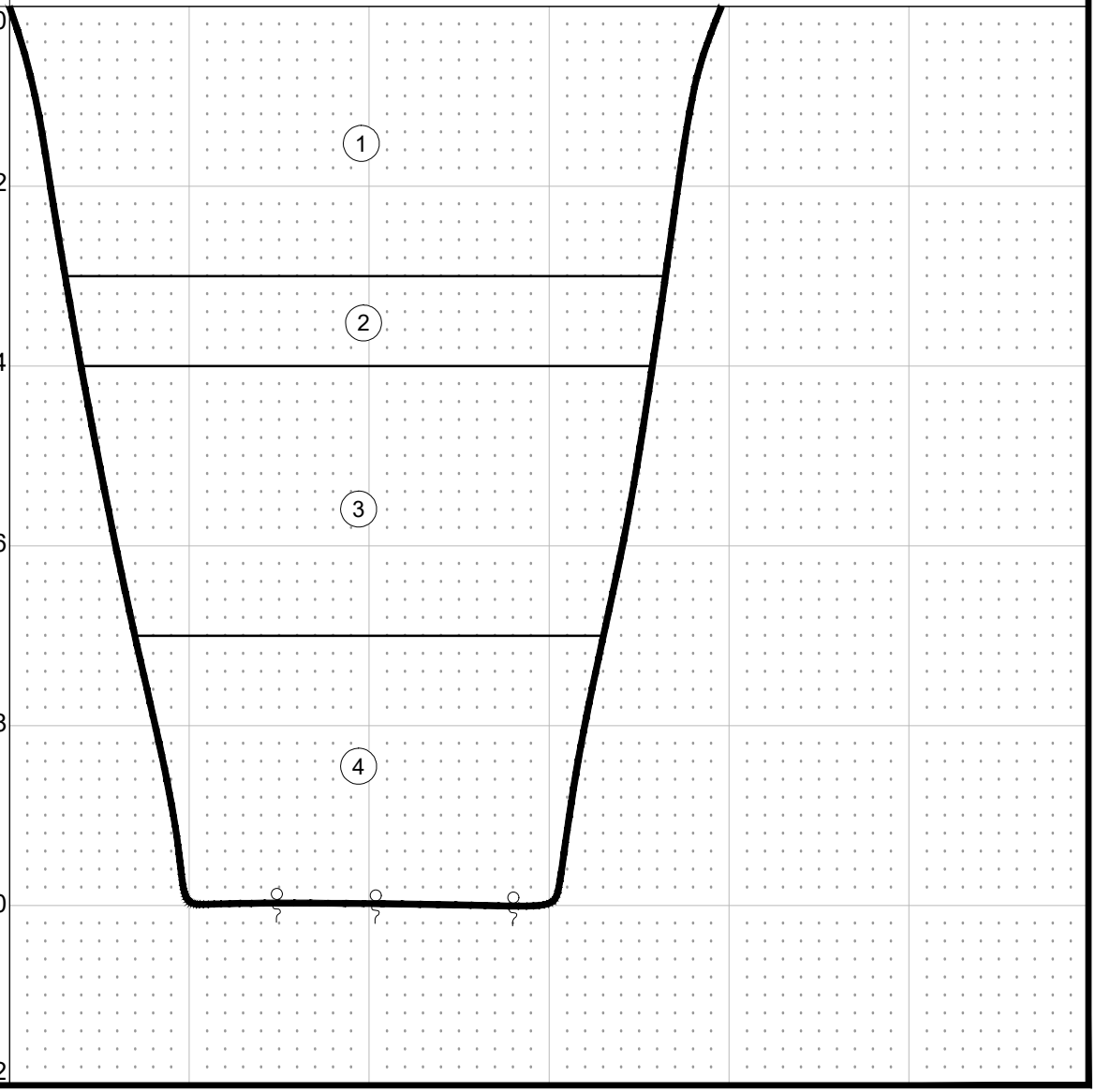


FIG 2
Sheet 4 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-5

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION

1. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand.
2. Red-brown, *Silty Sand (SM)*; fine to medium sand.
3. Gray, *Silt (ML)*; moist; some wood pieces, <1' long.
4. Gray, *Silty Sand (SM)*; moist; trace cobbles; few wood pieces transitioning to no wood by 10'.

NOTES

- Pit located 5' from top of bank.
- Composited environmental Sample TP-5 (5.0-6.0).

Ground Water | % Water Content | Samples | Depth, Ft.

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

Horizontal Distance in Feet

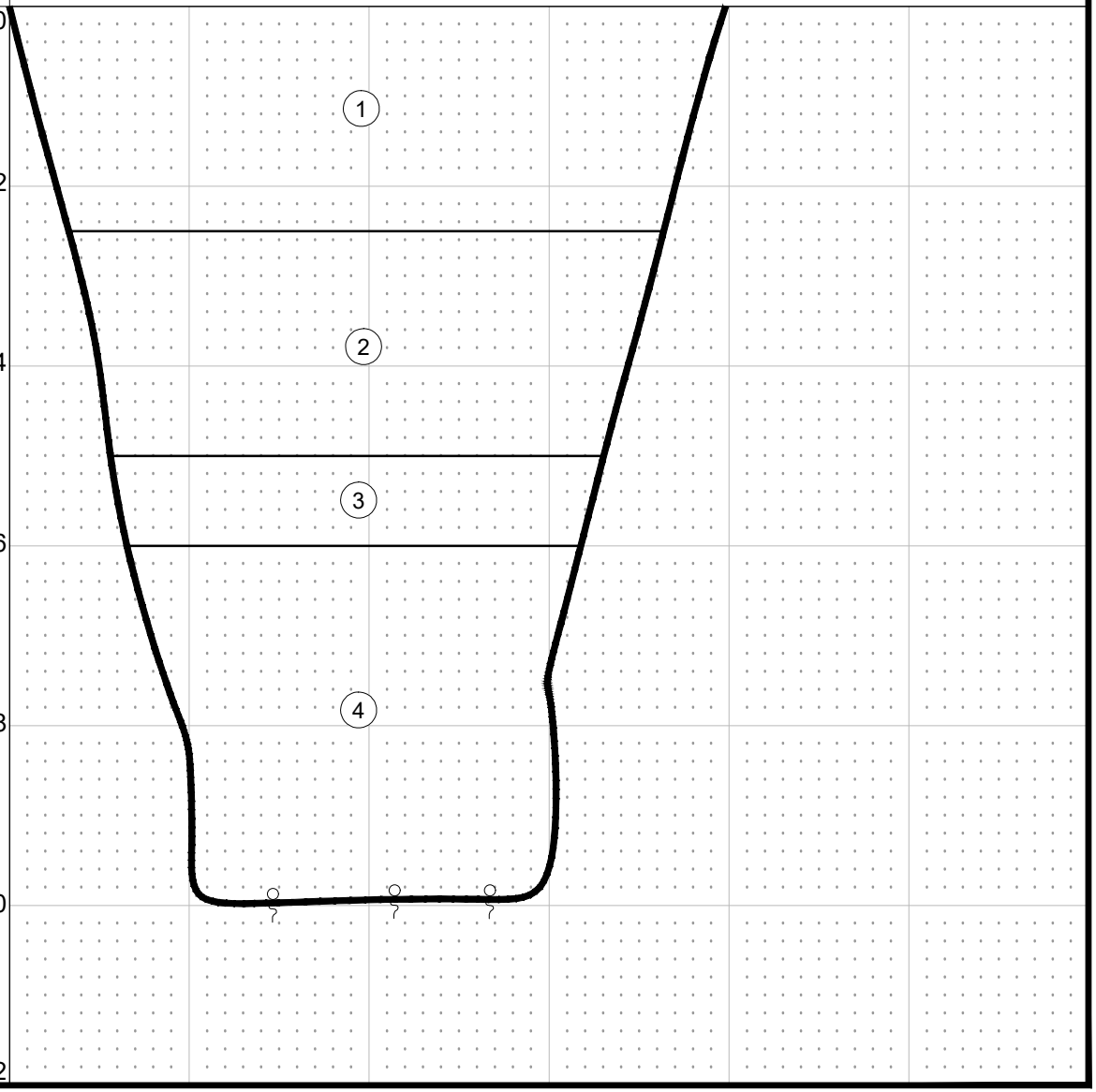


FIG 2
Sheet 5 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-6

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION	Ground Water	% Water Content	Samples
(1) Brown, *Sandy Silt (ML)*; moist; trace gravel and cobbles.			
(2) Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; few gravel.			
(3) Gray, *Well Graded Sand (SW)*; trace silt; few gravel; trace cobbles.			
(4) Gray, *Well Graded Sand (SW)*; trace silt; few gravel; trace cobbles; 6" layer of wood at 5.0-5.5', mostly small pieces <4", one large piece at 6" dia.	▽		

NOTES

- Pit located 4' from top of bank.
- Composited environmental Sample TP-6 (4.0-10.0).

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

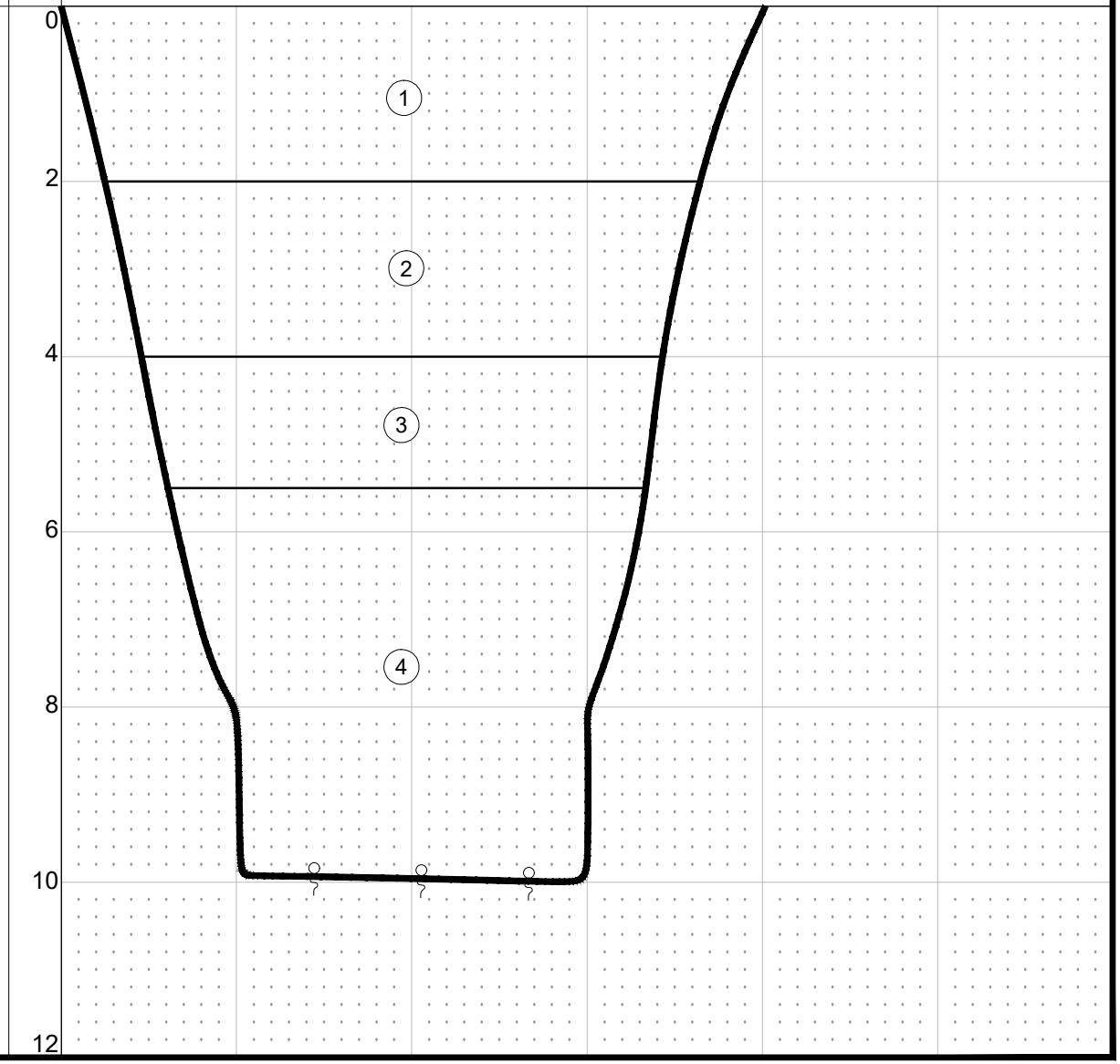


FIG 2
Sheet 6 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-7

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION

1. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand.
2. Brown, *Sandy Silt (ML)*; moist; few round to subangular gravel; trace wood pieces.
3. Gray, *Sandy Silt (ML)*; moist; few round to subangular gravel; trace wood pieces.
4. Mostly subangular to angular cobbles up to 12", with brown silt; trace wood pieces.

NOTES

- Pit located 5' from top of bank.
- Composited environmental Sample TP-7 (5.0-6.0).

Ground Water: None Observed

% Water Content

Samples

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

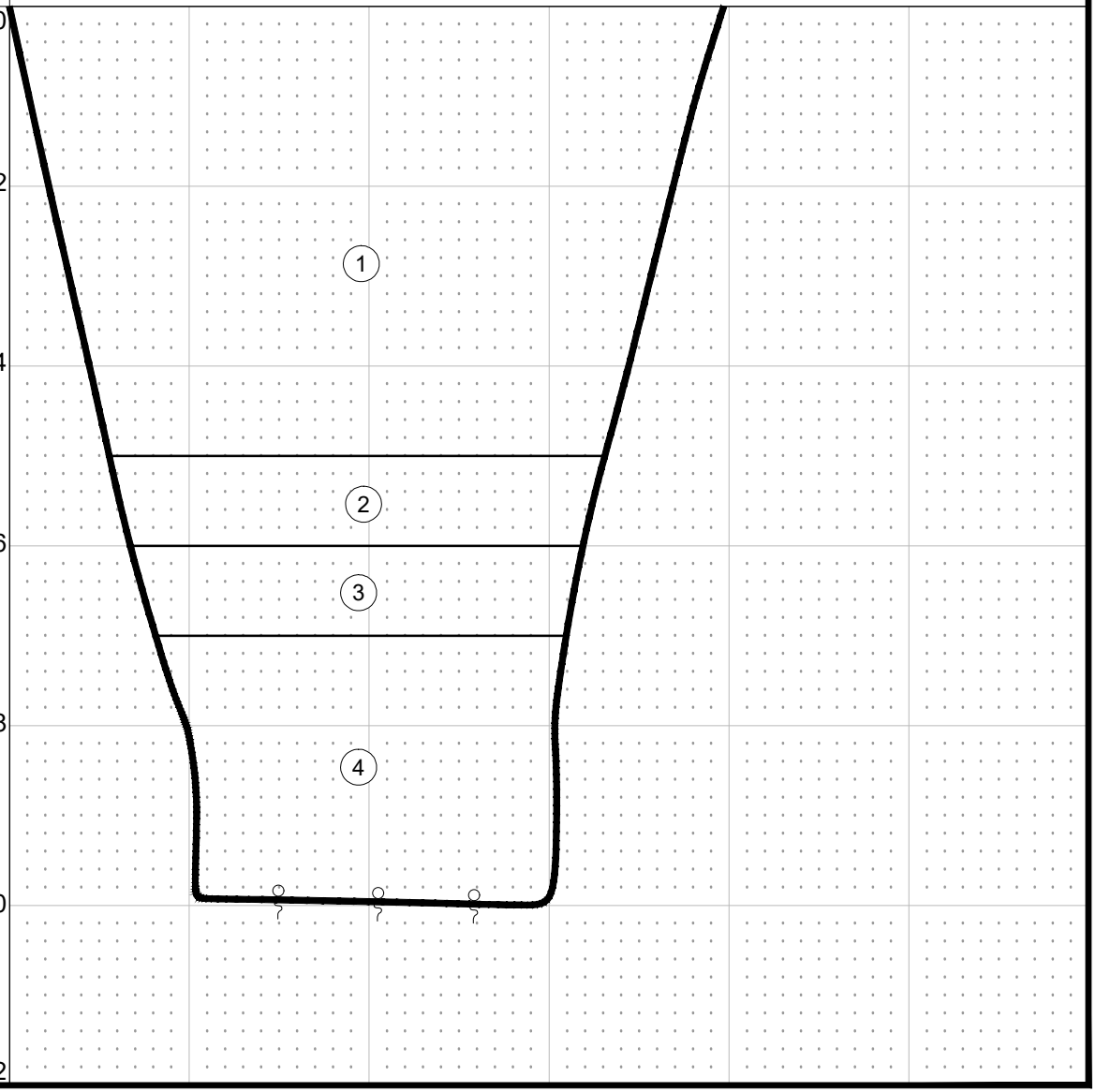


FIG 2
Sheet 7 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-8

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

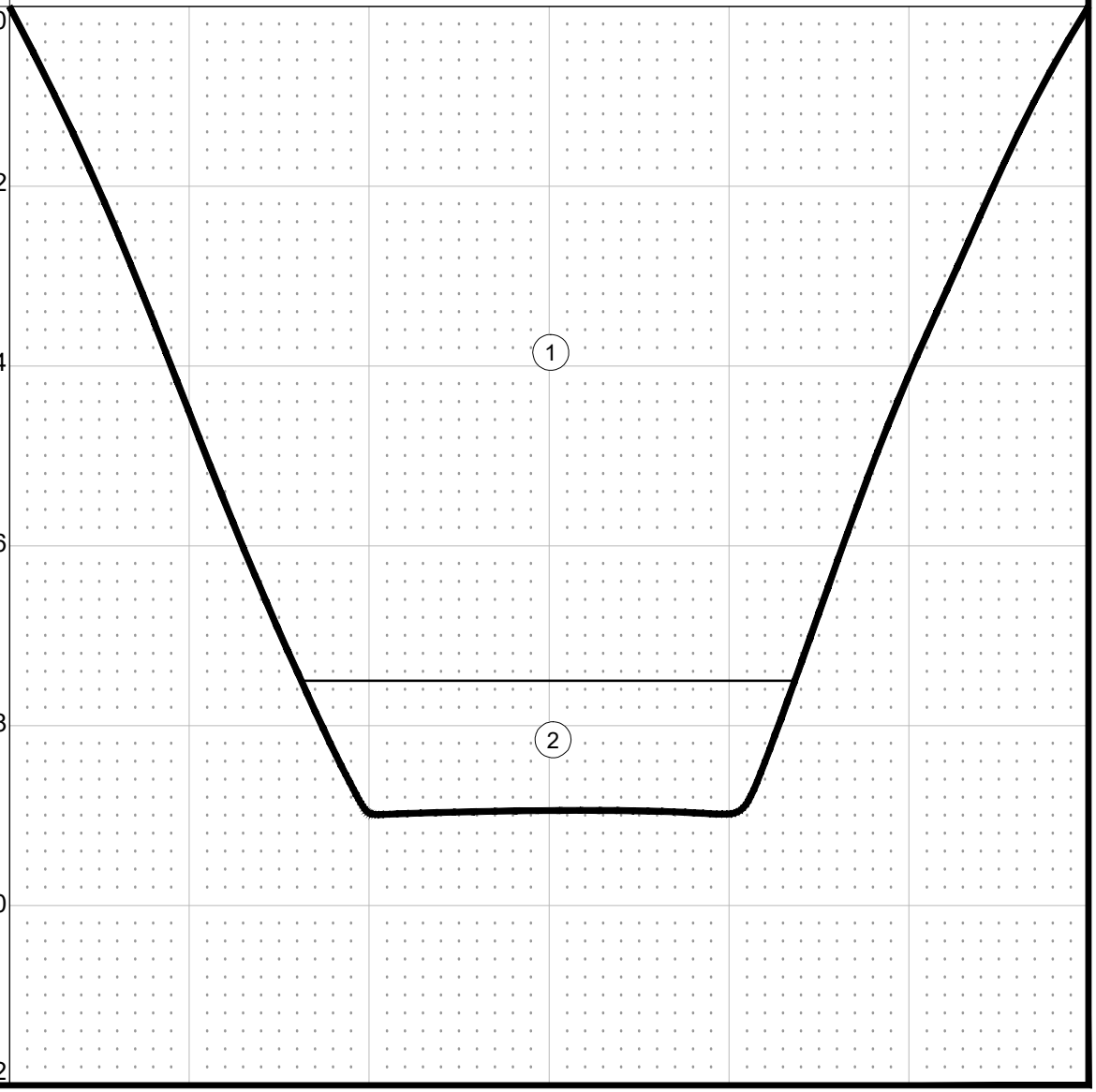
PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION	Ground Water	% Water Content	Samples	Depth, Ft.
(1) Gray-brown, *Poorly Graded Sand (SP)*; moist; fine to medium sand; trace rounded to subangular gravel; black fabric at 3'.	None Observed			0
(2) Mostly subangular to rounded Cobbles with few brown silt; trace rounded to subangular gravel; trace fine to coarse sand; one white brick at 9'.				2
				4
				6
				8
				10
				12

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

Horizontal Distance in Feet



NOTES

- Excavation 6' from top of bank.
- Composited environmental Sample TP-8 (7.5-9.0).
- Excavation stopped shallow due to excessive cave-ins.

FIG 2
Sheet 8 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-9

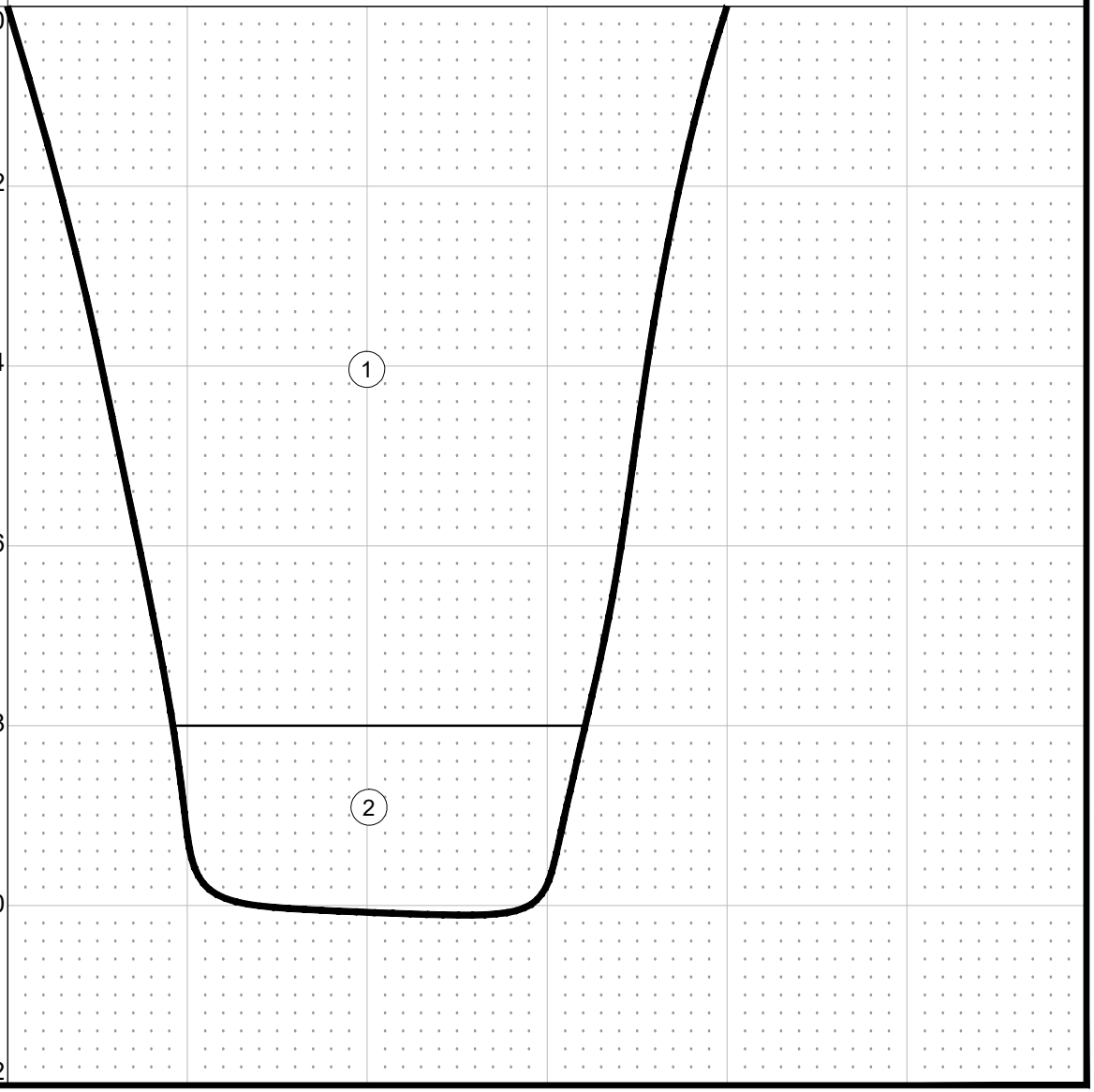
JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION	Ground Water	% Water Content	Samples	Depth, Ft.
(1) Gray-brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; trace rounded to subangular gravel. (2) Mostly subrounded to subangular Cobbles and concrete debris; trace wood (2 pieces observed); trace rounded to subrounded gravel; few fine to coarse sand.	None Observed			0 – 12

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank



NOTES

- Pit located 1' from top of bank.
- Composited environmental Sample TP-9 (8.0-10.0).

FIG 2
Sheet 9 of 10

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

LOG OF TEST PIT TP-10

JOB NO: 102336 DATE: 4-23-2019 LOCATION: Everett, Washington

PROJECT: Bay Wood Shoreline Restoration

SOIL DESCRIPTION

(1) Brown, *Poorly Graded Sand (SP)*; moist; trace silt; fine to medium sand; trace wood pieces.

(2) Brown, *Silt (ML)*; moist; one large (2'x2'x0.5') concrete block at 9'; three 4" pieces of asphalt at 9'; trace wood pieces.

(3) Gray, *Poorly Graded Sand with Gravel (SP)*; moist; trace silt; fine to coarse sand; rounded to angular gravel; two round 6" cobbles at 10'.

NOTES

- Pit located 4' from top of bank.
- Composited environmental Sample TP-10 (9.0-9.5).

Ground Water | % Water Content | Samples | Depth, Ft.

Sketch of North Pit Side

Surface Elevation: Approx. Top of Bank

Horizontal Distance in Feet

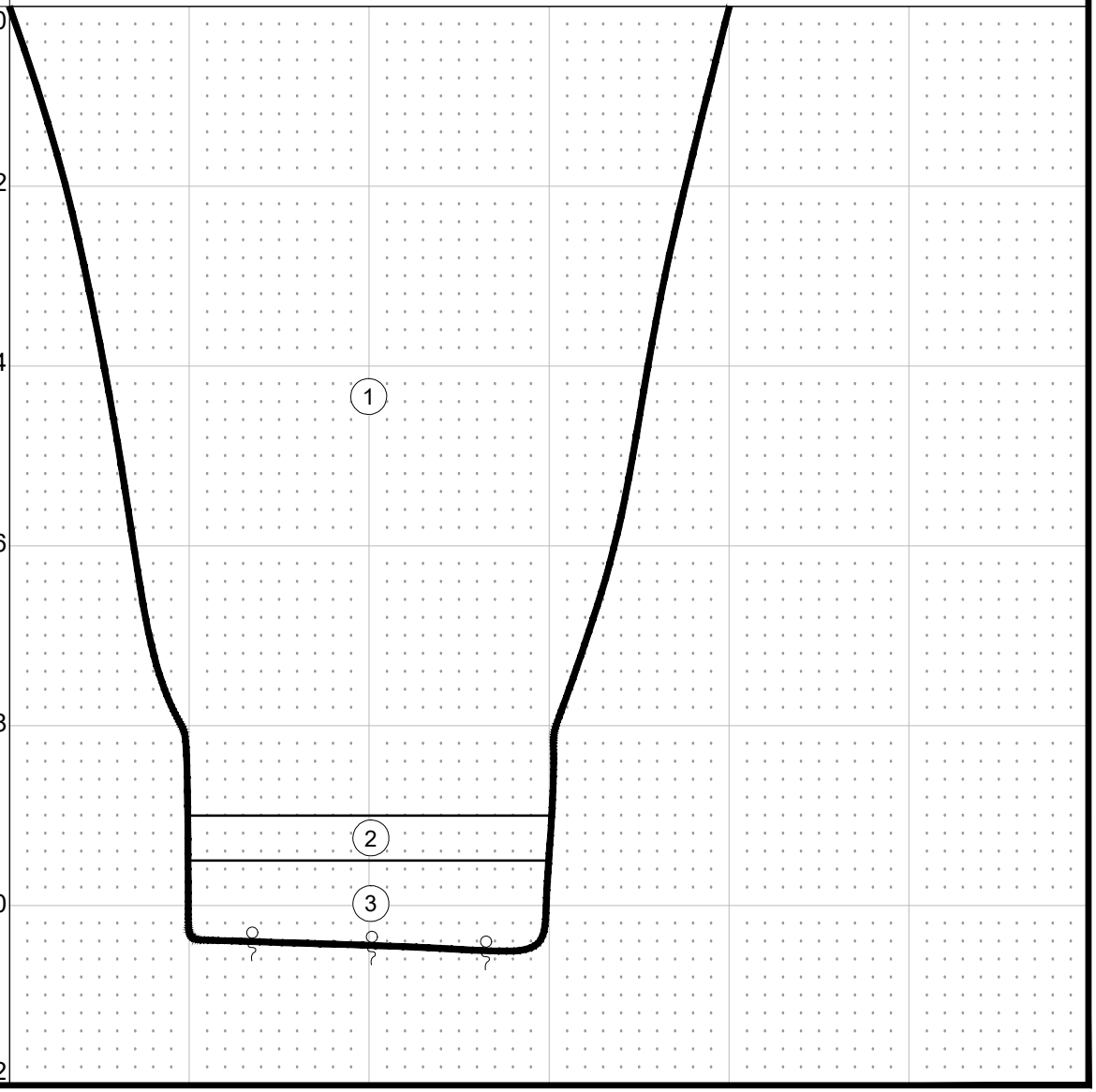
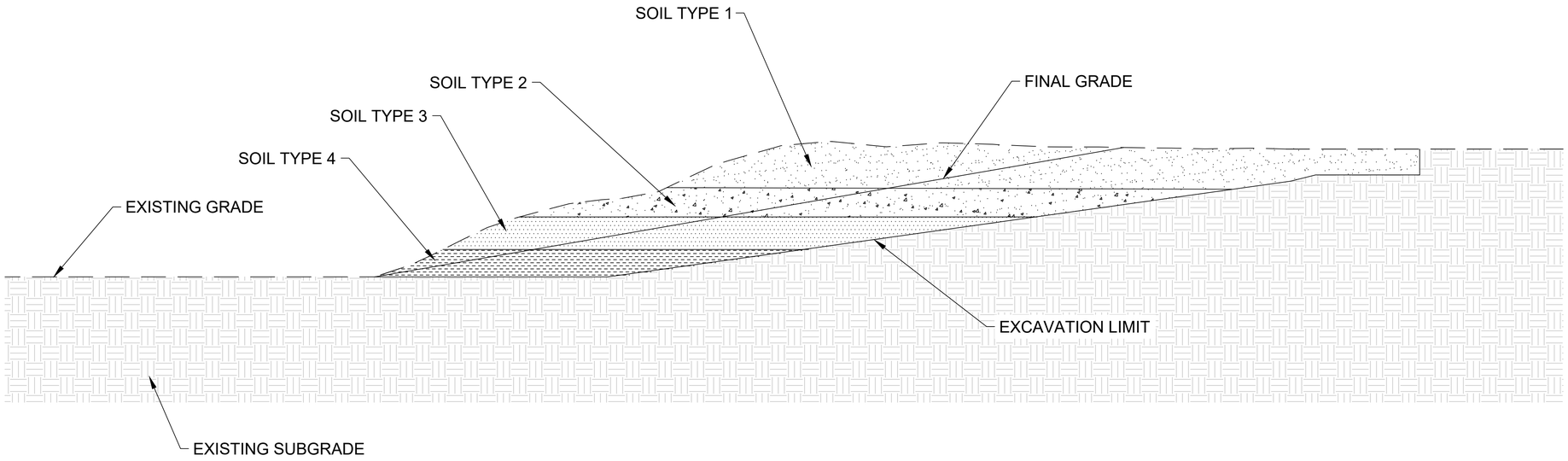


FIG 2
Sheet 10 of 10



EXCAVATION DETAIL A-A' - M-M'

NOTES

1. SOIL TYPE/CLASSIFICATION VARIES BY TEST PIT LOCATION.

LEGEND

- EXISTING GROUND (LiDAR)
- FINAL GRADE
- SOIL TYPE 1
- SOIL TYPE 2
- SOIL TYPE 3
- SOIL TYPE 4
- EXISTING SUBGRADE

SOIL EXCAVATION (YARDS)								
Alignment	Profile Soil Area (YD^2)				Alignment Soil Zone Volume (YD^3)			
	1	2	3	4	1	2	3	4
A-A'	16	0	0	0	581	0	0	0
B-B'	21	0	0	0	693	0	0	0
C-C'	32	4	0	0	970	110	0	0
D-D'	27	5	0	0	776	144	0	0
E-E'	24	3	1	0	502	59	29	0
F-F'	8	7	5	16	197	167	129	384
G-G'	8	7	5	17	291	246	189	574
H-H'	20	15	5	9	816	629	202	366
I-I'	22	0	0	0	992	0	0	0
J-J'	17	2	2	5	637	84	75	168
K-K'	6	5	11	0	229	200	417	0
L-L'	9	5	11	0	372	184	437	0
M-M'	9	7	18	0	256	212	515	0
SUM	220	60	59	46	7310	2034	1994	1492

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

TITLE: BAYWOOD SITE 30% DESIGN

CLIENT: PORT OF EVERETT

S & W JOB NUMBER: 102336-009

30% DESIGN EXCAVATION DETAIL

DAVID R. CLINE — STATE OF WASHINGTON — 9328 — REGISTERED PROFESSIONAL ENGINEER — NOT FOR CONSTRUCTION

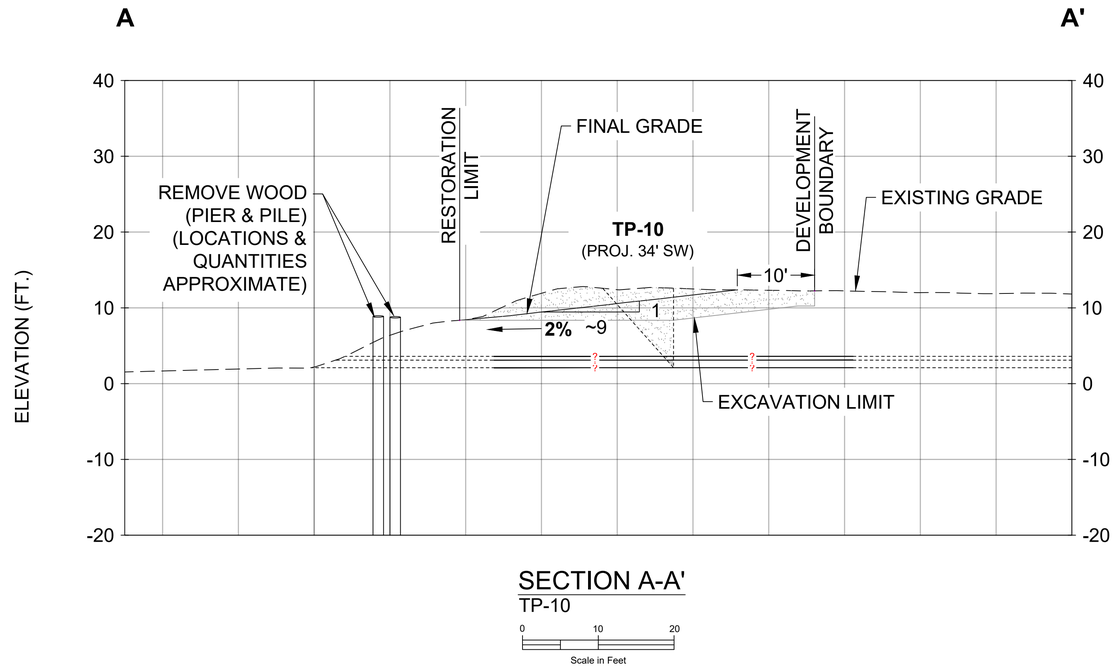
SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

3A

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\102336_30%_Design.dwg Layout: 102336_13_EXCAVATION DETAIL Date: 06-20-2019 Login: AWP



SECTION A-A'

TP-10

0 10 20

Scale in Feet

SOIL DESCRIPTION - TP-10

ZONE 1. Brown, *Poorly Graded Sand (SP)*; moist; trace silt; fine to medium sand; trace wood pieces.

ZONE 2. Brown, *Silt (ML)*; moist; one large (2'x2'x0.5') concrete block at 9'; three 4" pieces of asphalt at 9'; trace wood pieces.

ZONE 3. Gray, *Poorly Graded Sand with Gravel (SP)*; moist; trace silt; fine to coarse sand; rounded to angular gravel; two round 6" cobbles at 10'.

LEGEND

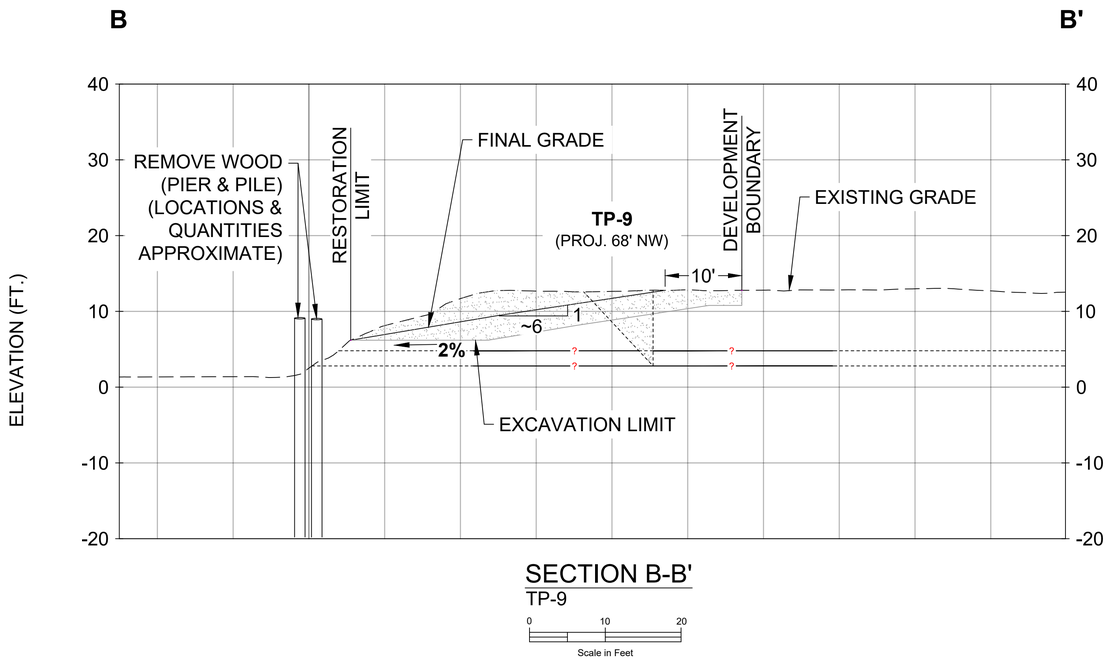
EXISTING GROUND (LiDAR)

FINAL GRADE

SOIL ZONE 1 (SP)

SOIL ZONE 2 (ML)

SOIL ZONE 3 (SP/GRAVEL)



SECTION B-B'

TP-9

0 10 20

Scale in Feet

SOIL DESCRIPTION - TP-9

ZONE 1. Gray-brown, *Poorly Graded Sand with Silt (SP)*; moist; fine to medium sand; tracerounded to subangular gravel.

ZONE 2. Mostly subrounded to subangular Cobbles and concrete debris; trace wood (2 pieces observed); trace rounded to subrounded gravel; few fine to coarse sand.

LEGEND

EXISTING GROUND (LiDAR)

FINAL GRADE

SOIL ZONE 1 (SP)

SOIL ZONE 2 (FILL)

TITLE: BAYWOOD SITE 30% DESIGN

CLIENT: PORT OF EVERETT

S & W JOB NUMBER: 102336-009

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

30% DESIGN SECTIONS A & B

DAVID R. CLINE — STATE OF WASHINGTON — 9328 — REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

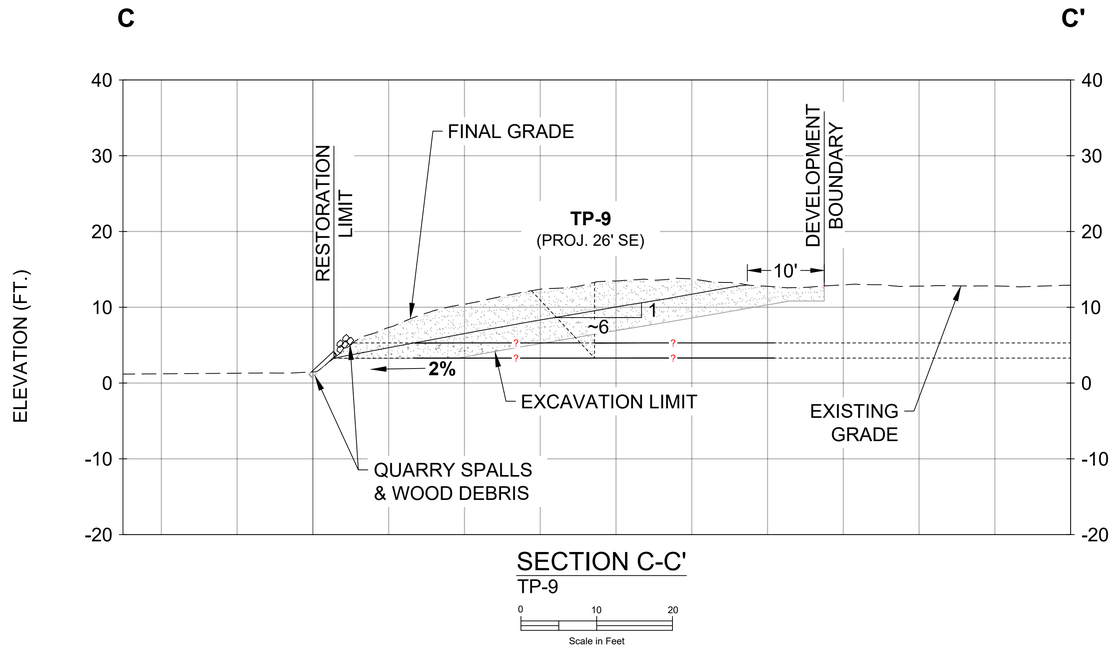
SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

3B

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"

Filename: I:\EP\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\102336_30%_Design.dwg Layout: 102336_167_SECTIONS A & B Date: 06-20-2019 Login: AWP

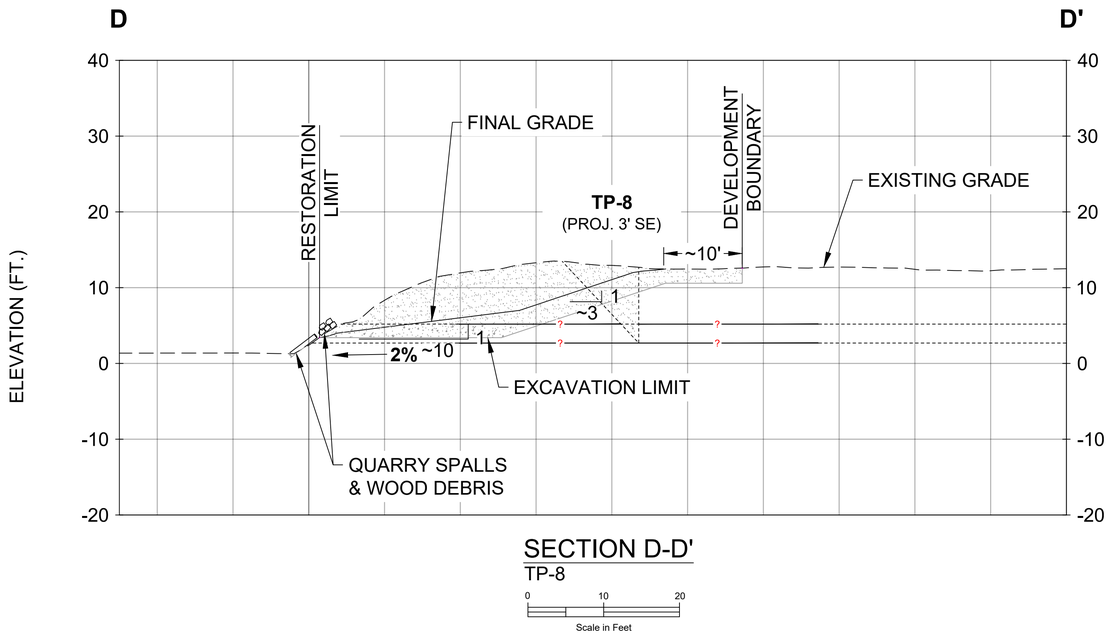


SECTION C-C'

TP-9

0 10 20

Scale in Feet



SECTION D-D'

TP-8

0 10 20

Scale in Feet

SOIL DESCRIPTION: TP-9

ZONE 1. Gray-brown, *Poorly Graded Sand with Silt (SP)*; moist; fine to medium sand; tracerounded to subangular gravel.
ZONE 2. Mostly subrounded to subangular Cobbles and concrete debris; trace wood (2 pieces observed); trace rounded to subrounded gravel; few fine to coarse sand.

LEGEND

- EXISTING GROUND (LiDAR)
- DESIGN GRADE (SLOPE VARIES)
- SOIL ZONE 1 (SP)
- SOIL ZONE 2 (SP)
- QUARRY SPALLS (ANGULAR)
- WOOD DEBRIS PIECES

SOIL DESCRIPTION: TP-8

ZONE 1. Gray-brown, *Poorly Graded Sand (SP)*; moist; fine to medium sand; trace rounded to subangular gravel; black fabric at 3'.
ZONE 2. Mostly subangular to rounded Cobbles with few brown silt; trace rounded to subangular gravel; trace fine to coarse sand; one white brick at 9'.

TITLE: BAYWOOD SITE 30% DESIGN

CLIENT: PORT OF EVERETT

S & W JOB NUMBER: 102336-009

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

30% DESIGN SECTIONS C & D

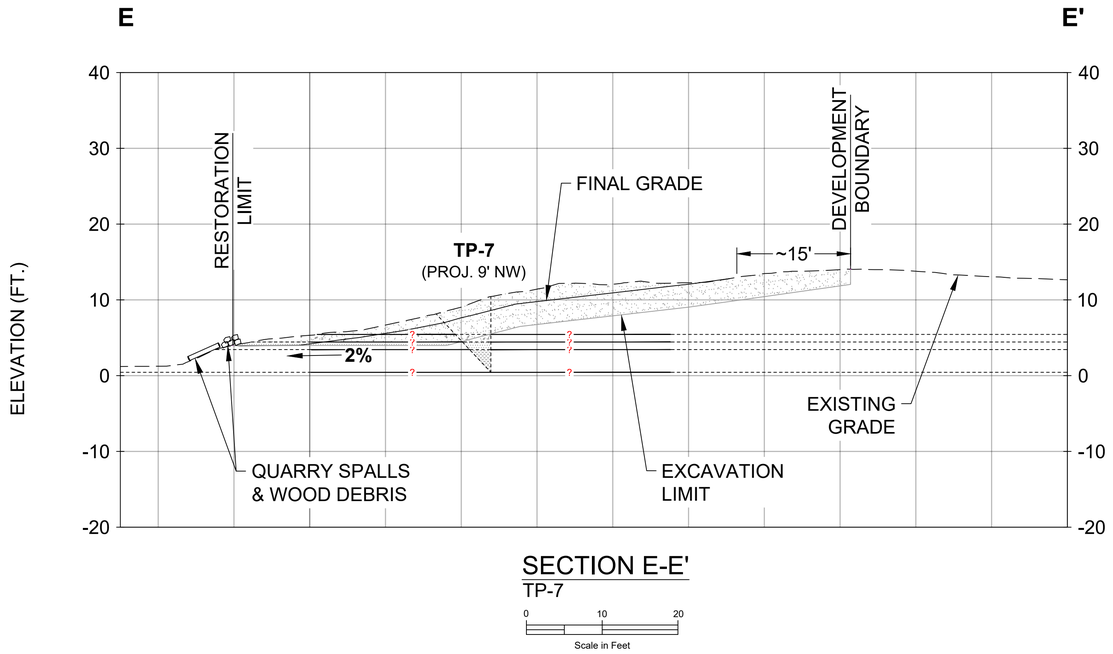
DAVID R. CLINE — STATE OF WASHINGTON — 39336 — REGISTERED PROFESSIONAL ENGINEER — NOT FOR CONSTRUCTION

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

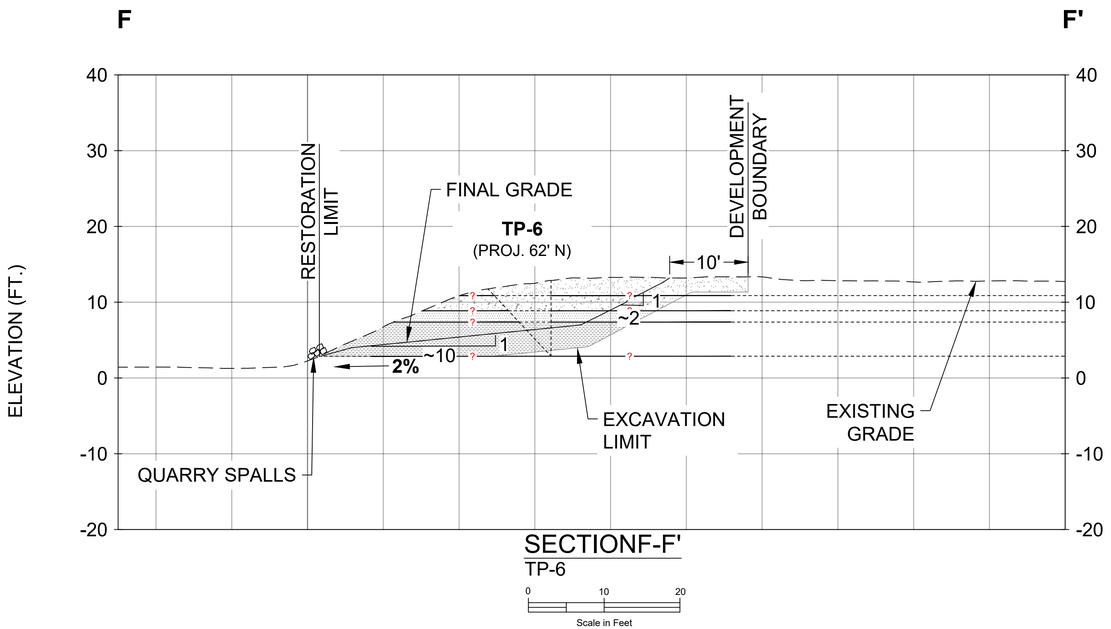
3C

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"



SECTION E-E'
TP-7

0 10 20
Scale in Feet



SECTIONF-F'
TP-6

0 10 20
Scale in Feet

SOIL DESCRIPTION: TP-7

ZONE 1. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand.
ZONE 2. Brown, *Sandy Silt (ML)*; moist; few round to subangular gravel; trace wood pieces.
ZONE 3. Gray, *Sandy Silt (ML)*; moist; few round to subangular gravel; trace wood pieces.
ZONE 4. Mostly subangular to angular cobbles up to 12", with brown silt; trace wood pieces.

LEGEND

- EXISTING GROUND (LiDAR)
- FINAL GRADE
- SOIL ZONE 1
- SOIL ZONE 2
- SOIL ZONE 3
- SOIL ZONE 4
- QUARRY SPALLS (ANGULAR)
- WOOD DEBRIS PIECES

SOIL DESCRIPTION: TP-6

ZONE 1. Brown, *Sandy Silt (ML)*; moist; trace gravel and cobbles.
ZONE 2. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; few gravel.
ZONE 3. Gray, *Well Graded Sand (SW)*; trace silt; few gravel; trace cobbles.
ZONE 4. Gray, *Well Graded Sand (SW)*; trace silt; few gravel; trace cobbles; 6" layer of wood at 5.0-5.5', mostly small pieces <4", one large piece at 6" dia.

TITLE: BAYWOOD SITE 30% DESIGN
CLIENT: PORT OF EVERETT
S & W JOB NUMBER: 102336-009

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

30% DESIGN
SECTIONS E & F

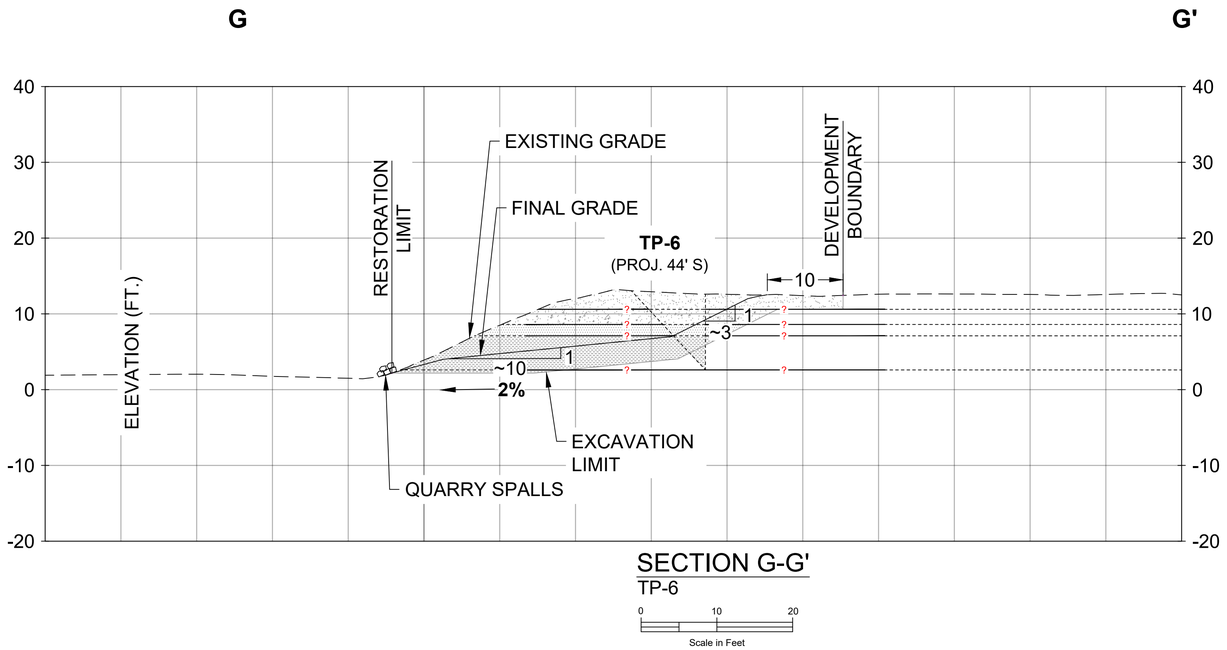
DAVID R. CLINE — STATE OF WASHINGTON — 9336 — REGISTERED PROFESSIONAL ENGINEER — NOT FOR CONSTRUCTION

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

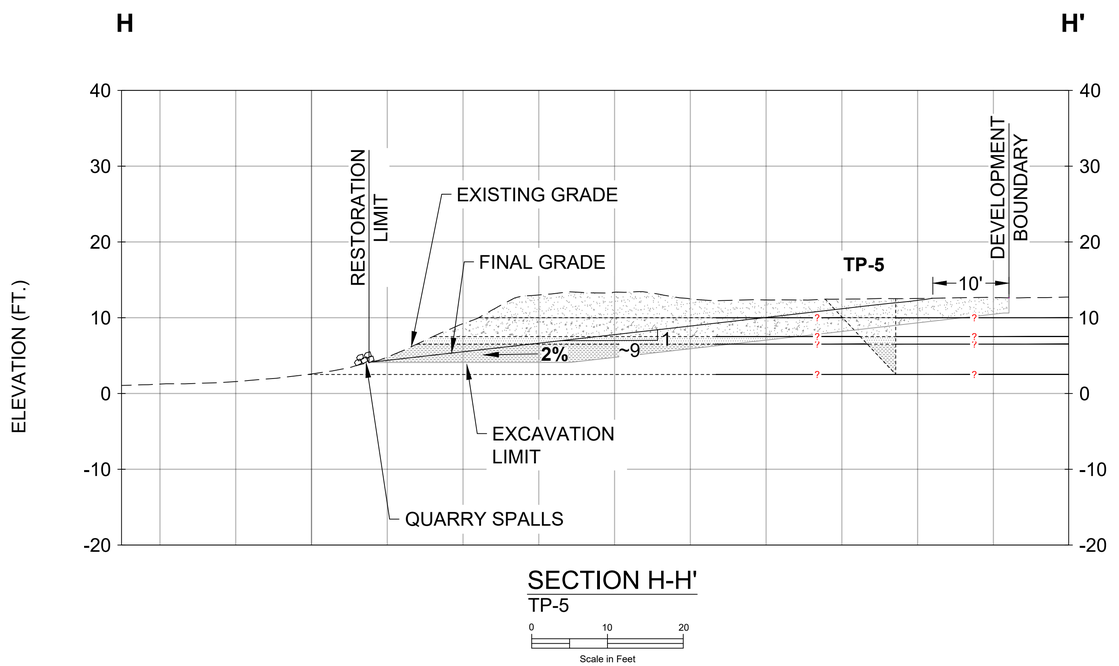
3D

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"



SECTION G-G'
TP-6

0 10 20
Scale in Feet



SECTION H-H'
TP-5

0 10 20
Scale in Feet

SOIL DESCRIPTION: TP-6

ZONE 1. Brown, *Sandy Silt (ML)*; moist; trace gravel and cobbles.
ZONE 2. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; few gravel.
ZONE 3. Gray, *Well Graded Sand (SW)*; trace silt; few gravel; trace cobbles.
ZONE 4. Gray, *Well Graded Sand (SW)*; trace silt; few gravel; trace cobbles; 6" layer of wood at 5.0-5.5', mostly small pieces <4", one large piece at 6" dia.

LEGEND

- EXISTING GROUND (LiDAR)
- FINAL GRADE
- SOIL ZONE 1
- SOIL ZONE 2
- SOIL ZONE 3
- SOIL ZONE 4
- QUARRY SPALLS (ANGULAR)

SOIL DESCRIPTION: TP-5

ZONE 1. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand.
ZONE 2. Red-brown, *Silty Sand (SM)*; fine to medium sand.
ZONE 3. Gray, *Silt (ML)*; moist; some wood pieces, <1' long.
ZONE 4. Gray, *Silty Sand (SM)*; moist; trace cobbles; few wood pieces transitioning to no wood by 10'.

TITLE: BAYWOOD SITE 30% DESIGN
CLIENT: PORT OF EVERETT
S & W JOB NUMBER: 102336-009

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

30% DESIGN
SECTIONS G & H

DAVID R. CLINE — STATE OF WASHINGTON — 9336 — REGISTERED PROFESSIONAL ENGINEER
NOT FOR CONSTRUCTION

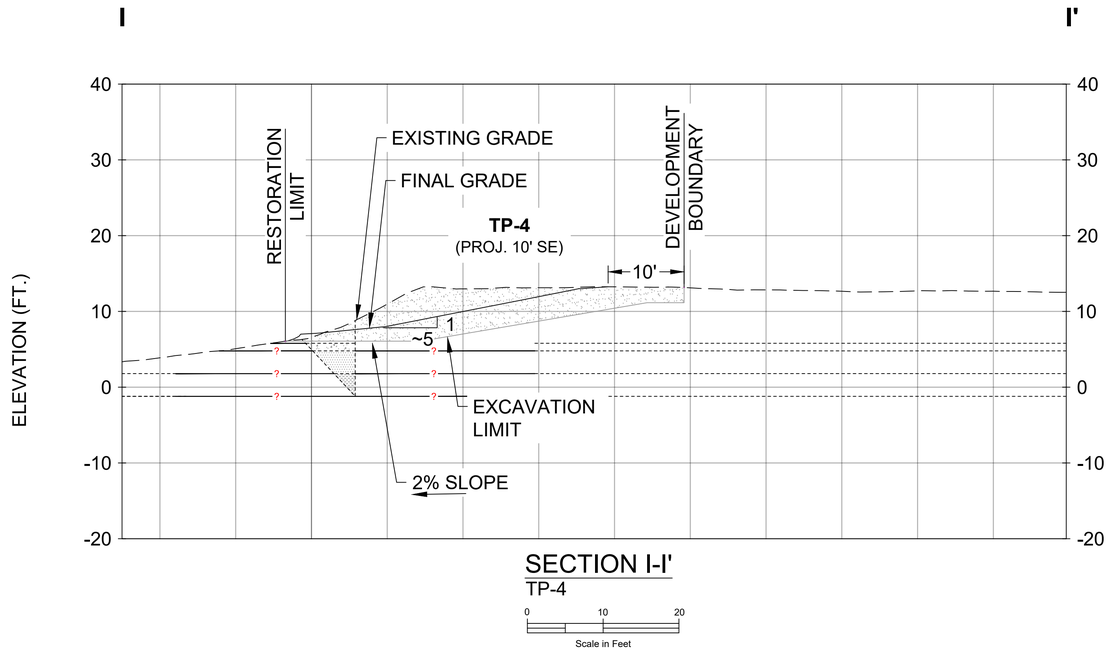
SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

3E

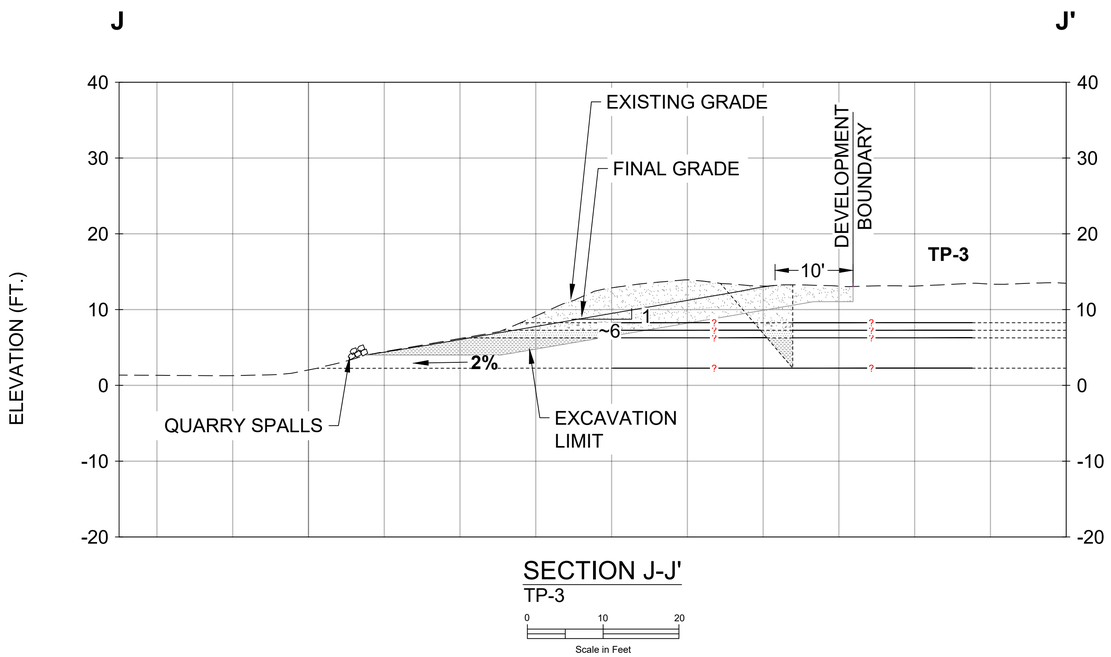
This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\102336_30%_Design.dwg Layout: 102336_20_SECTIONS G & H Date: 06-20-2019 Login: AWP



SECTION I-I'
TP-4

0 10 20
Scale in Feet



SECTION J-J'
TP-3

0 10 20
Scale in Feet

SOIL DESCRIPTION: TP-4

ZONE 1. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand.
ZONE 2. Red-brown, *Silty Sand (SM)*; moist.
ZONE 3. Mostly rounded to angular cobbles, some wood pieces, black fabric at 4'.
ZONE 4. *Poorly Graded Sand (SP)*; moist; trace silt; fine to medium sand; trace gravel; few wood pieces.

LEGEND

- EXISTING GROUND (LiDAR)
- FINAL GRADE
- SOIL ZONE 1
- SOIL ZONE 2
- SOIL ZONE 3
- SOIL ZONE 4
- QUARRY SPALLS (ANGULAR)

SOIL DESCRIPTION: TP-3

ZONE 1. Brown, *Poorly Graded Sand (SP)*; moist; trace silt; fine to medium sand; trace gravel; braided synthetic rope at 4'.
ZONE 2. Brown, *Poorly Graded Sand with Gravel and Cobbles (SP)*; moist; trace silt; fine to medium sand; trace gravel; little cobbles.
ZONE 3. Red-brown, *Silty Sand with Gravel and Cobbles (SM)*; moist; little subangular to subrounded gravel and cobbles; one branch found at 6'.
ZONE 4. Gray, *Well Graded Sand (SW)*; moist; trace silt; fine to coarse sand.

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

TITLE: BAYWOOD SITE 30% DESIGN
CLIENT: PORT OF EVERETT
S & W JOB NUMBER: 102336-009

30% DESIGN SECTIONS I & J

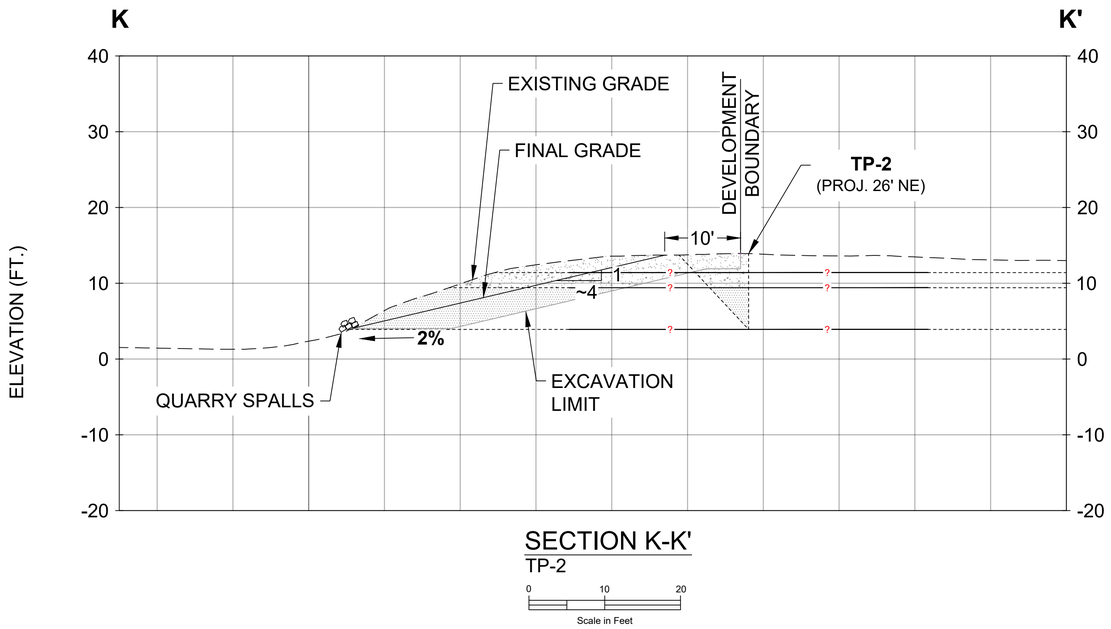
DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER
NOT FOR CONSTRUCTION

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

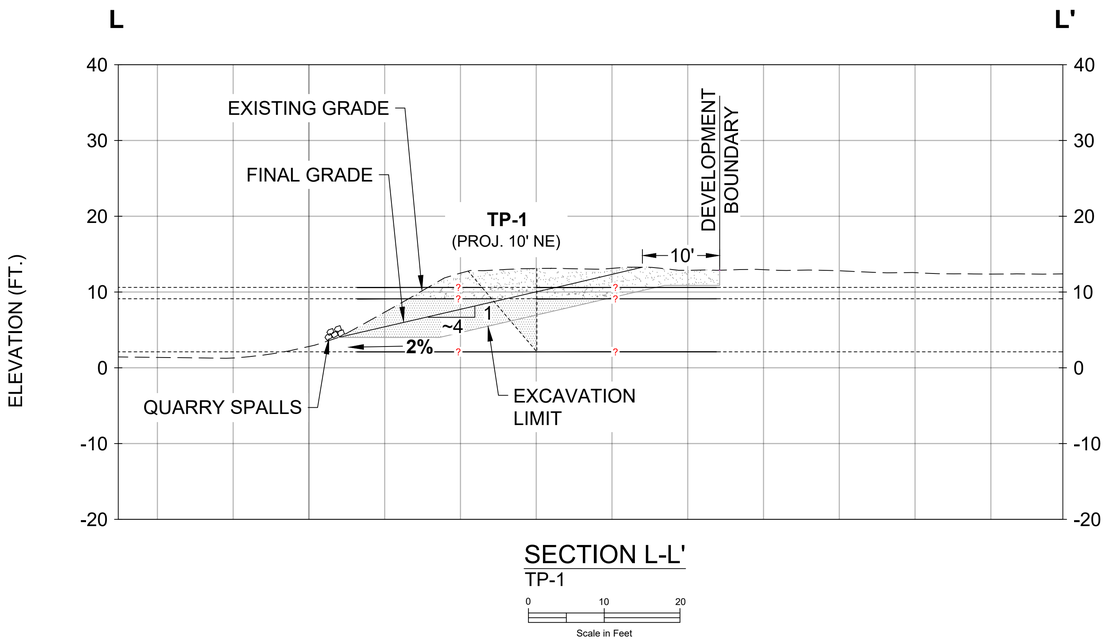
3F

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"



SECTION K-K'
TP-2

0 10 20
Scale in Feet



SECTION L-L'
TP-1

0 10 20
Scale in Feet

SOIL DESCRIPTION: TP-2

ZONE 1. Gray-brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few rounded to angular gravel.
ZONE 2. Gray, *Poorly Graded Sand with Silt, Gravel and Cobbles (SP-SM)*; moist; fine to coarse sand; few gravel; little woody debris; little subrounded to subangular gravel and cobbles; 2" metal strap at 3'.
ZONE 3. Gray, *Well Graded Sand (SW)*; moist; trace silt; fine to coarse sand; little wood debris; 2 abandoned wires and 1" diameter metal pipe at 7'.

LEGEND

- EXISTING GROUND (LiDAR)
- FINAL GRADE
- SOIL ZONE 1
- SOIL ZONE 2
- SOIL ZONE 3
- QUARRY SPALLS (ANGULAR)

SOIL DESCRIPTION: TP-1

ZONE 1. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; trace to few rounded gravel.
ZONE 2. Gray, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few gravels and subangular to subrounded cobbles; 2" Metal Strap at 3'.
ZONE 3. Gray, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few wood pieces, typically >1' long.

TITLE: BAYWOOD SITE 30% DESIGN
CLIENT: PORT OF EVERETT
S & W JOB NUMBER: 102336-009

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

30% DESIGN
SECTIONS L & K

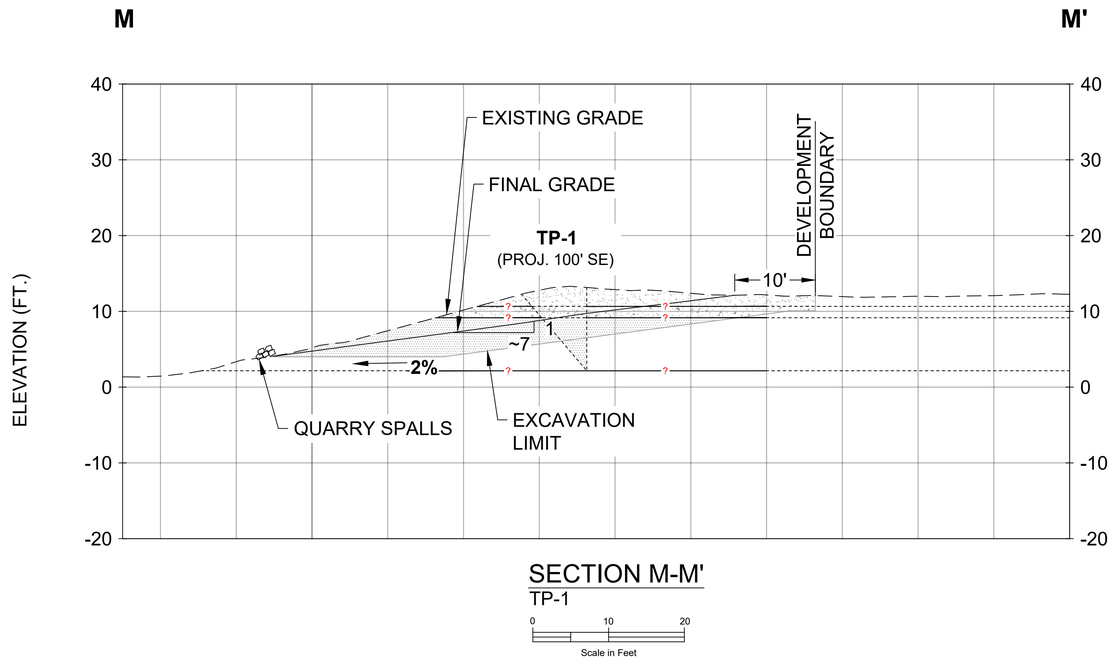
DAVID R. CLINE — STATE OF WASHINGTON — 9336 — REGISTERED PROFESSIONAL ENGINEER — NOT FOR CONSTRUCTION

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019
DRAWN: AWP
CHECKED: DRC
JOB NO.: 102336

3G

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"



SECTION M-M'

TP-1

0 10 20

Scale in Feet

SOIL DESCRIPTION: TP-1

ZONE 1. Brown, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; trace to few rounded gravel.

ZONE 2. Gray, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few gravels and subangular to subrounded cobbles; 2" Metal Strap at 3'.

ZONE 3. Gray, *Poorly Graded Sand with Silt (SP-SM)*; moist; fine to medium sand; few wood pieces, typically >1' long.

LEGEND

- EXISTING GROUND (LiDAR)
- FINAL GRADE
- SOIL ZONE 1
- SOIL ZONE 2
- SOIL ZONE 3
- QUARRY SPALLS (ANGULAR)

TITLE: BAYWOOD SITE 30% DESIGN

CLIENT: PORT OF EVERETT

S & W JOB NUMBER: 102336-009

BY	DATE	REVISIONS
AWP	4/19/2019	DRAFT
AWP	06/07/2019	30% DRAFT

30% DESIGN SECTION M

DONALD R. CLINE — STATE OF WASHINGTON — 9336 — REGISTERED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

DATE: 06/04/2019

DRAWN: AWP

CHECKED: DRC

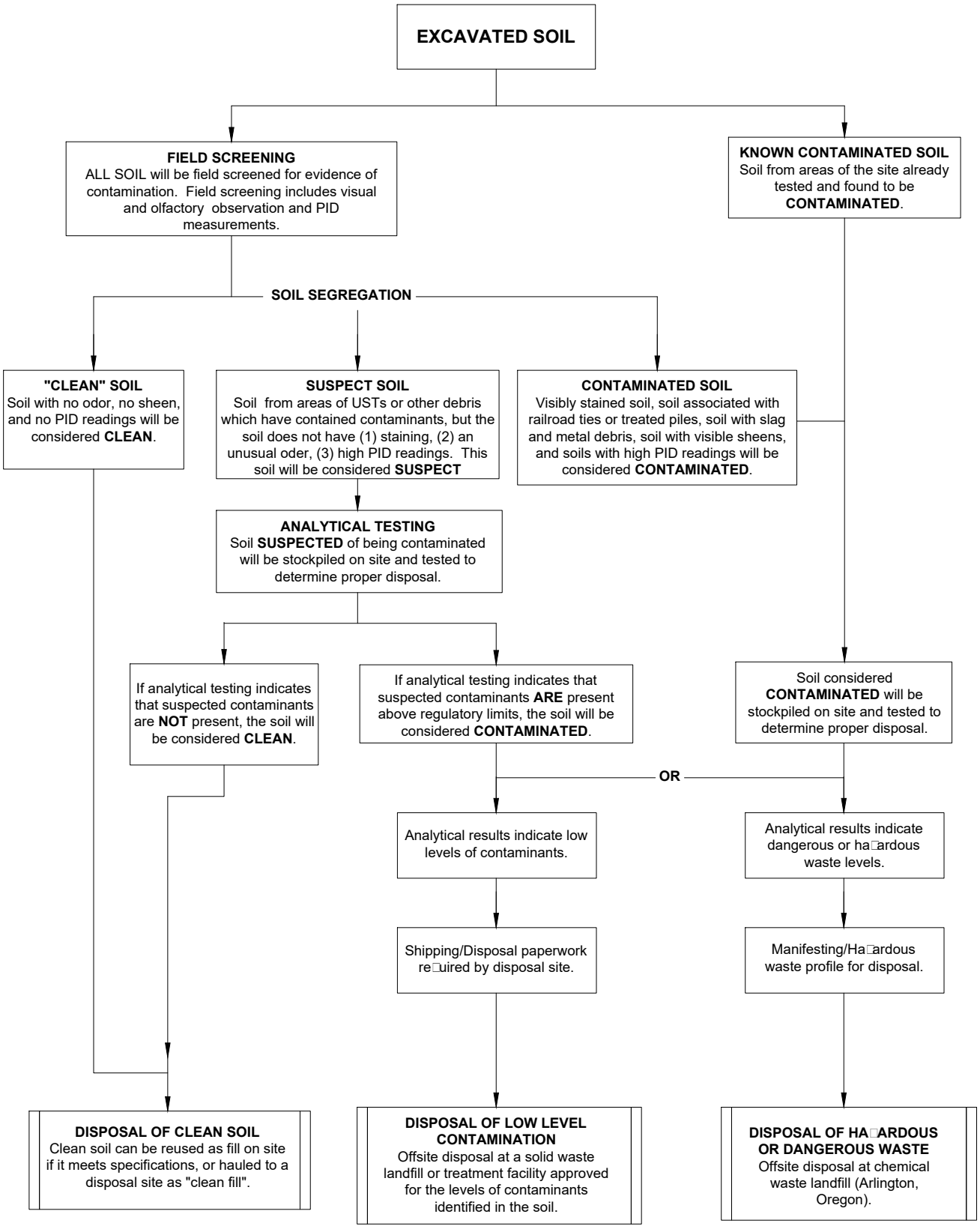
JOB NO.: 102336

3H

This Drawing is Full Size when 22" x 34" or is Half Size when 11" x 17"

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\102336_30%_Design.dwg Layout: 102336_23_SECTION M Date: 06-20-2019 Login: AWP

FIGURE 4: SOILS MANAGEMENT PLAN FLOW CHART



Filename: \\sea-fs1\Drafting_SEA\102336\P4\102336-P4 Soils Flow Chart.dwg Layout: Soils Flow Chart Date: 05-02-2019 Login: □s

APPENDIX A: LABORATORY REPORT

Appendix A

Laboratory Report

May 15, 2019

Mr. Erik Gerking
Port of Everett
P.O. Box 538
Everett, WA 98206

Dear Mr. Gerking,

On April 23rd, 13 samples were received by our laboratory and assigned our laboratory project number EV19040167. The project was identified as your Bay Wood Test Pits. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE: ALS JOB#: ALS SAMPLE#:	5/15/2019 EV19040167 EV19040167-01
CLIENT CONTACT:	Erik Gerking	DATE RECEIVED:	04/23/2019
CLIENT PROJECT:	Bay Wood Test Pits	COLLECTION DATE:	4/23/2019 9:05:00 AM
CLIENT SAMPLE ID	TP-1 (2.5-11.0)	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	5.0	1	UG/KG	05/07/2019	DLC
Toluene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	05/07/2019	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
Toluene-d8	EPA-8260	**92.4**	05/07/2019	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE: ALS JOB#: ALS SAMPLE#:	5/15/2019 EV19040167 EV19040167-11
CLIENT CONTACT:	Erik Gerking	DATE RECEIVED:	04/23/2019
CLIENT PROJECT:	Bay Wood Test Pits	COLLECTION DATE:	4/23/2019 2:20:00 PM
CLIENT SAMPLE ID	TP-1 (Shoreline)	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	5.0	1	UG/KG	05/07/2019	DLC
Toluene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	05/07/2019	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
Mercury	EPA-7471	**0.050**	0.020	1	MG/KG	05/15/2019	RAL
Arsenic	EPA-6020	**1.6**	0.20	1	MG/KG	05/14/2019	RAL
Barium	EPA-6020	**40**	0.10	1	MG/KG	05/14/2019	RAL
Cadmium	EPA-6020	U	0.10	1	MG/KG	05/14/2019	RAL
Chromium	EPA-6020	**10**	0.10	1	MG/KG	05/14/2019	RAL
Lead	EPA-6020	**4.1**	0.10	1	MG/KG	05/14/2019	RAL
Selenium	EPA-6020	U	1.0	1	MG/KG	05/14/2019	RAL
Silver	EPA-6020	U	0.10	1	MG/KG	05/14/2019	RAL

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
Toluene-d8	EPA-8260	**115**	05/07/2019	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE: ALS JOB#: ALS SAMPLE#:	5/15/2019 EV19040167 EV19040167-12
CLIENT CONTACT:	Erik Gerking	DATE RECEIVED:	04/23/2019
CLIENT PROJECT:	Bay Wood Test Pits	COLLECTION DATE:	4/23/2019 2:30:00 PM
CLIENT SAMPLE ID	TP-3 (Shoreline)	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	5.0	1	UG/KG	05/07/2019	DLC
Toluene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	05/07/2019	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	05/07/2019	DLC
Mercury	EPA-7471	**0.079**	0.020	1	MG/KG	05/15/2019	RAL
Arsenic	EPA-6020	**3.8**	0.20	1	MG/KG	05/14/2019	RAL
Barium	EPA-6020	**41**	0.10	1	MG/KG	05/14/2019	RAL
Cadmium	EPA-6020	**0.21**	0.10	1	MG/KG	05/14/2019	RAL
Chromium	EPA-6020	**37**	0.10	1	MG/KG	05/14/2019	RAL
Lead	EPA-6020	**5.2**	0.10	1	MG/KG	05/14/2019	RAL
Selenium	EPA-6020	U	1.0	1	MG/KG	05/14/2019	RAL
Silver	EPA-6020	U	0.10	1	MG/KG	05/14/2019	RAL

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
Toluene-d8	EPA-8260	**110**	05/07/2019	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE: ALS JOB#: ALS SAMPLE#:	5/15/2019 EV19040167 EV19040167-13
CLIENT CONTACT:	Erik Gerking	DATE RECEIVED:	04/23/2019
CLIENT PROJECT:	Bay Wood Test Pits	COLLECTION DATE:	4/23/2019 12:20:00 PM
CLIENT SAMPLE ID	Composite TP-1, 6, 7	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	05/07/2019	EBS
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	05/07/2019	EBS
Benzo[A]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	05/07/2019	JMK
Chrysene	EPA-8270 SIM	U	20	1	UG/KG	05/07/2019	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	05/07/2019	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	05/07/2019	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	05/07/2019	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	05/07/2019	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	05/07/2019	JMK
Pyridine	EPA-8270	U	200	1	UG/KG	05/09/2019	JMK
N-Nitrosodimethylamine	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Phenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Aniline	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Bis(2-Chloroethyl)Ether	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
2-Chlorophenol	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
1,3-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
1,4-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Benzyl Alcohol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
1,2-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2-Methylphenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
3&4-Methylphenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
N-Nitroso-Di-N-Propylamine	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
Hexachloroethane	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Nitrobenzene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Isophorone	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2-Nitrophenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2,4-Dimethylphenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Benzoic Acid	EPA-8270	U	1000	1	UG/KG	05/09/2019	JMK
Bis(2-Chloroethoxy)Methane	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
2,4-Dichlorophenol	EPA-8270	U	500	1	UG/KG	05/09/2019	JMK
1,2,4-Trichlorobenzene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Naphthalene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
4-Chloroaniline	EPA-8270	U	1000	1	UG/KG	05/09/2019	JMK
2,6-Dichlorophenol	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
Hexachlorobutadiene	EPA-8270	U	500	1	UG/KG	05/09/2019	JMK
4-Chloro-3-Methylphenol	EPA-8270	U	500	1	UG/KG	05/09/2019	JMK
2-Methylnaphthalene	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
1-Methylnaphthalene	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE: ALS JOB#: ALS SAMPLE#:	5/15/2019 EV19040167 EV19040167-13
CLIENT CONTACT:	Erik Gerking	DATE RECEIVED:	04/23/2019
CLIENT PROJECT:	Bay Wood Test Pits	COLLECTION DATE:	4/23/2019 12:20:00 PM
CLIENT SAMPLE ID	Composite TP-1, 6, 7	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Hexachlorocyclopentadiene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2,4,6-Trichlorophenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2,4,5-Trichlorophenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2-Chloronaphthalene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2-Nitroaniline	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Acenaphthylene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Dimethylphthalate	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2,6-Dinitrotoluene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Acenaphthene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
3-Nitroaniline	EPA-8270	U	1000	1	UG/KG	05/09/2019	JMK
2,4-Dinitrophenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
4-Nitrophenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Dibenzofuran	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2,4-Dinitrotoluene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
2,3,4,6-Tetrachlorophenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Diethylphthalate	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Fluorene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
4-Chlorophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
4-Nitroaniline	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
4,6-Dinitro-2-Methylphenol	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
N-Nitrosodiphenylamine	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Azobenzene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
4-Bromophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Hexachlorobenzene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Pentachlorophenol	EPA-8270	U	500	1	UG/KG	05/09/2019	JMK
Phenanthrene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Anthracene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Carbazole	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
Di-N-Butylphthalate	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Fluoranthene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Pyrene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Butylbenzylphthalate	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
3,3-Dichlorobenzidine	EPA-8270	U	250	1	UG/KG	05/09/2019	JMK
Benzo[A]Anthracene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Chrysene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Di-N-Octylphthalate	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Benzo[B]Fluoranthene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Benzo[K]Fluoranthene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE: ALS JOB#: ALS SAMPLE#:	5/15/2019 EV19040167 EV19040167-13
CLIENT CONTACT:	Erik Gerking	DATE RECEIVED:	04/23/2019
CLIENT PROJECT:	Bay Wood Test Pits	COLLECTION DATE:	4/23/2019 12:20:00 PM
CLIENT SAMPLE ID	Composite TP-1, 6, 7	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzo[A]Pyrene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Dibenz[A,H]Anthracene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
Benzo[G,H,I]Perylene	EPA-8270	U	100	1	UG/KG	05/09/2019	JMK
PCB-1016	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
PCB-1221	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
PCB-1232	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
PCB-1242	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
PCB-1248	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
PCB-1254	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
PCB-1260	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
PCB-1268	EPA-8082	U	0.10	1	MG/KG	05/08/2019	JMK
Mercury	EPA-7471	**0.042**	0.020	1	MG/KG	05/15/2019	RAL
Arsenic	EPA-6020	**4.1**	0.20	1	MG/KG	05/14/2019	RAL
Barium	EPA-6020	**61**	0.10	1	MG/KG	05/14/2019	RAL
Cadmium	EPA-6020	U	0.10	1	MG/KG	05/14/2019	RAL
Chromium	EPA-6020	**34**	0.10	1	MG/KG	05/14/2019	RAL
Lead	EPA-6020	**5.1**	0.10	1	MG/KG	05/14/2019	RAL
Selenium	EPA-6020	U	1.0	1	MG/KG	05/14/2019	RAL
Silver	EPA-6020	U	0.10	1	MG/KG	05/14/2019	RAL

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX	**87.0**	05/07/2019	EBS
Terphenyl-d14	EPA-8270 SIM	**102**	05/07/2019	JMK
2-Fluorophenol	EPA-8270	**128 GS4**	05/09/2019	JMK
Phenol-d5	EPA-8270	**122**	05/09/2019	JMK
Nitrobenzene-d5	EPA-8270	**79.2**	05/09/2019	JMK
2-Fluorobiphenyl	EPA-8270	**104**	05/09/2019	JMK
2,4,6-Tribromophenol	EPA-8270	**103**	05/09/2019	JMK
Terphenyl-d14	EPA-8270	**114**	05/09/2019	JMK
TCMX	EPA-8082	**89.8**	05/08/2019	JMK
DCB	EPA-8082	**91.0**	05/08/2019	JMK

U - Analyte analyzed for but not detected at level above reporting limit.
GS4 - Surrogate outside of control limits with a high bias. Associated compounds non-detect. No corrective action taken.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE:	5/15/2019
		ALS SDG#:	EV19040167
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Erik Gerking		
CLIENT PROJECT:	Bay Wood Test Pits		

LABORATORY BLANK RESULTS

MB-050719S - Batch 140626 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	05/07/2019	EBS
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	05/07/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-050719S - Batch 140711 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene	EPA-8260	U	UG/KG	10	05/07/2019	DLC
Benzene	EPA-8260	U	UG/KG	5.0	05/07/2019	DLC
Toluene	EPA-8260	U	UG/KG	10	05/07/2019	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	05/07/2019	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	05/07/2019	DLC
o-Xylene	EPA-8260	U	UG/KG	10	05/07/2019	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-050719S - Batch 140629 - Soil by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Chrysene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/KG	20	05/07/2019	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

MB-050719S - Batch 140628 - Soil by EPA-8270

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Pyridine	EPA-8270	U	UG/KG	200	05/09/2019	JMK
N-Nitrosodimethylamine	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Phenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Aniline	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Bis(2-Chloroethyl)Ether	EPA-8270	U	UG/KG	250	05/09/2019	JMK
2-Chlorophenol	EPA-8270	U	UG/KG	250	05/09/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: Port of Everett
P.O. Box 538
Everett, WA 98206
CLIENT CONTACT: Erik Gerking
CLIENT PROJECT: Bay Wood Test Pits

DATE: 5/15/2019
ALS SDG#: EV19040167
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-050719S - Batch 140628 - Soil by EPA-8270

1,3-Dichlorobenzene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
1,4-Dichlorobenzene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Benzyl Alcohol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
1,2-Dichlorobenzene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2-Methylphenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	UG/KG	250	05/09/2019	JMK
3&4-Methylphenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
N-Nitroso-Di-N-Propylamine	EPA-8270	U	UG/KG	250	05/09/2019	JMK
Hexachloroethane	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Nitrobenzene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Isophorone	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2-Nitrophenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2,4-Dimethylphenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Benzoic Acid	EPA-8270	U	UG/KG	1000	05/09/2019	JMK
Bis(2-Chloroethoxy)Methane	EPA-8270	U	UG/KG	250	05/09/2019	JMK
2,4-Dichlorophenol	EPA-8270	U	UG/KG	500	05/09/2019	JMK
1,2,4-Trichlorobenzene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Naphthalene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
4-Chloroaniline	EPA-8270	U	UG/KG	1000	05/09/2019	JMK
2,6-Dichlorophenol	EPA-8270	U	UG/KG	250	05/09/2019	JMK
Hexachlorobutadiene	EPA-8270	U	UG/KG	500	05/09/2019	JMK
4-Chloro-3-Methylphenol	EPA-8270	U	UG/KG	500	05/09/2019	JMK
2-Methylnaphthalene	EPA-8270	U	UG/KG	250	05/09/2019	JMK
1-Methylnaphthalene	EPA-8270	U	UG/KG	250	05/09/2019	JMK
Hexachlorocyclopentadiene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2,4,6-Trichlorophenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2,4,5-Trichlorophenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2-Chloronaphthalene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2-Nitroaniline	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Acenaphthylene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Dimethylphthalate	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2,6-Dinitrotoluene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Acenaphthene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
3-Nitroaniline	EPA-8270	U	UG/KG	1000	05/09/2019	JMK
2,4-Dinitrophenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
4-Nitrophenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Dibenzofuran	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2,4-Dinitrotoluene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
2,3,4,6-Tetrachlorophenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Diethylphthalate	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Fluorene	EPA-8270	U	UG/KG	100	05/09/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: Port of Everett
P.O. Box 538
Everett, WA 98206
CLIENT CONTACT: Erik Gerking
CLIENT PROJECT: Bay Wood Test Pits

DATE: 5/15/2019
ALS SDG#: EV19040167
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-050719S - Batch 140628 - Soil by EPA-8270

4-Chlorophenyl-Phenylether	EPA-8270	U	UG/KG	100	05/09/2019	JMK
4-Nitroaniline	EPA-8270	U	UG/KG	250	05/09/2019	JMK
4,6-Dinitro-2-Methylphenol	EPA-8270	U	UG/KG	100	05/09/2019	JMK
N-Nitrosodiphenylamine	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Azobenzene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
4-Bromophenyl-Phenylether	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Hexachlorobenzene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Pentachlorophenol	EPA-8270	U	UG/KG	500	05/09/2019	JMK
Phenanthrene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Anthracene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Carbazole	EPA-8270	U	UG/KG	250	05/09/2019	JMK
Di-N-Butylphthalate	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Fluoranthene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Pyrene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Butylbenzylphthalate	EPA-8270	U	UG/KG	100	05/09/2019	JMK
3,3-Dichlorobenzidine	EPA-8270	U	UG/KG	250	05/09/2019	JMK
Benzo[A]Anthracene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Chrysene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Di-N-Octylphthalate	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Benzo[B]Fluoranthene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Benzo[K]Fluoranthene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Benzo[A]Pyrene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Indeno[1,2,3-Cd]Pyrene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Dibenz[A,H]Anthracene	EPA-8270	U	UG/KG	100	05/09/2019	JMK
Benzo[G,H,I]Perylene	EPA-8270	U	UG/KG	100	05/09/2019	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

MB-050719S - Batch 140630 - Soil by EPA-8082

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
PCB-1016	EPA-8082	U	MG/KG	0.10	05/08/2019	JMK
PCB-1260	EPA-8082	U	MG/KG	0.10	05/08/2019	JMK

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-338506 - Batch R338506 - Soil by EPA-7471

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Mercury	EPA-7471	U	MG/KG	0.020	05/15/2019	RAL

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE:	5/15/2019
		ALS SDG#:	EV19040167
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Erik Gerking		
CLIENT PROJECT:	Bay Wood Test Pits		

LABORATORY BLANK RESULTS

MBLK-338506 - Batch R338506 - Soil by EPA-7471

U - Analyte analyzed for but not detected at level above reporting limit.

MB-051419S - Batch 140854 - Soil by EPA-6020

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Arsenic	EPA-6020	U	MG/KG	0.20	05/14/2019	RAL
Barium	EPA-6020	U	MG/KG	0.12	05/14/2019	RAL
Cadmium	EPA-6020	U	MG/KG	0.10	05/14/2019	RAL
Chromium	EPA-6020	U	MG/KG	0.10	05/14/2019	RAL
Lead	EPA-6020	U	MG/KG	0.10	05/14/2019	RAL
Selenium	EPA-6020	U	MG/KG	1.0	05/14/2019	RAL
Silver	EPA-6020	U	MG/KG	0.10	05/14/2019	RAL

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE:	5/15/2019
		ALS SDG#:	EV19040167
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Erik Gerking		
CLIENT PROJECT:	Bay Wood Test Pits		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 140626 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	**101**			75.5	122.1	05/07/2019	EBS
TPH-Diesel Range - BSD	NWTPH-DX	**104**	**3**		75.5	122.1	05/07/2019	EBS

ALS Test Batch ID: 140711 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene - BS	EPA-8260	**101**			70	130	05/07/2019	DLC
1,1-Dichloroethene - BSD	EPA-8260	**101**	**1**		70	130	05/07/2019	DLC
Benzene - BS	EPA-8260	**102**			75	138	05/07/2019	DLC
Benzene - BSD	EPA-8260	**99.9**	**2**		75	138	05/07/2019	DLC
Toluene - BS	EPA-8260	**98.3**			71.6	122.1	05/07/2019	DLC
Toluene - BSD	EPA-8260	**97.5**	**1**		71.6	122.1	05/07/2019	DLC
Ethylbenzene - BS	EPA-8260	**92.4**			50	150	05/07/2019	DLC
Ethylbenzene - BSD	EPA-8260	**92.3**	**0**		50	150	05/07/2019	DLC
m,p-Xylene - BS	EPA-8260	**109**			50	150	05/07/2019	DLC
m,p-Xylene - BSD	EPA-8260	**109**	**0**		50	150	05/07/2019	DLC
o-Xylene - BS	EPA-8260	**97.3**			50	150	05/07/2019	DLC
o-Xylene - BSD	EPA-8260	**97.0**	**0**		50	150	05/07/2019	DLC

ALS Test Batch ID: 140629 - Soil by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Naphthalene - BS	EPA-8270 SIM	**77.9**			20	150	05/07/2019	JMK
Naphthalene - BSD	EPA-8270 SIM	**82.0**	**5**		20	150	05/07/2019	JMK
Benzo[A]Anthracene - BS	EPA-8270 SIM	**77.5**			20	150	05/07/2019	JMK
Benzo[A]Anthracene - BSD	EPA-8270 SIM	**83.6**	**8**		20	150	05/07/2019	JMK
Chrysene - BS	EPA-8270 SIM	**78.4**			20	150	05/07/2019	JMK
Chrysene - BSD	EPA-8270 SIM	**85.6**	**9**		20	150	05/07/2019	JMK
Benzo[B]Fluoranthene - BS	EPA-8270 SIM	**83.0**			20	150	05/07/2019	JMK
Benzo[B]Fluoranthene - BSD	EPA-8270 SIM	**90.1**	**8**		20	150	05/07/2019	JMK
Benzo[K]Fluoranthene - BS	EPA-8270 SIM	**86.2**			20	150	05/07/2019	JMK
Benzo[K]Fluoranthene - BSD	EPA-8270 SIM	**94.2**	**9**		20	150	05/07/2019	JMK
Benzo[A]Pyrene - BS	EPA-8270 SIM	**79.5**			20	150	05/07/2019	JMK
Benzo[A]Pyrene - BSD	EPA-8270 SIM	**86.0**	**8**		20	150	05/07/2019	JMK
Indeno[1,2,3-Cd]Pyrene - BS	EPA-8270 SIM	**72.7**			20	150	05/07/2019	JMK
Indeno[1,2,3-Cd]Pyrene - BSD	EPA-8270 SIM	**78.5**	**8**		20	150	05/07/2019	JMK
Dibenz[A,H]Anthracene - BS	EPA-8270 SIM	**58.4**			20	150	05/07/2019	JMK
Dibenz[A,H]Anthracene - BSD	EPA-8270 SIM	**63.0**	**8**		20	150	05/07/2019	JMK
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	**80.9**			20	150	05/07/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE:	5/15/2019
		ALS SDG#:	EV19040167
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Erik Gerking		
CLIENT PROJECT:	Bay Wood Test Pits		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	**87.4**	**8**		20	150	05/07/2019	JMK

ALS Test Batch ID: 140628 - Soil by EPA-8270

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Pyridine - BS	EPA-8270	**67.5**			20	150	05/09/2019	JMK
Pyridine - BSD	EPA-8270	**59.5**	**13**		20	150	05/09/2019	JMK
N-Nitrosodimethylamine - BS	EPA-8270	**75.8**			20	150	05/09/2019	JMK
N-Nitrosodimethylamine - BSD	EPA-8270	**77.9**	**3**		20	150	05/09/2019	JMK
Phenol - BS	EPA-8270	**75.9**			36.1	131	05/09/2019	JMK
Phenol - BSD	EPA-8270	**78.3**	**3**		36.1	131	05/09/2019	JMK
Aniline - BS	EPA-8270	**53.2**			20	150	05/09/2019	JMK
Aniline - BSD	EPA-8270	**55.8**	**5**		20	150	05/09/2019	JMK
Bis(2-Chloroethyl)Ether - BS	EPA-8270	**86.8**			20	150	05/09/2019	JMK
Bis(2-Chloroethyl)Ether - BSD	EPA-8270	**82.6**	**5**		20	150	05/09/2019	JMK
2-Chlorophenol - BS	EPA-8270	**77.9**			59.9	111	05/09/2019	JMK
2-Chlorophenol - BSD	EPA-8270	**79.9**	**3**		59.9	111	05/09/2019	JMK
1,3-Dichlorobenzene - BS	EPA-8270	**77.3**			20	150	05/09/2019	JMK
1,3-Dichlorobenzene - BSD	EPA-8270	**78.7**	**2**		20	150	05/09/2019	JMK
1,4-Dichlorobenzene - BS	EPA-8270	**77.3**			44.3	122	05/09/2019	JMK
1,4-Dichlorobenzene - BSD	EPA-8270	**78.2**	**1**		44.3	122	05/09/2019	JMK
Benzyl Alcohol - BS	EPA-8270	**78.2**			20	150	05/09/2019	JMK
Benzyl Alcohol - BSD	EPA-8270	**81.9**	**5**		20	150	05/09/2019	JMK
1,2-Dichlorobenzene - BS	EPA-8270	**78.2**			20	150	05/09/2019	JMK
1,2-Dichlorobenzene - BSD	EPA-8270	**79.3**	**1**		20	150	05/09/2019	JMK
2-Methylphenol - BS	EPA-8270	**76.4**			20	150	05/09/2019	JMK
2-Methylphenol - BSD	EPA-8270	**78.7**	**3**		20	150	05/09/2019	JMK
Bis(2-Chloroisopropyl)Ether - BS	EPA-8270	**69.8**			20	150	05/09/2019	JMK
Bis(2-Chloroisopropyl)Ether - BSD	EPA-8270	**69.8**	**0**		20	150	05/09/2019	JMK
3&4-Methylphenol - BS	EPA-8270	**78.3**			20	150	05/09/2019	JMK
3&4-Methylphenol - BSD	EPA-8270	**80.8**	**3**		20	150	05/09/2019	JMK
N-Nitroso-Di-N-Propylamine - BS	EPA-8270	**69.8**			31.6	134	05/09/2019	JMK
N-Nitroso-Di-N-Propylamine - BSD	EPA-8270	**76.2**	**9**		31.6	134	05/09/2019	JMK
Hexachloroethane - BS	EPA-8270	**77.9**			20	150	05/09/2019	JMK
Hexachloroethane - BSD	EPA-8270	**79.9**	**2**		20	150	05/09/2019	JMK
Nitrobenzene - BS	EPA-8270	**75.3**			20	150	05/09/2019	JMK
Nitrobenzene - BSD	EPA-8270	**76.2**	**1**		20	150	05/09/2019	JMK
Isophorone - BS	EPA-8270	**78.3**			20	150	05/09/2019	JMK
Isophorone - BSD	EPA-8270	**79.4**	**1**		20	150	05/09/2019	JMK
2-Nitrophenol - BS	EPA-8270	**77.8**			20	150	05/09/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: Port of Everett
P.O. Box 538
Everett, WA 98206
CLIENT CONTACT: Erik Gerking
CLIENT PROJECT: Bay Wood Test Pits

DATE: 5/15/2019
ALS SDG#: EV19040167
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
2-Nitrophenol - BSD	EPA-8270	**79.6**	**2**		20	150	05/09/2019	JMK
2,4-Dimethylphenol - BS	EPA-8270	**76.9**			20	150	05/09/2019	JMK
2,4-Dimethylphenol - BSD	EPA-8270	**73.9**	**4**		20	150	05/09/2019	JMK
Bis(2-Chloroethoxy)Methane - BS	EPA-8270	**79.7**			20	150	05/09/2019	JMK
Bis(2-Chloroethoxy)Methane - BSD	EPA-8270	**81.7**	**2**		20	150	05/09/2019	JMK
2,4-Dichlorophenol - BS	EPA-8270	**86.7**			20	150	05/09/2019	JMK
2,4-Dichlorophenol - BSD	EPA-8270	**88.6**	**2**		20	150	05/09/2019	JMK
1,2,4-Trichlorobenzene - BS	EPA-8270	**78.4**			44.6	122	05/09/2019	JMK
1,2,4-Trichlorobenzene - BSD	EPA-8270	**78.3**	**0**		44.6	122	05/09/2019	JMK
Naphthalene - BS	EPA-8270	**76.0**			20	150	05/09/2019	JMK
Naphthalene - BSD	EPA-8270	**76.2**	**0**		20	150	05/09/2019	JMK
4-Chloroaniline - BS	EPA-8270	**76.0**			20	150	05/09/2019	JMK
4-Chloroaniline - BSD	EPA-8270	**76.2**	**0**		20	150	05/09/2019	JMK
Hexachlorobutadiene - BS	EPA-8270	**79.2**			20	150	05/09/2019	JMK
Hexachlorobutadiene - BSD	EPA-8270	**80.6**	**2**		20	150	05/09/2019	JMK
4-Chloro-3-Methylphenol - BS	EPA-8270	**78.7**			49.2	135	05/09/2019	JMK
4-Chloro-3-Methylphenol - BSD	EPA-8270	**81.2**	**3**		49.2	135	05/09/2019	JMK
2-Methylnaphthalene - BS	EPA-8270	**82.3**			20	150	05/09/2019	JMK
2-Methylnaphthalene - BSD	EPA-8270	**82.4**	**0**		20	150	05/09/2019	JMK
1-Methylnaphthalene - BS	EPA-8270	**79.1**			20	150	05/09/2019	JMK
1-Methylnaphthalene - BSD	EPA-8270	**80.2**	**1**		20	150	05/09/2019	JMK
Hexachlorocyclopentadiene - BS	EPA-8270	**66.8**			20	150	05/09/2019	JMK
Hexachlorocyclopentadiene - BSD	EPA-8270	**76.2**	**13**		20	150	05/09/2019	JMK
2,4,6-Trichlorophenol - BS	EPA-8270	**78.8**			20	150	05/09/2019	JMK
2,4,6-Trichlorophenol - BSD	EPA-8270	**80.1**	**2**		20	150	05/09/2019	JMK
2,4,5-Trichlorophenol - BS	EPA-8270	**81.0**			20	150	05/09/2019	JMK
2,4,5-Trichlorophenol - BSD	EPA-8270	**81.3**	**0**		20	150	05/09/2019	JMK
2-Chloronaphthalene - BS	EPA-8270	**79.4**			20	150	05/09/2019	JMK
2-Chloronaphthalene - BSD	EPA-8270	**79.1**	**0**		20	150	05/09/2019	JMK
2-Nitroaniline - BS	EPA-8270	**76.2**			20	150	05/09/2019	JMK
2-Nitroaniline - BSD	EPA-8270	**79.2**	**4**		20	150	05/09/2019	JMK
Acenaphthylene - BS	EPA-8270	**83.2**			20	150	05/09/2019	JMK
Acenaphthylene - BSD	EPA-8270	**83.6**	**1**		20	150	05/09/2019	JMK
Dimethylphthalate - BS	EPA-8270	**81.2**			20	150	05/09/2019	JMK
Dimethylphthalate - BSD	EPA-8270	**80.2**	**1**		20	150	05/09/2019	JMK
2,6-Dinitrotoluene - BS	EPA-8270	**83.6**			20	150	05/09/2019	JMK
2,6-Dinitrotoluene - BSD	EPA-8270	**84.3**	**1**		20	150	05/09/2019	JMK
Acenaphthene - BS	EPA-8270	**81.8**			49.3	117	05/09/2019	JMK
Acenaphthene - BSD	EPA-8270	**82.2**	**0**		49.3	117	05/09/2019	JMK
3-Nitroaniline - BS	EPA-8270	**76.2**			20	150	05/09/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: Port of Everett
P.O. Box 538
Everett, WA 98206
CLIENT CONTACT: Erik Gerking
CLIENT PROJECT: Bay Wood Test Pits

DATE: 5/15/2019
ALS SDG#: EV19040167
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
3-Nitroaniline - BSD	EPA-8270	**79.2**	**4**		20	150	05/09/2019	JMK
2,4-Dinitrophenol - BS	EPA-8270	**84.5**			20	150	05/09/2019	JMK
2,4-Dinitrophenol - BSD	EPA-8270	**85.0**	**1**		20	150	05/09/2019	JMK
4-Nitrophenol - BS	EPA-8270	**76.9**			29.8	137	05/09/2019	JMK
4-Nitrophenol - BSD	EPA-8270	**78.6**	**2**		29.8	137	05/09/2019	JMK
Dibenzofuran - BS	EPA-8270	**85.4**			20	150	05/09/2019	JMK
Dibenzofuran - BSD	EPA-8270	**85.3**	**0**		20	150	05/09/2019	JMK
2,4-Dinitrotoluene - BS	EPA-8270	**80.2**			55.3	130	05/09/2019	JMK
2,4-Dinitrotoluene - BSD	EPA-8270	**80.6**	**1**		55.3	130	05/09/2019	JMK
2,3,4,6-Tetrachlorophenol - BS	EPA-8270	**83.0**			20	150	05/09/2019	JMK
2,3,4,6-Tetrachlorophenol - BSD	EPA-8270	**84.0**	**1**		20	150	05/09/2019	JMK
Diethylphthalate - BS	EPA-8270	**86.8**			20	150	05/09/2019	JMK
Diethylphthalate - BSD	EPA-8270	**84.8**	**2**		20	150	05/09/2019	JMK
Fluorene - BS	EPA-8270	**89.2**			20	150	05/09/2019	JMK
Fluorene - BSD	EPA-8270	**89.7**	**1**		20	150	05/09/2019	JMK
4-Chlorophenyl-Phenylether - BS	EPA-8270	**83.6**			20	150	05/09/2019	JMK
4-Chlorophenyl-Phenylether - BSD	EPA-8270	**82.9**	**1**		20	150	05/09/2019	JMK
4-Nitroaniline - BS	EPA-8270	**60.4**			20	150	05/09/2019	JMK
4-Nitroaniline - BSD	EPA-8270	**63.3**	**5**		20	150	05/09/2019	JMK
4,6-Dinitro-2-Methylphenol - BS	EPA-8270	**77.4**			20	150	05/09/2019	JMK
4,6-Dinitro-2-Methylphenol - BSD	EPA-8270	**78.6**	**2**		20	150	05/09/2019	JMK
Azobenzene - BS	EPA-8270	**71.7**			20	150	05/09/2019	JMK
Azobenzene - BSD	EPA-8270	**72.6**	**1**		20	150	05/09/2019	JMK
4-Bromophenyl-Phenylether - BS	EPA-8270	**71.8**			20	150	05/09/2019	JMK
4-Bromophenyl-Phenylether - BSD	EPA-8270	**72.8**	**1**		20	150	05/09/2019	JMK
Hexachlorobenzene - BS	EPA-8270	**81.3**			20	150	05/09/2019	JMK
Hexachlorobenzene - BSD	EPA-8270	**82.4**	**1**		20	150	05/09/2019	JMK
Pentachlorophenol - BS	EPA-8270	**78.0**			41.3	113	05/09/2019	JMK
Pentachlorophenol - BSD	EPA-8270	**78.0**	**0**		41.3	113	05/09/2019	JMK
Phenanthrene - BS	EPA-8270	**82.7**			20	150	05/09/2019	JMK
Phenanthrene - BSD	EPA-8270	**83.3**	**1**		20	150	05/09/2019	JMK
Anthracene - BS	EPA-8270	**84.3**			20	150	05/09/2019	JMK
Anthracene - BSD	EPA-8270	**83.8**	**1**		20	150	05/09/2019	JMK
Carbazole - BS	EPA-8270	**85.3**			20	150	05/09/2019	JMK
Carbazole - BSD	EPA-8270	**85.9**	**1**		20	150	05/09/2019	JMK
Di-N-Butylphthalate - BS	EPA-8270	**89.7**			20	150	05/09/2019	JMK
Di-N-Butylphthalate - BSD	EPA-8270	**90.3**	**1**		20	150	05/09/2019	JMK
Fluoranthene - BS	EPA-8270	**96.9**			20	150	05/09/2019	JMK
Fluoranthene - BSD	EPA-8270	**98.7**	**2**		20	150	05/09/2019	JMK
Pyrene - BS	EPA-8270	**81.1**			57.4	145	05/09/2019	JMK

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: Port of Everett
P.O. Box 538
Everett, WA 98206
CLIENT CONTACT: Erik Gerking
CLIENT PROJECT: Bay Wood Test Pits

DATE: 5/15/2019
ALS SDG#: EV19040167
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Pyrene - BSD	EPA-8270	**81.1**	**0**		57.4	145	05/09/2019	JMK
Butylbenzylphthalate - BS	EPA-8270	**71.9**			20	150	05/09/2019	JMK
Butylbenzylphthalate - BSD	EPA-8270	**72.8**	**1**		20	150	05/09/2019	JMK
Benzo[A]Anthracene - BS	EPA-8270	**81.4**			20	150	05/09/2019	JMK
Benzo[A]Anthracene - BSD	EPA-8270	**82.5**	**1**		20	150	05/09/2019	JMK
Chrysene - BS	EPA-8270	**77.6**			20	150	05/09/2019	JMK
Chrysene - BSD	EPA-8270	**77.5**	**0**		20	150	05/09/2019	JMK
Bis(2-Ethylhexyl)Phthalate - BS	EPA-8270	**76.6**			20	150	05/09/2019	JMK
Bis(2-Ethylhexyl)Phthalate - BSD	EPA-8270	**77.5**	**1**		20	150	05/09/2019	JMK
Di-N-Octylphthalate - BS	EPA-8270	**77.1**			20	150	05/09/2019	JMK
Di-N-Octylphthalate - BSD	EPA-8270	**78.2**	**1**		20	150	05/09/2019	JMK
Benzo[B]Fluoranthene - BS	EPA-8270	**81.6**			20	150	05/09/2019	JMK
Benzo[B]Fluoranthene - BSD	EPA-8270	**83.8**	**3**		20	150	05/09/2019	JMK
Benzo[K]Fluoranthene - BS	EPA-8270	**81.8**			20	150	05/09/2019	JMK
Benzo[K]Fluoranthene - BSD	EPA-8270	**82.0**	**0**		20	150	05/09/2019	JMK
Benzo[A]Pyrene - BS	EPA-8270	**79.9**			20	150	05/09/2019	JMK
Benzo[A]Pyrene - BSD	EPA-8270	**80.6**	**1**		20	150	05/09/2019	JMK
Indeno[1,2,3-Cd]Pyrene - BS	EPA-8270	**70.4**			20	150	05/09/2019	JMK
Indeno[1,2,3-Cd]Pyrene - BSD	EPA-8270	**71.4**	**1**		20	150	05/09/2019	JMK
Dibenz[A,H]Anthracene - BS	EPA-8270	**53.5**			20	150	05/09/2019	JMK
Dibenz[A,H]Anthracene - BSD	EPA-8270	**53.9**	**1**		20	150	05/09/2019	JMK
Benzo[G,H,I]Perylene - BS	EPA-8270	**75.9**			20	150	05/09/2019	JMK
Benzo[G,H,I]Perylene - BSD	EPA-8270	**76.3**	**1**		20	150	05/09/2019	JMK

ALS Test Batch ID: 140630 - Soil by EPA-8082

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
PCB-1016 - BS	EPA-8082	**85.5**			50	150	05/08/2019	JMK
PCB-1016 - BSD	EPA-8082	**84.2**	**2**		50	150	05/08/2019	JMK
PCB-1260 - BS	EPA-8082	**96.6**			50	150	05/08/2019	JMK
PCB-1260 - BSD	EPA-8082	**98.0**	**1**		50	150	05/08/2019	JMK

ALS Test Batch ID: R338506 - Soil by EPA-7471

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Mercury - BS	EPA-7471	**110**			81.8	117	05/15/2019	RAL
Mercury - BSD	EPA-7471	**111**	**1**		81.8	117	05/15/2019	RAL

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Port of Everett P.O. Box 538 Everett, WA 98206	DATE:	5/15/2019
		ALS SDG#:	EV19040167
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Erik Gerking		
CLIENT PROJECT:	Bay Wood Test Pits		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 140854 - Soil by EPA-6020

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Arsenic - BS	EPA-6020	**100**			80	120	05/14/2019	RAL
Arsenic - BSD	EPA-6020	**99.1**	**1**		80	120	05/14/2019	RAL
Barium - BS	EPA-6020	**104**			80	120	05/14/2019	RAL
Barium - BSD	EPA-6020	**106**	**1**		80	120	05/14/2019	RAL
Cadmium - BS	EPA-6020	**104**			80	120	05/14/2019	RAL
Cadmium - BSD	EPA-6020	**102**	**2**		80	120	05/14/2019	RAL
Chromium - BS	EPA-6020	**98.1**			80	120	05/14/2019	RAL
Chromium - BSD	EPA-6020	**96.3**	**2**		80	120	05/14/2019	RAL
Lead - BS	EPA-6020	**100**			80	120	05/14/2019	RAL
Lead - BSD	EPA-6020	**99.6**	**1**		80	120	05/14/2019	RAL
Selenium - BS	EPA-6020	**100**			80	120	05/14/2019	RAL
Selenium - BSD	EPA-6020	**98.4**	**2**		80	120	05/14/2019	RAL
Silver - BS	EPA-6020	**102**			80	120	05/14/2019	RAL
Silver - BSD	EPA-6020	**106**	**3**		80	120	05/14/2019	RAL

APPROVED BY

Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV1904 0167

Date 4/23/2019 Page 1 Of 2

PROJECT ID: Bay Wood Test Pits
REPORT TO COMPANY: Port of Everett
PROJECT MANAGER: Erik Gerking
ADDRESS:
PHONE: P.O. #: 49872
E-MAIL:
INVOICE TO COMPANY:
ATTENTION:
ADDRESS:

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8260 ☒	BTEX by EPA 8021 ☐	MTBE by EPA 8260 ☐	MTBE by EPA 8021 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☒	Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐	RCRA-8 ☒	Pri Pol ☐	TAL ☐	Metals Other (Specify)	TCLP-Metals ☐	VOA ☐	Semi-Vol ☐	Pest ☐	Herbs ☐	Hold	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. TP-1 (2.5-14.0)	4/23/19	0905	Soil	1	X			X								X	X	X			X									X	5	
2. TP-2 (2.5-10.0)		0940		2	NO Sm											←	NO Sm						→							X		
3. TP-3 (6.0-7.0)		1000		3																										X		
4. TP-4 (7.0-10.0)		1040		4																										X		
5. TP-5 (5.0-6.0)		1115		5																										X		
6. TP-6 (4.0-10.0)		1145		6	X NO Sm			X NO Sm								X		X			X									X		
7. TP-7 (5.0-6.0)		1220		7	X NO Sm			X NO Sm								X		X			X									X		
8. TP-8 (7.5-9.0)		1245		8												←	NO Sm						→							X		
9. TP-9 (8.0-10.0)		1320		9																										X		
10. TP-10 (9.0-9.5)	↓	1350	↓	10	(5.0-11.0)			(6.5-11.0)																						X	↓	

OTHER (Specify)

SPECIAL INSTRUCTIONS

(X) 5/7/19 - Run BTEX by 8260 for TP-1 (2.5-11.0), Composite TP-4, TP-6, TP-7 and analyze for DX, SVOC, cPAH, ~~SIM~~ PCB + RCRA-8. Run #11 + #12 for BTEX by 8260 and RCRA-8. All on Std TAT per Erik Sm

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Ryan Peterson, Shannon & Wilson, 4/23/19, 3:25 pm
   Received By: Shawn Rebecca ALS 4/23/19 3:25 pm
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) | 3 | 1 | SAME DAY

OTHER: Specify:

*Turnaround request less than standard may incur Rush Charges

ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV190 40167

Date 4/23/19 Page 2 of 2

PROJECT ID: Ray Wood Test Pits
REPORT TO COMPANY: Port of Everett
PROJECT MANAGER: Erik Gerking
ADDRESS:
PHONE: P.O.#: 49872
E-MAIL:
INVOICE TO COMPANY:
ATTENTION:
ADDRESS:

ANALYSIS REQUESTED / OTHER (Specify)

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 ☐ BTEX by EPA 8260 ☒	MTBE by EPA 8021 ☐ MTBE by EPA 8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☒ Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ RCRA-8 ☒ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	Hold								NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. TP-1 (shoreline)	4/23/19	1420	Soil/wood	11				X									X			X								5	
2. TP-3 (shoreline)	4/23/19	1430	Soil/wood	12				X									X			X								5	
3. Composite TP-1, 6, 7	4/23/19	1220	Soil	13		X								X	X	X	X												
4. No Further Samples																													
5.																													
6.																													
7.																													
8.																													
9.																													
10.																													

SPECIAL INSTRUCTIONS: ⊗ 5/7/19 - Eric added on std TAT. SM

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Ryan Peterson, Shannon & Wilson, 4/23/19 3:25 pm
   Received By: Shawn Nelson ALS 4/23/19 3:25 pm
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) | 3 | 1 | SAME DAY

OTHER: Specify:

*Turnaround request less than standard may incur Rush Charges

IMPORTANT INFORMATION

Important Information

About Your Environmental Site Assessment/Evaluation Report

IMPORTANT INFORMATION

ENVIRONMENTAL SITE ASSESSMENTS/EVALUATIONS ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

This report was prepared to meet the needs you specified with respect to your specific site and your risk management preferences. Unless indicated otherwise, we prepared your report expressly for you and for the purposes you indicated. No one other than you should use this report for any purpose without first conferring with us. No one is authorized to use this report for any purpose other than that originally contemplated without our prior written consent.

The findings and conclusions documented in this site assessment/evaluation have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in this area. The conclusions presented are based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made.

OUR REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Our environmental site assessment is based on several factors and may include (but not be limited to) reviewing public documents to chronicle site ownership for the past 30, 40, or more years; investigating the site's regulatory history to learn about permits granted or citations issued; determining prior uses of the site and those adjacent to it; reviewing available topographic and real estate maps, historical aerial photos, geologic information, and hydrologic data; reviewing readily available published information about surface and subsurface conditions; reviewing federal and state lists of known and potentially contaminated sites; evaluating the potential for naturally occurring hazards; and interviewing public officials, owners/operators, and/or adjacent owners with respect to local concerns and environmental conditions.

Except as noted within the text of the report, no sampling or quantitative laboratory testing was performed by us as part of this site assessment. Where such analyses were conducted by an outside laboratory, Shannon & Wilson relied upon the data provided and did not conduct an independent evaluation regarding the reliability of the data.

CONDITIONS CAN CHANGE.

Site conditions, both surface and subsurface, may be affected as a result of natural processes or human influence. An environmental site assessment/evaluation is based on conditions that existed at the time of the evaluation. Because so many aspects of a historical review rely on third-party information, most consultants will refuse to certify (warrant) that a site is free of contaminants, as it is impossible to know with absolute certainty if such a condition exists. Contaminants may be present in areas that were not surveyed or sampled or may migrate to areas that showed no signs of contamination at the time they were studied.

Unless your consultant indicates otherwise, your report should not be construed to represent geotechnical subsurface conditions at or adjacent to the site and does not provide sufficient information for construction-related activities. Your report also should not be used following floods, earthquakes, or other acts of nature; if the size or configuration of the site is altered; if the location of the site is modified; or if there is a change of ownership and/or use of the property.

IMPORTANT INFORMATION

INCIDENTAL DAMAGE MAY OCCUR DURING SAMPLING ACTIVITIES.

Incidental damage to a facility may occur during sampling activities. Asbestos and lead-based paint sampling often require destructive sampling of pipe insulation, floor tile, walls, doors, ceiling tile, roofing, and other building materials. Shannon & Wilson does not provide for paint repair. Limited repair of asbestos sample locations is provided. However, Shannon & Wilson neither warranties repairs made by our field personnel, nor are we held liable for injuries or damages as a result of those repairs. If you desire a specific form of repair, such as those provided by a licensed roofing contractor, you need to request the specific repair at the time of the proposal. The owner is responsible for repair methods that are not specified in the proposal.

READ RESPONSIBILITY CLAUSES CAREFULLY.

Environmental site assessments/evaluations are less exact than other design disciplines because they are based extensively on judgment and opinion and there may not have been any (or very limited) investigation of actual subsurface conditions. Wholly unwarranted claims have been lodged against consultants. To limit this exposure, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses may appear in this report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

Consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed or conditions at the site have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of the final assessment/evaluation.

An assessment/evaluation of a site helps reduce your risk but does not eliminate it. Even the most rigorous professional assessment may fail to identify all existing conditions.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, HEALTH, PROPERTY, AND WELFARE OF THE PUBLIC.

If our environmental site assessment/evaluation discloses the existence of conditions that may endanger the safety, health, property, or welfare of the public, we may be obligated under rules of professional conduct, statutory law, or common law to notify you and others of these conditions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

APPENDIX B

Restoration Plan (Shannon & Wilson 2019)

SUBMITTED TO:
Port of Everett
1205 Craftsman Way
Everett, WA 98201

BY:
Shannon & Wilson, Inc.
400 N. 34th Street, Suite 100
Seattle, WA 98103

(206) 632-8020
www.shannonwilson.com

RESTORATION PLAN

Bay Wood Shoreline Interim Cleanup and Restoration

EVERETT, WASHINGTON

SHANNON & WILSON

November 21, 2019

Shannon & Wilson No: 102336-014

Submitted To: Port of Everett
1205 Craftsman Way
Everett, WA 98201
Attn: Ms. Laura Gurley

Subject: DRAFT RESTORATION PLAN, BAY WOOD SHORELINE INTERIM CLEANUP AND RESTORATION , EVERETT, WASHINGTON

Shannon & Wilson prepared this report and participated in this project as a consultant to the Port of Everett. Our scope of services was specified in a proposal for permit an engineering support for the Bay Wood Project with the Port of Everett dated August 28, 2019. This report presents the shoreline restoration approach and monitoring plan and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.

Shelby Petro, PWS
Senior Ecologist

SDP:KLW/sdp

CONTENTS

CONTENTS

Exhibits

Figures

Appendices

ACRONYMS

BMPs	best management practices
City	City of Everett
Corps	U.S. Army Corps of Engineers
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
EMC	Everett Municipal Code
LIO	Local Integrating Organization
LWD	large woody debris
MTCA	Model Toxics Control Act
NGVD 29	National Geodetic Vertical Datum of 1929
OHWM	ordinary high water mark
PDI	Planning Director Interpretation
Port	Port of Everett
Project	Bay Wood Shoreline Interim Cleanup and Restoration
Property	Bay Wood property
SEWIP	Snohomish Estuary Wetland Integration Plan
SLR	SLR International Corporation
SPAP	Shoreline Public Access Plan
SWPPP	Stormwater Pollution Prevention Plan
TESC	Temporary Erosion and Sediment Control

1 INTRODUCTION

The Port of Everett (Port) is proposing to implement the Bay Wood Shoreline Interim Cleanup and Restoration Project (Project). The proposed shoreline restoration is being planned as part of environmental cleanup and in conjunction with and to support upland site redevelopment of the Bay Wood property (Property). The shoreline cleanup and restoration is intended to significantly improve ecological function of the shoreline as part of an interim cleanup action with the Washington State Department of Ecology (Ecology). These benefits will also fulfill the requirements of a critical area buffer reduction request to the City of Everett (City) to support the future upland development of the Property. The Port is working with Ecology under a Model Toxics Control Act (MTCA) Agreed Order (No. 5490) to clean up and restore this Property as part of the State of Washington's Puget Sound Initiative.

This Restoration Plan outlines the proposed shoreline restoration actions, avoidance and minimization measures for impacts to existing critical areas (i.e., wetlands, streams, and buffers); restoration of critical areas; monitoring; maintenance; and contingencies. This restoration plan meets the requirements of Everett Municipal Code (EMC) 19.33D.460D and 19.33D.500D. In addition, this restoration plan is intended to support the U.S. Army Corps of Engineer's (Corps') Clean Water Act Section 404 permit application.

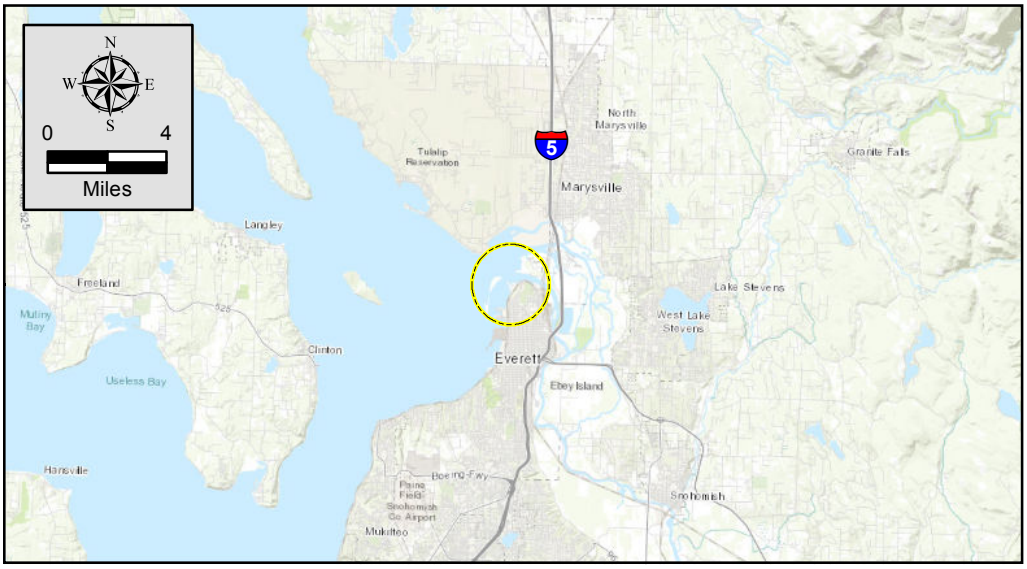
1.1 Project Location

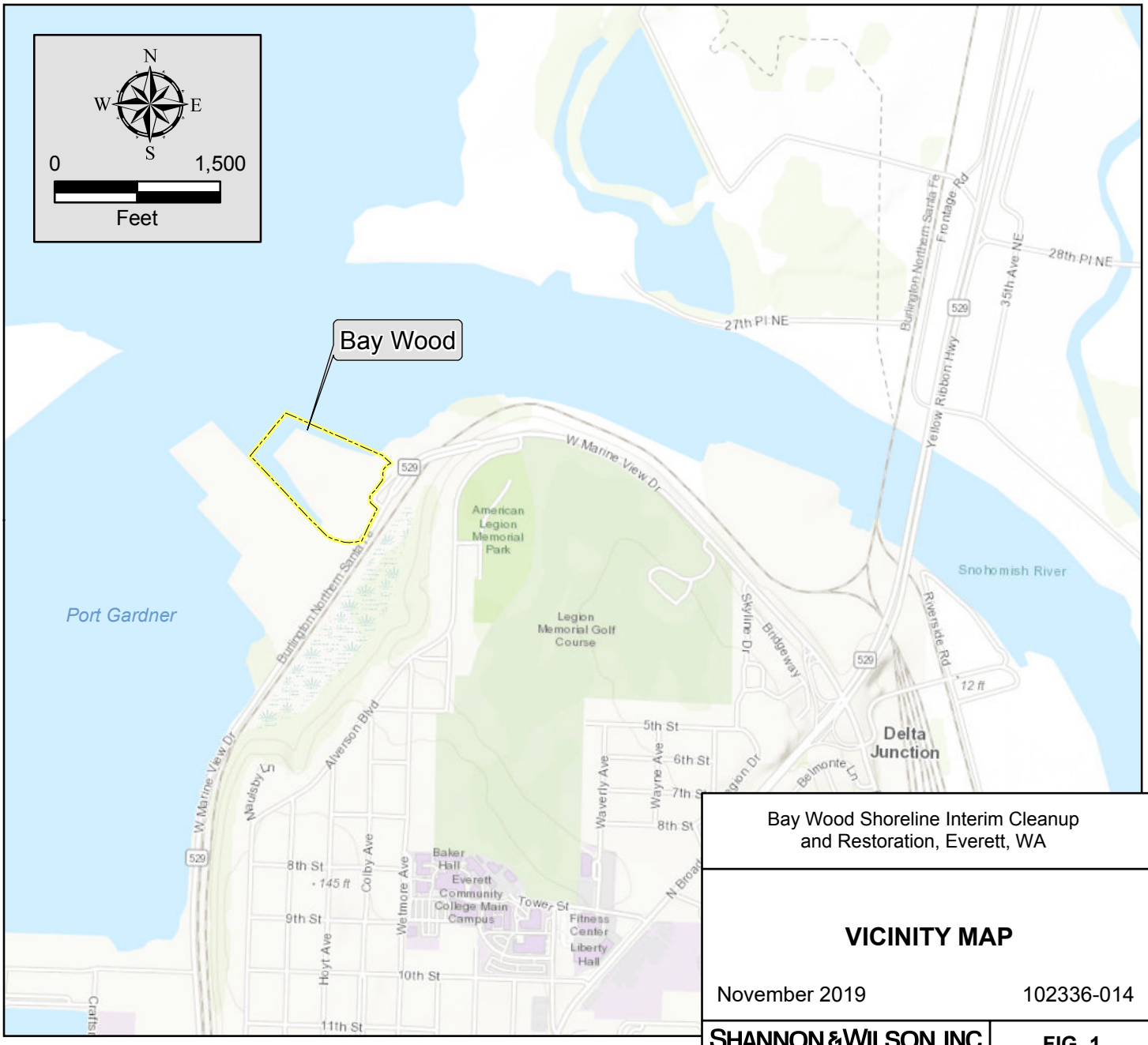
The Property is located at 200 West Marine View Drive, Everett, Washington (Section 07, Township 29N, Range 05E) (Figure 1). Adjacent land uses include tidal mudflats and vacant land owned by Kimberly-Clark Worldwide, Inc. to the north; West Marine View Drive, BNSF railroad tracks, and Maulsby Swamp to the east; W&W Everett Industries property to the south; and the Snohomish River and Port Gardner Bay to the west (Figure 2). The Project area includes the entire shoreline of the Property and 50 feet upland of the ordinary high water mark (OHWM) (Figure 2).

1.2 Project Description

The Property shoreline is currently challenged by a low functioning, publicly inaccessible shoreline that is overgrown with invasive plant species, has scattered industrial debris, oversteepened shoreline embankment made of quarry spalls and wood debris, dilapidated creosote-treated bulkheads, and other unnatural features. This Project will clean up and restore approximately 1,300 linear feet of shoreline by removing invasive species, industrial debris, and creosote-treated wood structures, followed by grading the shore back to a more

Document Path: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig1_Vicinity.mxd





Bay Wood Shoreline Interim Cleanup and Restoration, Everett, WA

VICINITY MAP

November 2019 102336-014

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

Document Path: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig2_SiteMap.mxd

LEGEND

- Project Area
- Corps Wall
- Tax Parcels

Bay Wood Shoreline Interim Cleanup and Restoration, Everett, WA

SITE MAP

November 2019 102336-014

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig2_SiteMap.mxd Date: 6/13/2019 MAC

natural slope, installing large woody debris (LWD), and establishing intertidal marsh and riparian habitat. The Project will also enhance 2,200 linear feet of riparian buffer along the shoreline by removing invasive species and planting native grasses, shrubs, and trees. The Project will provide public access by constructing a pedestrian trail constructed in the buffer along the north shore. The Port anticipates this restoration work being done under all applicable local, state, and federal permits and as a MTCA interim cleanup action. Additionally, this work will be conducted under an amendment to the Agreed Order that allows for the interim cleanup action. This restoration work is expected to be done in conjunction with development of the upland portion of the Property.

Note, the Property has some limitations that affect the extent of restoration that is possible. On the north side of the property, the Corps holds a 100-foot-wide easement on the training wall structure that extends out into the water and that places practical limitations on the extent of work that can be done along the entire length of the northern shoreline area. To the south, the Jeld-Wen MTCA cleanup site boundary extends onto the Property shoreline and will place limits on the extent of the cleanup and restoration work.

1.3 Existing Conditions

Existing conditions at the Project site were characterized based on site visits in January 2019 to delineate and characterize aquatic and upland habitats and during a site walk with the Port (L. Gurley, E. Gerking, and E. Gronewald), the City (K. Stewart and S. Ingalsbe), Ecology (C. Abercrombie and S. Meng), and Shannon & Wilson (S. Petro, A. Summe, and D. Cline) on March 22, 2019. A summary of the existing conditions is provided below. A more detailed narrative of existing wetland conditions can be found in the Habitat Assessment (Shannon & Wilson, 2019a) prepared for the Project.

The Project area consists of a degraded shoreline and disturbed upland buffer. Multiple defunct marine industrial structures, including mooring piles, piers, and bulkheads, are found along the entire site shoreline. Debris found along all aspects of the shoreline includes riprap, asphalt, concrete, steel pipe log skids, creosote timber piles, wire cables, trash, tires, wood debris and waste ranging from dimensional lumber to sawdust, and other miscellaneous anthropogenic materials. Mud and sand flats extend waterward of the Project area into the Snohomish River estuary.

The northern shoreline is a riprap and pile "training wall" maintained by the Corps within a 100-foot-wide easement (Figure 2). The mudflats north of this shoreline are part of a future and final MTCA cleanup for the site (GeoEngineers, 2018), which is outside the scope of this Project. The western shoreline consists of slopes that are eroded by tides and wave action, exposing fill material and debris left over from prior land uses at the site. The southern

shoreline follows an inlet channel and is relatively protected from wind and wave erosion. This shoreline includes areas of gentle slopes with vegetated wetlands in the upper tidal reaches in addition to areas with steep, unvegetated slopes. LWD is present on portions of the shoreline along the upper banks. Along this inlet channel are freshwater seeps that are exposed during low tide. At the terminus of the channel, a wetland lies behind a failing bulkhead. The mud substrate of the inlet channel is contaminated and is part of a future MTCA cleanup on and adjacent to the Jeld-Wen Cleanup Site property (GeoEngineers, 2018).

Three wetlands, Wetlands A, B, and D, were delineated within the Project area on low-aspect slopes of the upper reaches of the shoreline (Figure 3). Wetlands A and B are within the proposed shoreline restoration area, and Wetland D is mostly offsite on the adjacent Kimberly-Clark property. Wetland A is composed of five small wetland units (A-1 through A-5) along the inlet channel on the southern shoreline. Another area was previously identified as Wetland C; however, after further investigation and data gathering, its history indicates that the area is a stormwater drainage channel and a known location of illicit stormwater discharge from the neighboring property (SLR International Corporation [SLR], 2018). Exhibit 1-1 describes the wetland classifications, categorization, and regulatory buffer widths. Within the Project area, the Snohomish River is designated as a Shoreline of the State and a Category I river (EMC 19.33D.480). The river is afforded a 100-foot buffer from the top of the upper bank (EMC 19.33D.490). A description of wetland functions, aquatic habitat, and buffer condition is included in the *Habitat Assessment* prepared for this Project (Shannon & Wilson, 2019a).

Exhibit 1-1: Wetlands Delineated in the Project Area

Wetland Name	Size (square feet)	USFWS Classification[a]	HGM Classification[b]	Ecology Category[c]	City of Everett Category[d]	Buffer Width (feet)[e]
A	4,388	E2EM1	Estuarine	II	III	50
B	501	E2EM1	Estuarine	II	III	50
D[f]	--	E2EM1	Estuarine	II	I	100

NOTES:

a. U.S. Fish and Wildlife Service (USFWS) classification is based on Cowardin (Federal Geographic Data Committee, 2013): estuarine intertidal emergent persistent wetland (E2EM1), palustrine emergent saturated wetland (PEMB), and palustrine emergent (PEM).

b. Hydrogeomorphic (HGM) classification is based on Brinson (1993).

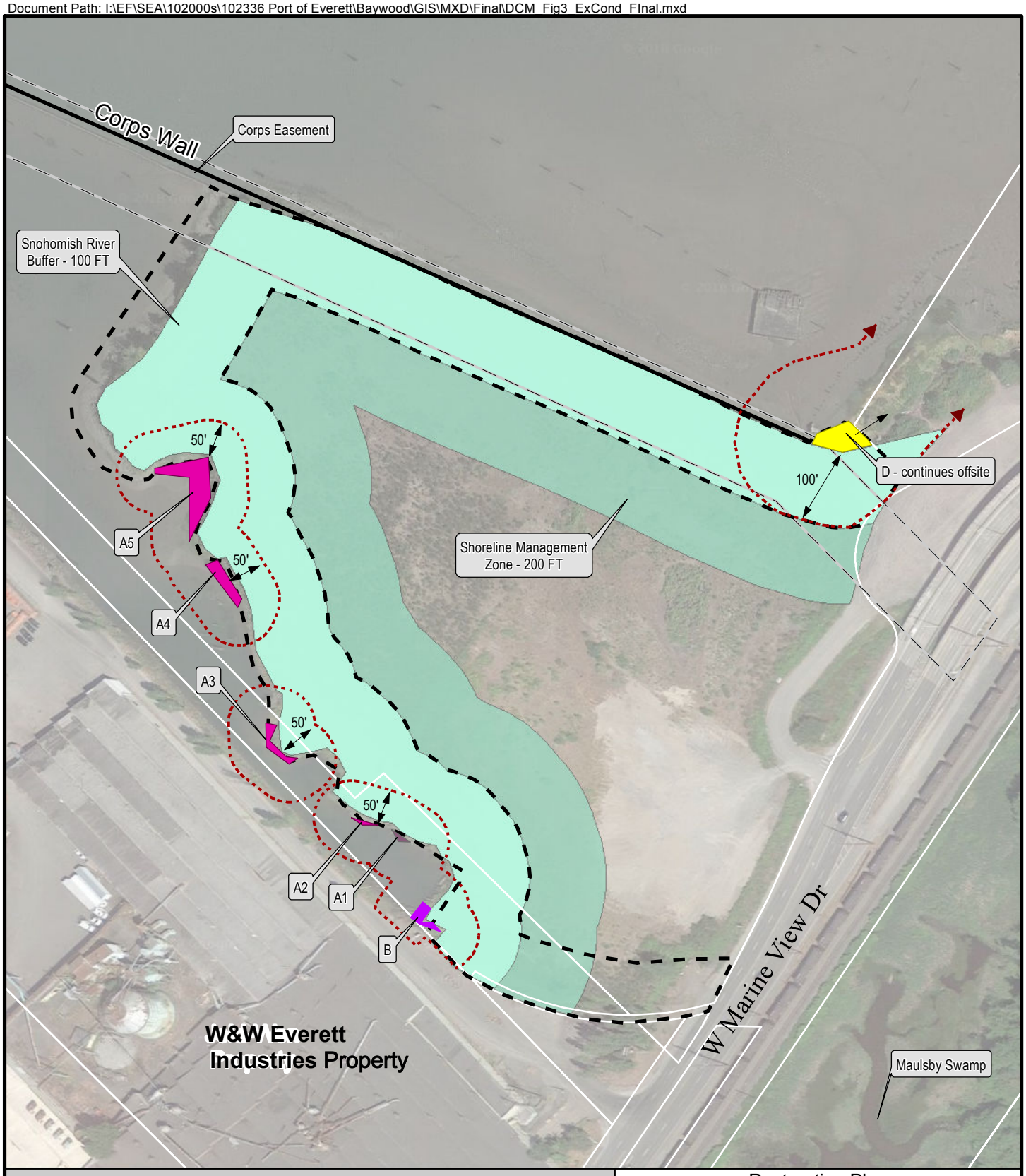
c. Wetland categories are based on the Washington State Wetland Rating System for Western Washington, 2014 Update (Hruby, 2014).

d. Wetlands A, B, and D categories are in accordance with EMC 19.33D.440, because they are located within the shoreline management zone.

e. Wetland A, B, and D buffer widths are determined in accordance with EMC 19.33D.450, because they are located within the shoreline management zone.

f. Wetland D extends offsite; therefore, the total wetland size was not calculated and the classifications, categorization, and associated regulatory buffer widths are only estimates based on visual observations and a review of available information.

Document Path: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig3_ExCond_FInal.mxd



LEGEND

- Wetland A
- Wetland B
- Wetland D
- Snohomish River Buffer (100ft)
- Shoreline Management Zone (200ft)
- Wetland Buffer
- Project Area
- Parcel

N W E S

0 100 200 Feet

Restoration Plan
Bay Wood Shoreline Interim Cleanup and Restoration, Everett, WA

EXISTING WETLANDS AND BUFFERS

November 2019 102336-014

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 3

2 PROJECT IMPACTS

The Project will temporarily impact wetlands, streams, and their buffers as a result of removal of debris, shoreline grading, and removal of invasive species to prepare the site for shoreline and buffer restoration. Approximately 1,300 linear feet of stream (Snohomish River), 722 square feet of wetlands, and 2,200 linear feet of buffer will be temporarily impacted as a result of removal of debris, grading associated with reshaping the shoreline, and removal of invasive species in the uplands. The sections below summarize the proposed restoration activities. A detailed narrative of the proposed restoration activities and the basis of design can be found in the *Tidal Hydraulics Study and 30% Design* prepared for the Project (Shannon & Wilson, 2019b).

Exhibit 2-1: Proposed Wetland Impacts

Wetland Name	Size (square feet)	Temporary Impact (square feet)	Permanent Impact (square feet)
A1	111	13	0
A2	75	6	0
A3	555	355	0
A4	846	39	0
A5	2,801	94	0
B	501	215	0
TOTAL	4,889	722	0

2.1 Quarry Spalls and Marine Wood Debris Removal

Quarry spalls, marine wood debris, and other industrial debris will be removed from approximately 16,800 square feet along 1,300 linear feet of the shoreline. The majority of the proposed shoreline excavation will occur above the mudline in the upper shoreline and riparian zone at the top of the shoreline slope. Upland test pit excavations and laboratory sampling on test pit samples indicate the materials in the upper shoreline areas were not contaminated; therefore, upper shoreline excavation and grading requires no special handling or treatment. Quarry spall and marine wood debris removal will occur in lower shoreline elevations and below the mudline. In certain areas of the Project site below the mudline, sediments are contaminated. Removal of quarry spalls and marine wood debris in these areas requires special handling and disposal. Contaminated sediments will be disposed of by the Port at an approved solid waste disposal facility. A Materials Handling Plan will be developed prior to construction.

2.2 Shoreline Grading

It is estimated that approximately 13,000 cubic yards of material would be removed by shoreline grading along 1,300 linear feet of shoreline (Shannon & Wilson, 2019b). This material consists of sand, silt, cobbles, and wood debris. Reuse and placement of the excavated materials onto the Property may be possible and is a practical alternative if contamination is not identified during grading and if site development allows. This work will be performed in the dry at low tide with machinery including graders and excavators.

Additional grading will be conducted along 2,200 linear feet in the upland buffer to remove the existing nonnative, invasive species. Grading will only extend 50 feet inland from the delineated existing top of bank, which is the extent of the restoration project.

2.3 Stormwater Management from Upland Development

The upland development site will contain a large industrial building along with associated parking lot area and truck loading dock. Runoff from the parking lot and loading area will be collected in catch basins and gravity flow to water quality facilities located on the southwestern portion of the site. These water quality facilities (currently proposed as a modular wetlands biofiltration system) will provide enhanced water quality treatment per Ecology's Technology Assessment Protocol Program under the General Use Designation. The clean water will then discharge to a pump station. Runoff from the roof is considered clean and does not require treatment. It will be collected through a system of downspouts and be piped to the same pump station as the treated surface water.

The combined, clean runoff will then be pumped up into a catch basin near the outfall point, where the runoff will be allowed to gravity flow through a pipe into and out of a bubble-up structure surrounded by rip-rap. This bubble up structure will be located in an existing drainage ditch along the western property line that conveys water north to the Snohomish River. The ditch will be enhanced to look and function like a natural water feature with the placement of wood and native riparian plantings to provide habitat and water quality functions. The feature will discharge within the shoreline restoration area and will be designed to avoid shoreline erosion.

2.4 Mitigation Sequencing

The Project has made all reasonable efforts to avoid, minimize, rectify, and reduce impacts on critical areas and provide sufficient mitigation to maintain and enhance ecological functions of wetlands, streams, and buffers. Mitigation will be achieved through the following sequence of actions.

2.4.1 Avoid

Complete avoidance of temporary impacts on wetlands, streams, and buffers is not feasible due to the purpose of the Project to clean up debris on shoreline and restore the shoreline and buffer to a more natural condition. The Project proposes to completely avoid permanent impacts to wetlands and streams.

2.4.2 Minimize

Impacts will be minimized during construction by implementing the following minimization strategies:

- Shoreline grading was designed around existing pocket wetlands with native vegetation and the proposed slope tying into the edges of the existing wetlands. This maintains native vegetation and existing wetland and shoreline functions.
- All excavations will occur during low tide periods and in the dry, or isolated from tidal action.
- To minimize sediment dispersal and turbidity in water, excavated areas will be backfilled with clean sand on single low tide cycle..
- Pile removal shall be accomplished by pulling piles, or vibed out during low tide to minimize turbidity and avoid in-water noise impacts. Wood debris removal shall be performed in accordance with the Washington State Department of Natural Resources (DNR), Derelict Creosote Piling Removal, Best Management Practices for Pile Removal and Disposal (DNR, 2017).
- Erosion protection measures will include silt fences, fiber wattles, jute matting, geotextiles, or geosynthetic fabric (or other preventative measures) and best management practices (BMPs) around on-land work areas to control upland erosion and sedimentation.
- Temporary construction elements will be removed after construction is performed.
- A Project-specific Storm Water Pollution Prevention Plan (SWPPP) and accompanying Temporary Erosion and Sediment Control (TESC) plans will be prepared and implemented prior to beginning earthwork under the Project's National Pollutant Discharge Elimination System Construction Stormwater Permit. It is anticipated that the construction sequencing in combination with sediment and flow control BMPs described in the TESC and SWPPP will minimize the potential for water quality impacts to aquatic resources within the Project area and vicinity.
- Petroleum products will not be stored and refueling will not occur within 100 feet of the shoreline. Any staging and storage areas will be located as far as feasible from these waterbodies, with containment measures around the area to prevent migration of materials or spills into potential receiving waterbodies.

- Management of stormwater runoff from the completed Project will be designed to be consistent with Ecology's *Stormwater Management Manual for Western Washington* (Ecology, 2019), as adopted by the City.
- The Project will be constructed in accordance with regulatory permits.
- Construction activities below the OHWM would occur during the approved in-water work window, as described in the *Biological Assessment* prepared for the Project (Shannon & Wilson, 2019c) or as indicated in the permits issued by regulatory agencies.

2.4.3 Rectify

The Project aims to rectify temporary impacts on wetlands, streams, and buffers by restoring affected areas to improved (i.e., enhanced) conditions. See Section 3 for further information.

2.4.4 Reduce Impact Over Time

The restored shoreline will be maintained to control invasive vegetation and support the development of native vegetation communities during vegetation establishment. See Section 5 for further information.

2.4.5 Compensate

The Project will not result in the permanent impact to wetlands, streams, or buffers; therefore, compensatory mitigation for impacts is not required. Regardless, the Project proposes to restore temporary impacts to existing wetlands, streams, and buffers, and restore and enhance the remaining shoreline to native vegetation communities supporting intertidal marsh (i.e., wetland) and riparian habitats. The restoration of wetland habitat is proposed to be approximately 38:1, above and beyond that of the 1.25:1 ratio required for emergent Category III wetlands in EMC 19.33D.460.C. More information is included in Section 3.

2.4.6 Monitor

Vegetation monitoring will occur within the shoreline and buffer planting areas for a minimum of ten years. Maintenance measures will be implemented as necessary during this time period to promote the establishment of native vegetation communities and ensure compliance with performance standards (see Sections 4 and 5). If Year 10 performance standards are met ahead of schedule, the Port may request early release of monitoring requirements.

Permanent fencing, if required by the City, will be installed at the edge of the buffer to discourage intrusion and subsequent impacts on wetlands, streams, and buffers after

construction. The fence type will allow for passage of wildlife (i.e., split rail wooden fence). In addition, permanent signs will be installed along the fencing to inform people of these protected areas.

3 PROPOSED RESTORATION

3.1 Buffer Reduction

The Port is currently reviewing possible commercial and industrial uses for upland site redevelopment by others. The Port is requesting a critical area (i.e., wetland and stream) buffer reduction from the City, to be vested under the existing Shoreline code (EMC 19.33D) to support redevelopment of the upland portion of the Property. Under this code, the largest critical area buffer within the restoration area on site is 100 feet, extending upland from the top of the shoreline bank. The Port is requesting a buffer reduction of 50 feet (or 50% of the standard 100-foot buffer) to a 50-foot critical area buffer for Wetland D and the Snohomish River. Wetlands A and B are by code already afforded a 50-foot buffer and therefore not included in this buffer reduction request. The following sections describe the relevant City code, Planning Director Interpretations (PDIs), and the development objectives that drive this buffer reduction request.

3.1.1 Development Objectives

Within the City's Shoreline Master Program (City, 2016), the Shoreline Public Access Plan (SPAP) describes the City's goal to provide public access to the shoreline along the Snohomish River. At the Property, the SPAP proposes a spur trail along the north shore within the Corps training wall easement. At a minimum, the proposed Project trail will meet the SPAP concept with a trail that will connect to a trail along West Marine View Drive and include a lookout at the end of the spur with views to the north and west of Mount Baker and the Snohomish River.

3.1.2 Code Review

Wetlands and streams are regulated by the City through the critical areas ordinance and Shoreline Master Program (City, 2016). The shoreline management zone includes areas within 200 feet of the OHWM of waters of the state, including the section of the Snohomish River within the Project area and wetlands contiguous with the shoreline. In the City's Shoreline Master Program, the Project area below the top of bank is designated as an aquatic conservancy zone, and the area landward of the top of bank is designated as urban industrial zone (City, 2016). Critical areas (e.g., wetlands and streams) within the 200-foot shoreline management zone are subject to the guidelines outlined in the City's shoreline

overlay district zoning code (EMC 19.33D). Wetlands A, B, and D are contiguous with the shoreline and are within shoreline jurisdiction and are therefore rated under the Everett shoreline code. Critical areas outside of the 200-foot zone are subject to the critical areas chapter of the zoning code (EMC 19.37). There are no critical areas on this site that are outside of the 200-foot zone.

The following sections of EMC and PDIs are relevant to the Project site, proposed shoreline cleanup and restoration, and buffer reduction request:

EMC 19.33D.440 – Wetland delineation and rating

Wetlands A and B are rated as Category III, because they are not associated with a documented habitat of primary association, are not high-quality native wetlands, are less than 1 acre in size, and although they are estuarine wetlands, their functions are minimal and can be replaced through shoreline restoration efforts focused on functional uplift. Wetland D is rated as Category I, because it is a relatively high-quality estuarine wetland with functions that would be harder to replace. Wetland D is located within a future MTCA cleanup area that is under an Agreed Order.

EMC 19.33D.450 – Standard wetland buffer width requirements

Category I wetlands are afforded a 100-foot buffer, and Category III wetlands are afforded a 50-foot buffer (Figure 3). For a standard wetland buffer width reduction, the City's Planning Director may reduce the standard wetland buffer when there has been "substantial legal alteration" of the buffer. As described in Section 1, the Project area was previously significantly disturbed and vegetation was eliminated. The planning director may allow a buffer reduction (rather than buffer averaging) when the proposal includes a buffer enhancement plan that improves the functional values of the buffer and stream. Section 4 describes design criteria for buffer enhancement at the Project site. Buffers are not allowed to be reduced more than 50% of the standard buffer; therefore, the Port requests a wetland buffer reduction for Wetland D from 100 feet to 50 feet. This is further described in PDI 01-005.

EMC 19.33D.480 – Stream rating

The Snohomish River is used by salmonids and is listed in the City's Shoreline Master Program (City, 2016) and is therefore a Category I river.

19.33D.490 – Standard stream buffer requirements

The stream buffer is measured from the top of bank (Figure 3). The Snohomish River is afforded a 100-foot buffer at the Project site. Per code, the buffer may be less than 100 feet

with the incorporation of public access. For a standard stream buffer width reduction, the City's Planning Director may reduce the standard buffer when there has been "substantial legal alteration" of the buffer. As described in Section 1, the Project area was previously significantly disturbed, and vegetation was eliminated. The planning director may allow a buffer reduction (rather than buffer averaging) when the proposal includes a buffer enhancement plan that improves the functional values of the buffer and stream. Section 4 describes design criteria for buffer enhancement at the Project site. Buffers are not allowed to be reduced more than 50% of the standard buffer; therefore, the Port requests a stream buffer reduction from 100 feet to 50 feet. This is further described in PDI 01-005.

Planning Director's Interpretation (PDI) 01-005

PDI 01-005 provides clarification on the interpretation of code and outlines the parameters under which the City allows for stream and wetland buffer reductions. The prior alterations at the Project site meet the legal alteration criteria for "The activity predates the City's Environmental Sensitive Areas Ordinance (EMC 1/31/91) (and has not been substantially revegetated with native vegetation)." In addition, the buffers at the Project site are substantially altered from past uses, grading, and placement of fill material such that the buffer is vegetated with primarily invasive species (Himalayan blackberry and scotch broom) covering more than 75% of the buffer area. Clearing of the buffer was part of an authorized prior action associated with a 1990s-era MTCA cleanup action and revegetation with native species has not occurred.

The enhancement plan that accompanies the buffer reduction request must increase the functions and values of the wetland and/or stream and include a monitoring, maintenance, and assurance device. Section 3.2 outlines the proposed shoreline and buffer restoration and enhancement activities and anticipated functional lift.

3.2 Shoreline and Buffer Restoration

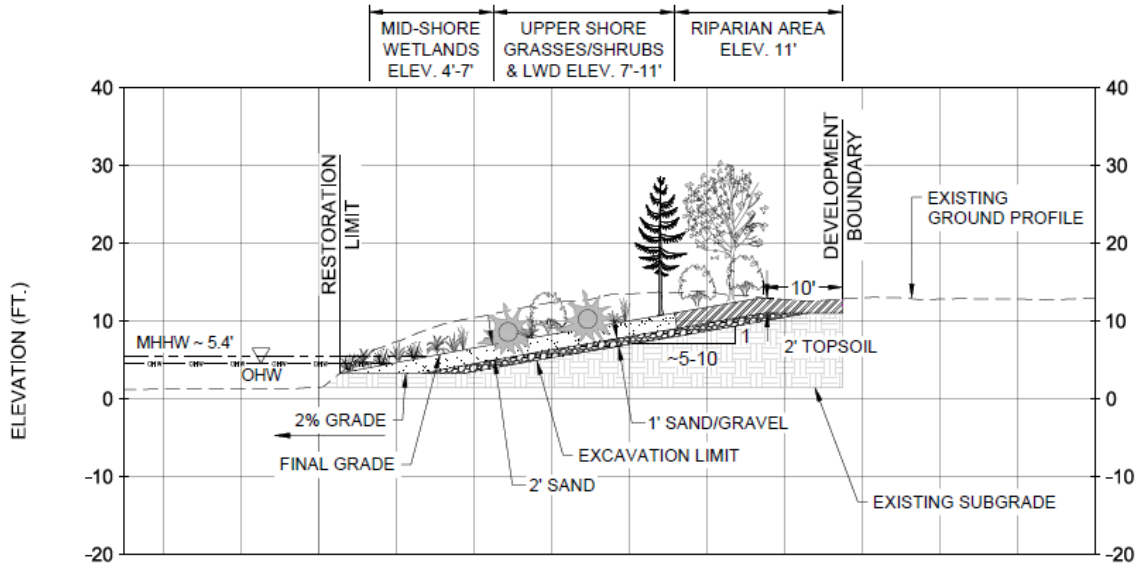
The following activities summarize the restoration activities. A detailed narrative for shoreline materials placement can be found in the *Tidal Hydraulics Study and 30% Design* prepared for the Project (Shannon & Wilson, 2019b). The planting plan and schedule for vegetation installation can be found in Appendix A.

3.2.1 Shoreline Native Material Placement

After shoreline cleanup and grading back the existing slopes, native material will be placed on the slopes. Separate layers of shoreline fill suitable for the proposed plantings would be placed as part of the restoration. Sand to cobble-sized sediment would be placed above the native subgrade on the reconfigured shoreline slope as part of the proposed restoration, for

the western section of shoreline exposed to wind and boat waves. For the shoreline areas south of the wind-wave and boat-wave exposed area, the base fill material will consist of a smaller range of sand/gravel/ cobbles, as this area is less exposed to erosive forces. This layer would be able to withstand the predicted wave action determined for the site. A 2-foot layer of sand and gravel would be placed as the uppermost beach layer. The sand and gravel overlay will have compost amendments to facilitate the establishment of wetland vegetation. A 1-foot-thick planting layer (topsoil) would be placed above the extreme high tide levels in the upland riparian planting zone (Shannon & Wilson, 2019b). A typical cross section of the proposed shoreline restoration is presented in Exhibit 3-1.

Exhibit 3-1: Proposed Shoreline Restoration Typical Cross Section (NGVD29)



3.2.2 Native Plantings

Prior to seeding and planting, all invasive and nonnative vegetation will be removed from the Project area by means of clearing and grubbing. A list of proposed typical plant species that will be installed is presented in Exhibit 3-2. The detailed planting plan and schedule is included in Appendix A.

Exhibit 3-2: Proposed Shoreline Restoration Plantings by Zone

Zone	Elevation (NGVD 29)	Planting Zone	Typical Species
1	< 2 Feet	Mudflat	No Planting Proposed
2	2 to 4 Feet	Low Shore	Rushes, Sedges
3	4 to 7 Feet	Mid Shore	Rushes, Sedges, Grasses, Herbs
4	7 to 11 Feet	Upper Shore and Wood Zone	Dune Grasses, Shrubs, Herbs, Large Wood (conifer species)
5	11 to 13 Feet	Riparian	Trees, Shrubs, Herbs

Plant species were selected based on their water and light requirements, wetland indicator status, tolerance/functions with respect to tidal inundation and elevations, nursery availability, and successful establishment within the Project area based on observations of species thriving in adjacent estuarine wetlands (e.g., Wetland D). Planting will occur during the dormant season (October to February). Low and Mid Shore plantings will be installed in the early spring to avoid washing away during winter storms. After planting woody species, mulch will be applied in rings around each plant and pulled back such that it does not come into contact with the plant stems. Trees will be planted no closer than 10 feet from the land-ward side of the buffer.

3.2.3 Large Woody Debris (LWD) Placement

Large wood placement is proposed to be placed along the upper extents of the beach slope between 7 to 11 feet (National Geodetic Vertical Datum of 1929 [NGVD 29]; Exhibit 3-1). Large wood will be anchored in-place with two mechanical soil earth anchors per log (Shannon & Wilson, 2019b), or equivalent approved anchoring system.

The placement of large wood within the upper shoreline zone will enhance wildlife habitat. Large wood creates structure, improves soil water retention, and provides organic material to underlying soil. As woody debris decays, it is colonized by fungi and insects that provide food for other animals.

3.2.4 Wetland Restoration and Creation

The shoreline restoration will temporarily impact 722 square feet of existing wetlands but will restore wetlands after grading the shoreline to a more natural slope and expand wetlands along the shoreline to create approximately 27,500 square feet intertidal saltmarsh habitat. Native wetland vegetation appropriate for tidal elevations will be installed to expand and connect wetlands along the shoreline, creating larger areas of intertidal saltmarsh habitat to support fish and wildlife species. At places along the southern

shoreline, the restoration will mirror the existing pocket wetland landscape position and vegetation structure of Wetland A-5.

After the shoreline is graded back, the restored shoreline will be densely vegetated with herbaceous wetland vegetation along the lower and intermediate slopes. This emergent vegetation will provide erosion control, water filtration, and sediment stabilization and deposition functions in addition to habitat for invertebrates, juvenile fish, foraging shorebirds, and upland wildlife species. This is a significant lift in function to the currently unvegetated, or sparsely vegetated, over steepened and debris laden shoreline.

3.2.5 Buffer Enhancement

While a portion of the 50-foot buffer along the western and southern shorelines will be excavated as part of the shoreline restoration and planted with wetland or riparian vegetation, the remaining upland buffer area will be enhanced. Buffer enhancement will be achieved by removing the existing invasive species (e.g., Himalayan blackberry and scotch broom), and native species will be installed to create an upper shore zone with grasses and LWD and a shrub and forested riparian community. The riparian zone within the restoration area is anticipated to be between 15 to 20 feet in width and will vary along the restored shoreline. Existing native trees will be retained on site to the greatest extent feasible. If the trees must be removed for shoreline restoration, then the trees shall be removed and placed on site as LWD to create habitat features for wildlife species to the extent feasible.

Once established, the upper shore and riparian vegetation along the entire shoreline will provide shade, litter, and woody debris recruitment and a continuous native riparian corridor along the water for wildlife foraging, refuge, and nesting. While this riparian buffer is narrow, it is a significant ecological functional lift from the current disturbed, degraded, non-native buffer condition.

3.2.6 Public Access

A pedestrian spur trail and viewpoint will be constructed along the north shoreline through the enhanced buffer within the Corps' easement to create public access and use opportunities, as proposed in the Shoreline Master Plan Public Access Plan (City, 2016). The trail will be located away from the water edge of the buffer to protect the aquatic habitat from human intrusion and potential degradation. Native vegetation will be installed in the buffer along the trail so as to minimize future trail maintenance (e.g., species will be selected that will not quickly grow into the trail and require trimming). The trail specifications will meet City and Corps (where located within the easement) requirements. A viewpoint will be included at the end of the spur trail. At this viewpoint, native vegetation will be installed

within the enhanced buffer to facilitate views of the river (i.e., low-growing vegetation that will not block views). See Appendix A for approximate location of trail. The trail will be designed to connect to the existing Mill Town Trail sidewalk on West Marine View Drive through the upland industrial development.

4 RESTORATION GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

To meet the requirements of cleanup under the state's Puget Sound Initiative and to satisfy the buffer reduction request, the Port proposes to clean up and restore the shoreline at the Project site and enhance the buffer to improve the ecological functions at the site and provide public access. The following goals and objectives are based on the City's Shoreline Master Program (City, 2016); the recovery actions for the Snohomish Estuary found in the Snohomish River Basin Salmon Conservation Plan (Snohomish Basin Salmon Recovery Forum, 2005); and the Snohomish Estuary Wetland Integration Plan (SEWIP; City, 1997).

While not an explicit requirement, the Port is participating in the Puget Sound Partnership action agenda through its local integrating organization (Snohomish-Stillaguamish; Local Integrating Organization [LIO]), and as part of this shoreline cleanup and restoration, the Port would like to draw the connection of the importance of this work to the LIO Ecosystem Recovery Plan (LIO, 2017). This proposed work addresses several of the priority ecosystem components identified in the recovery plan, including removal of shoreline armoring/ nearshore restoration, improving chinook salmon habitat, good governance, cultural well-being, sense of place, outdoor activity, and sound stewardship.

4.1 Goal 1 – Shoreline Cleanup

Goal 1: Clean up the shoreline by removing anthropogenic debris to restore the shoreline to a more natural state.

Objective 1.1: Remove bulkheads and replace with soft shore stabilization measures.

Objective 1.2: Remove debris, including dimensional lumber and wood chips, log skids, riprap rock (quarry spalls), asphalt, concrete, and trash to the extent feasible.

4.2 Goal 2 – Shoreline Restoration

Goal 2: Restore the degraded shoreline habitat to improve habitat for fish and wildlife species, specifically aquatic habitat to support juvenile salmonids using the Snohomish River estuary.

Objective 2.1: Restore shoreline grades to a gradual slope that can support native intertidal and riparian vegetation on the west- and south-facing shorelines. The north-facing shoreline will not be graded due to restrictions imposed by the Corps training wall and associated easement.

Objective 2.2: Install LWD to stabilize the slope and provide habitat.

Objective 2.3: Restore and expand estuarine wetlands along the shoreline to create saltmarsh habitat.

4.3 Goal 3 – Buffer Enhancement

Goal 3: Establish native riparian vegetation community along the shoreline that includes long-term sources of LWD to support productive shoreline habitat.

Objective 3.1: Reestablish native riparian plant communities along the shoreline.

Objective 3.2: Reintroduce LWD through plantings and wood placement.

4.4 Goal 4 – Public Access

Goal 4: Create public access/use opportunities consistent with the City's Shoreline Master Plan Public Access Plan (City, 2016).

Objective 4.1: Integrate trails and amenities for public access into shoreline restoration actions, as appropriate considering development requirements, safety considerations, availability of space, restoration goals, existing easements, etc.

4.5 Performance Standards

Success of the mitigation (restoration and enhancement) will be determined based on meeting standards for minimum plant survival, minimum cover of native vegetation, and maximum allowed cover of invasive, nonnative plant species over ten growing seasons (Exhibit 4-1). Invasive, nonnative plant species include those on the Snohomish County Noxious Weed List, including any revisions to the list during the ten-year monitoring period for the Project (Snohomish County, 2019).

Exhibit 4-1: Vegetation Performance Standards

	Standard	Year 1	Year 2	Year 3	Year 5	Year 7	Year 10
1	Woody Plant Survival Rate (%)	100	>80	--	--	--	--
2	Native Emergent Vegetation Cover (%)	>50	>60	>70	>80	>90	>90
3	Native Woody Vegetation Cover (%)	--	--	>30	>60	>80	>90
4	Invasive, Nonnative Plant Cover (%)	≤10	≤10	≤10	≤10	≤10	≤10

5 MONITORING, MAINTENANCE, AND CONTINGENCIES

5.1 Monitoring

In accordance with EMC 19.33D, maintenance and monitoring shall be required for all projects where wetland mitigation and buffer enhancement is required. Monitoring requirements will be based upon the performance standards defined by the Project (Exhibit 4-1). Monitoring of the shoreline restoration and buffer enhancement will occur over a ten-year period to protect and support the restored ecological integrity of the site. An As-Built report will be submitted following construction and monitoring reports will be submitted at the end of Years 1, 2, 3, 5, 7, and 10 following installation, or for a duration and frequency as required by state and federal permits issued for the Project. The Port will arrange for a qualified biologist to conduct monitoring visits each monitoring year to evaluate compliance with established performance standards.

Following construction in Year 0, a visit will be made to document the as-built conditions, including placement of LWD, removal of debris, and installation of vegetation. During this visit, a qualified biologist will establish photo points for documenting growth and establishment of vegetation conditions over the monitoring period.

The monitoring visit during Year 1 will be conducted to inspect the plantings, identify mortality, determine the number and location of plants that need to be replaced, and determine maintenance needs. In addition, a monitoring plan will be prepared for monitoring vegetation cover; transects and sampling plots for vegetation monitoring will be established. Vegetation monitoring will be conducted in accordance with methods outlined in *Measuring & Monitoring Plant Populations* (Elzinga and others, 1998) or similar.

The monitoring visits during Years 2, 3, 5, 7, and 10 will follow the monitoring plan developed in Year 1 and will focus on evaluating the percent cover of native woody plant vegetation in the riparian zone and estimate the emergent plant cover in the intertidal zone.

In addition, each of the site visits will include an inspection of the area for the presence and cover of nonnative, invasive plant species. Evaluation of plant cover will include installed and native volunteer plant species.

During each monitoring visit, photos will be taken from established photo points and to document areas in need of maintenance. In addition, the general appearance and health of vegetation will be documented; and incidental observation of wildlife or evidence of wildlife presence (e.g., scat or tracks) will be recorded.

Upon completion of each site visit, a monitoring report will be prepared documenting the monitoring methods, results, photo documentation, and any necessary contingency and maintenance measures. Reporting to permitting agencies will consist of an as-built report (including record drawings) within 90 days after construction and annual monitoring reports before the end of the year in Years 1, 2, 3, 5, 7, and 10 thereafter.

5.2 Maintenance and Contingencies

The Port will provide maintenance of the restoration areas to correct any failures during the ten-year monitoring period. Maintenance will occur annually and as specified in annual monitoring reports to address site conditions (i.e., removal of invasive species). During Year 1, the planting contractor will be responsible for achieving 100% plant survival. In accordance with Year 1 plant establishment requirements, the Contractor will provide necessary maintenance throughout the year (e.g., weed control and irrigation) and will replace plants that have died. Before plants are replaced, the Contractor will consult with the Project biologist assigned by the Port to determine why certain species are not surviving and, if necessary, which native plant substitutions are appropriate.

The Port will be responsible for managing the establishment of native plants during Years 2 through 10, with the goal of achieving performance standards. Routine maintenance activities could include weed control, supplemental irrigation, mulching, reseeding, and plant replacement. If performance standards for percent coverage of woody plants (shrubs and trees) and nonnative, invasive species have not been satisfied, adaptive management measures may include, but are not limited to, plant replacement, plant supplementation, plant species substitution, adjustment of the planting layout to reflect specific or changing site conditions, weed control, and installation and adjustment of plant protection devices. For example, if more than 15% of the area is vegetated by nonnative, invasive species, the best method for eradication of the weedy species of concern will be implemented (e.g., herbicide application, hand or mechanical weeding, or application of mulch). If, during the monitoring period, corrective actions are necessary that deviate from the original design

(e.g., plant substitutions), approval will be requested from the permitting agencies prior to implementation.

6 CLOSURE

The findings and conclusions documented in this report have been prepared for specific application to this Project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our agreement. The conclusions presented in this report are professional opinions based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this Project. No warranty, express or implied, is made.

Shannon & Wilson has prepared the enclosed, "Important Information About Your Wetland Report" to assist you and others in understanding the use and limitations of our reports.

7 REFERENCES

Brinson, Mark M., 1993, A hydrogeomorphic classification for wetlands: U.S. Army Corps of Engineers Waterways Experiment Station Wetlands Research Program Technical Report WRP-DE-4, NTIS Report no. AD-A270053, 101 p.

City of Everett (City) Department of Planning and Community Development, 1997, Snohomish Estuary Wetlands Integration Plan (SEWIP). April. Available: https://everettwa.gov/DocumentCenter/View/1096/Snohomish-Estuary-Wetland-Integration-Plan-PDF?bidId=

City of Everett (City), 2016, Shoreline Master Program. Effective July 11, 2016. Available: https://everettwa.gov/DocumentCenter/View/11456/City-of-Everett-Shoreline-Master-Program---July-11-2016?bidId=

Elzinga, C.L.; Salzer, D.W.; and Willoughby, J.W., 1998, Measuring and monitoring plant populations. U.S. Department of the Interior, Bureau of Land Management, National Applied Resource Sciences Center. July.

Federal Geographic Data Committee, 2013, Classification of wetlands and deepwater habitats of the United States, Adapted from Cowardin, Carter, Golet and LaRoe (1979), available: https://www.fgdc.gov/standards/projects/wetlands/nwcs-2013

GeoEngineers, 2018, Draft Remedial Investigation and Feasibility Study Addendum. Prepared for Washington State Department of Ecology on behalf of Port of Everett, September 26, 2018.

Hruby, Thomas, 2014, Washington State wetland rating system for eastern Washington: 2014 update (effective January 2015): Olympia, Wash., Washington State Department of Ecology, Publication no. 14-06-030, 160 p., available: https://fortress.wa.gov/ecy/publications/summarypages/1406030.html.

Shannon & Wilson, 2019a, Habitat Assessment for the Bay Wood Redevelopment and Shoreline Interim Cleanup and Restoration, Everett, Washington. Prepared by Shannon & Wilson for the Port of Everett, November.

Shannon & Wilson, 2019b, Tidal Hydraulics Study and 30% Design for the Bay Wood Shoreline Interim Cleanup and Restoration, Everett, Washington. Prepared by Shannon & Wilson for the Port of Everett, November.

Shannon & Wilson, 2019c, Biological Assessment for the Bay Wood Shoreline Interim Cleanup and Restoration, Everett, Washington. Prepared by Shannon & Wilson for the Port of Everett, November.

SLR International Corporation (SLR), 2018, Proposed Soil Sampling – Port of Everett Property, North Truck Dock Stormwater Sump Investigation – Source Control Evaluation Work Plan, Former E.A. Nord Facility, Everett, Washington. Letter from R. Scott Miller and Chris Kramer, SLR, to Mahbub Alam, Department of Ecology, and Elise Gronewald, Port of Everett, June 26, 2018.

Snohomish Basin Salmon Recovery Forum, 2005, Snohomish River Basin Salmon Conservation Plan. Snohomish County Department of Public Works, Surface Water Management Division. Everett, WA. June. Available: https://www.govlink.org/watersheds/7/pdf/WRIA%207_Plan/Final_Compiled_Plan.pdf

Snohomish County Noxious Weed Board, 2019, Noxious Weed List. Accessed September 2019. Available: https://snohomishcountywa.gov/750/Noxious-Weeds-List

Snohomish-Stillaguamish Local Integrating Organization (LIO), 2017, Final Ecosystem Recovery Plan. May. Available: https://snohomishcountywa.gov/DocumentCenter/View/44939/Sno-Stilly-LIO_Ecosystem-Recovery-Plan_Final_Rev-06-2017?bidId=

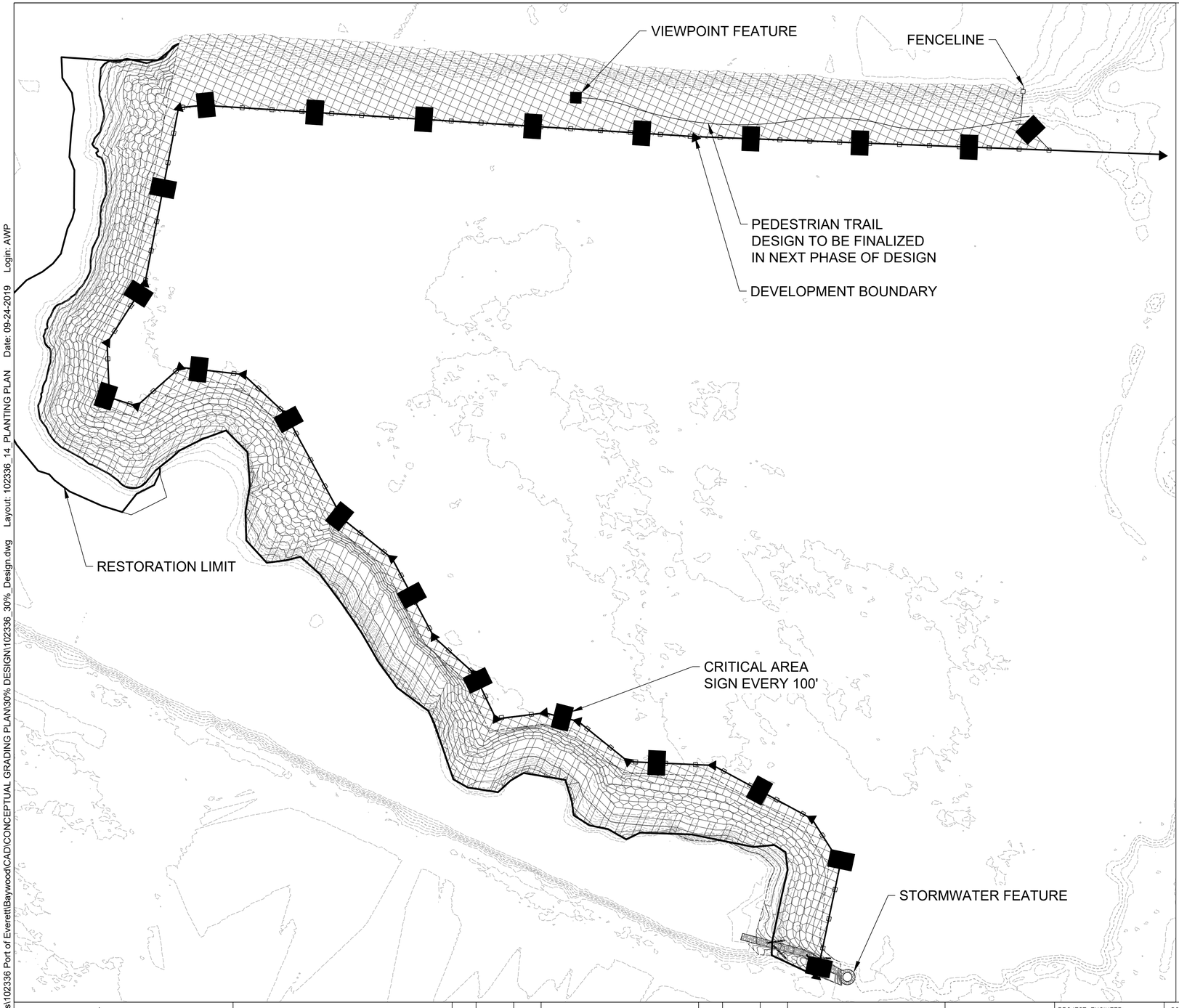
Washington State Department of Ecology (Ecology), 2019, Stormwater Management Manual for Western Washington: Olympia, Wash., Washington State Department of Ecology, publication no. 19-10-021, 1108 p., July, available: https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/Content/Resources/DocsForDownload/2019SWMMWW.pdf.

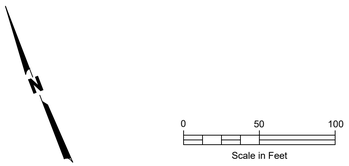
Washington State Department of Natural Resources (DNR), 2017, Derelict Creosote Piling Removal: Best Management Practices for Pile Removal and Disposal, updated January 25, available: https://www.dnr.wa.gov/publications/aqr_rest_pileremoval_bmp_2017.pdf

APPENDIX A: RESTORATION PLAN AND SCHEDULE

Appendix A

Restoration Plan and Schedule





LEGEND

- MINOR DESIGN CONTOUR (1')
- MAJOR DESIGN CONTOUR (5')
- EXISTING MINOR CONTOUR (1')
- EXISTING MAJOR CONTOUR (5')
- GRADING LIMITS
- DEVELOPMENT BOUNDARY
- RESTORATION LIMIT
- FENCE LINE
- PEDESTRIAN TRAIL (ASSUMES 8 FT. WIDTH)
- LOWER SLOPE PLANTING ZONE (WETLANDS) (2'-4')
- MID SLOPE PLANTING ZONE (WETLAND/RIPARIAN MIX) (4'-7')
- UPPER SLOPE PLANTING ZONE (RIPARIAN) (7'-11')
- RIPARIAN PLANTING ZONE (RIPARIAN) (11'+)
- CRITICAL AREA SIGN
- VIEWPOINT FEATURE (ASSSUMES 10FT. X FT. PAD)

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/23	DRC	30% PLAN				

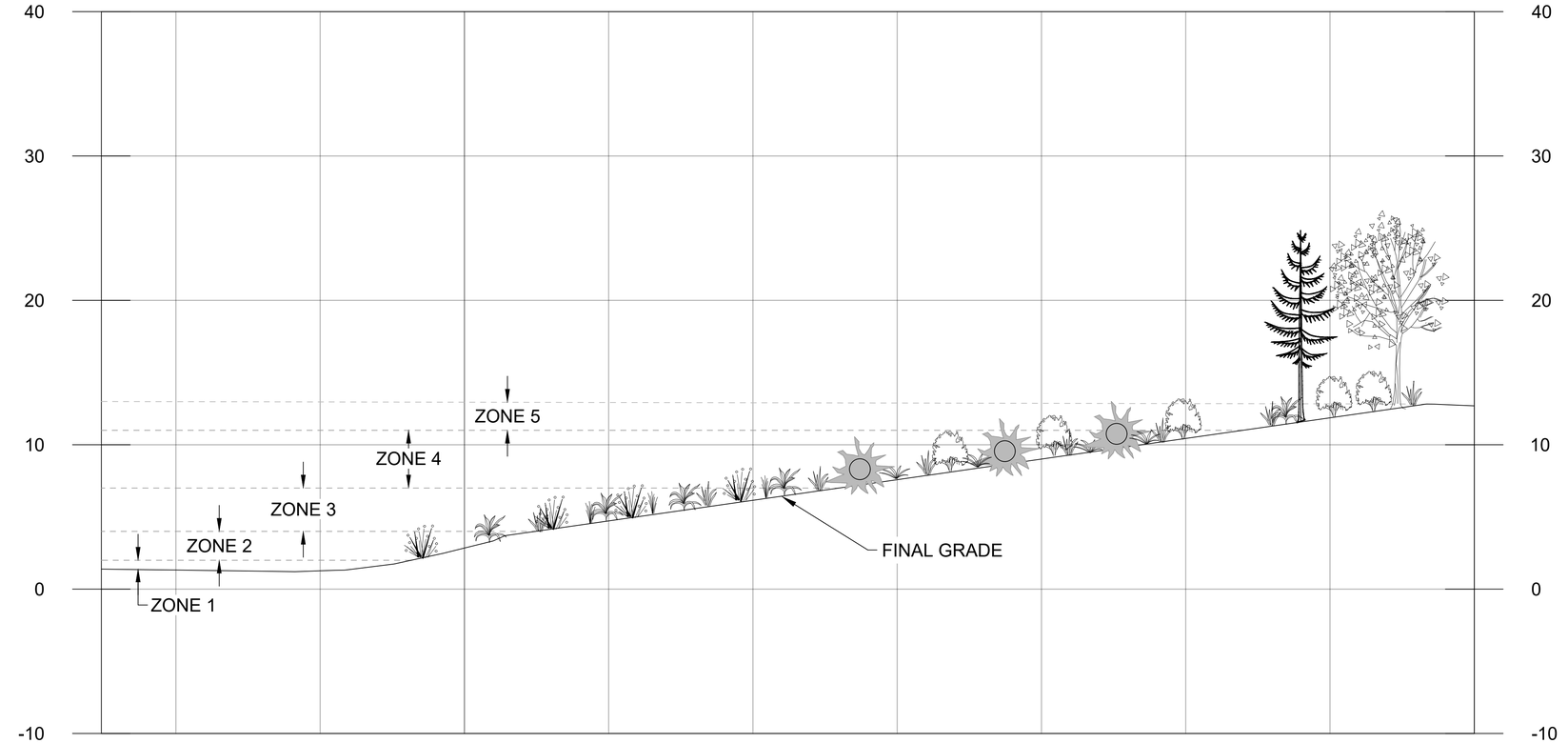
PROJECT ENGINEER: DRC	SCALE:
DESIGNED BY: DRC	DATE: SEPTEMBER 2019
DRAWN BY: AWP	CHECKED BY: SDP
APPROVED BY:	

PORT OF EVERETT

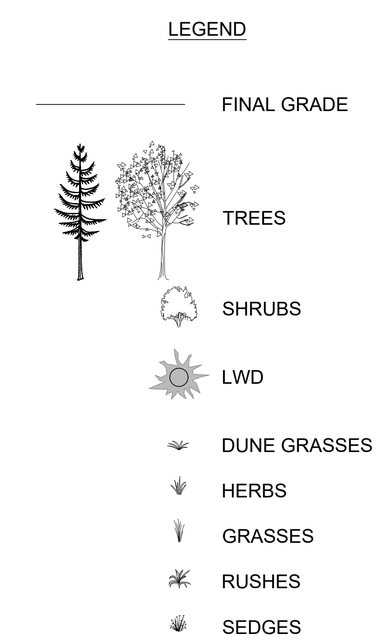
PLANTING PLAN

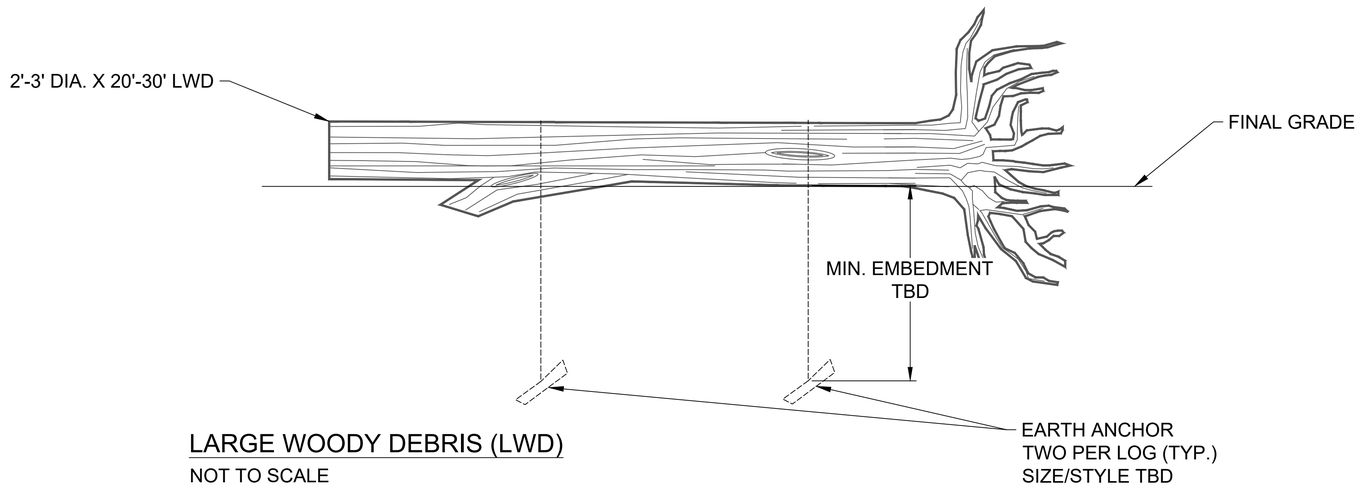
DWG. NO.
CIP NO.
PROJECT NO.
SHEET NO. 1 OF 6

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\102336_30%_Design.dwg Layout: 102336_14_PLANTING PLAN Date: 09-24-2019 Login: AWP



TYPICAL PLANTING SECTION
1" = 5'





LARGE WOODY DEBRIS (LWD)
NOT TO SCALE

ZONE #	ELEVATION (NGVD-29)	PLANTING ZONE	TYPICAL SPEICIES
1	≤ 2'	MUDFLAT	NONE
2	2'-4'	LOW SHORE	RUSHES, SEDGES
3	4'-7'	MID SHORE	RUSHES, SEDGES, GRASSES, HERBS
4	7'-11'	UPPER SHORE & WOOD ZONE	DUNE GRASSES, SHRUBS, HERBS, LWD
5	11'-13'	RIPARIAN	TREES, SHRUBS, HERBS

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/23	DRC	30% PLAN				

PROJECT ENGINEER: DRC	SCALE:
DESIGNED BY: DRC	DATE: SEPTEMBER 2019
DRAWN BY: AWP	CHECKED BY: SDP
APPROVED BY:	

PORT OF EVERETT

LWD & PLANTING SECTION

DWG. NO.
CIP NO.
PROJECT NO.
SHEET NO. **2** OF **6**

MID SHORE (4 FT TO 7 FT) AND LOWER SHORE (2 FT TO 4 FT) PLANTING ZONES								
STRATUM	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	SIZE AND CONDITION	SPACING	TOTAL QTY	PLANTING ZONE	
							MID	LOWER
EMERGENT								
	AGROSTIS EXARATA	SPIKE BENTGRASS	FACW	10 INCH PLUG	2.5' O.C.	250	250	
	CAREX LYNGBYEI	LYNGBYE'S SEDGE	OBL	10 INCH PLUG	2.5' O.C.	440	250	190
	DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS	FACW	10 INCH PLUG	2.5' O.C.	250	250	
	DISTICHLIS SPICATA	SALTGRASS	FACW	10 INCH PLUG	2.5' O.C.	250	250	
	ELEOCHARIS PALUSTRIS	COMMON SPIKERUSH	OBL	10 INCH PLUG	2.5' O.C.	440	250	190
	GRINDELIA INTEGRIFOLIA	COAST GUMWEED	FACW	10 INCH PLUG	2.5' O.C.	250	250	
	JUNCUS ARCTICUS SSP LITTORALIS	BALTIC RUSH	FACW	10 INCH PLUG	2.5' O.C.	250	250	
	PLANTAGO MARITIMA	SEA PLANTAIN	FACW	10 INCH PLUG	2.5' O.C.	250	250	
	POTENTILLA ANSERINA	PACIFIC SILVERWEED	OBL	10 INCH PLUG	2.5' O.C.	440	250	190
	SCHOENOPLECTUS ACUTUS	HARDSTEM BULRUSH	OBL	10 INCH PLUG	2.5' O.C.	440	250	190
	SYMPHYOTRICHUM SUBSPICATUM	DOUGLAS ASTER	FACW	10 INCH PLUG	2.5' O.C.	250	250	
	TRIGLOCHIN MARITIMA	SEASIDE ARROWGRASS	OBL	10 INCH PLUG	2.5' O.C.	440	250	190

UPPER SHORE PLANTING ZONE (7 FT TO 11 FT)						
STRATUM	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	SIZE AND CONDITION	SPACING	QUANTITY
SHRUB						
	SALIX HOOKERIANA	HOOKER WILLOW	FACW	LIVE STAKE	5' O.C.	1,000
GROUNDCOVER						
	GRINDELIA INTEGRIFOLIA	COAST GUMWEED	FACW	PLUG	2.5' O.C.	825
	LEYMUS MOLLIS	AMERICAN DUNE GRASS	FACU	PLUG	2.5' O.C.	825
	LUPINUS LITTORALIS	SEASHORE LUPINE	NL	PLUG	2.5' O.C.	825
	SYMPHYOTRICHUM SUBSPICATUM	DOUGLAS ASTER	FACW	PLUG	2.5' O.C.	825

RIPARIAN PLANTING ZONE (11 FT TO DEVELOPMENT BOUNDARY)						
STRATUM	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	SIZE AND CONDITION	SPACING	QUANTITY
TREE						
	ACER MACROPHYLLUM	BIG LEAF MAPLE	FACU	1-GAL CONT.	15' O.C.	90
	ALNUS RUBRA	RED ALDER	FAC	1-GAL CONT.	15' O.C.	45
	MALUS FUSCA	PACIFIC CRABAPPLE	FACW	1-GAL CONT.	15' O.C.	90
	PINUS CONTORTA	SHORE PINE	FAC	1-GAL CONT.	15' O.C.	90
	POPULUS BALSAMIFERA SPP TRICHOCARPA	BLACK COTTONWOOD	FAC	1-GAL CONT.	15' O.C.	45
SHRUB						
	AMELANCHIER ALNIFOLIA	SERVICEBERRY	FACU	BARE ROOT	5' O.C.	265
	GAULTHERIA SHALLON	SALAL	FACU	BARE ROOT	5' O.C.	265
	HOLODISCUS DISCOLOR	OCEANSPRAY	FACU	BARE ROOT	5' O.C.	265
	LONICERA INVOLUCRATA	BLACK TWINBERRY	FAC	BARE ROOT	5' O.C.	265
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	FACU	BARE ROOT	5' O.C.	265
	PHILADELPHUS LEWISII	MOCK ORANGE	NL	BARE ROOT	5' O.C.	265
	RIBES DIVARICATUM	BLACK GOOSEBERRY	FAC	BARE ROOT	5' O.C.	265
	ROSA NUTKANA	NOOTKA ROSE	FAC	BARE ROOT	5' O.C.	265
	RUBUS PARVIFLORUS	THIMBLEBERRY	FACU	BARE ROOT	5' O.C.	265
	SAMBUCUS RACEMOSA	RED ELDERBERRY	FACU	BARE ROOT	5' O.C.	265
	SYMPORICARPOS ALBUS	SNOWBERRY	FACU	BARE ROOT	5' O.C.	265
GROUNDCOVER						
	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	FACU	BARE ROOT	2.5' O.C.	3,150
	FRAGARIA CHILOENSIS	COAST STRAWBERRY	FACU	BARE ROOT	2.5' O.C.	3,150
	LUPINUS LITTORALIS	SEASHORE LUPINE	NL	BARE ROOT	2.5' O.C.	3,150

RIPARIAN ZONE (11 FT TO DEVELOPMENT BOUNDARY EROSION CONTROL SEED MIX				
BOTANICAL NAME	COMMON NAME	% BY WEIGHT	SEEDS / LB OF MIX	POUNDS PURE LIVE SEED / ACRE
ELYMUS GLAUCUS	BLUE WILDRYE	60.0000	66,000	110,000
HORDEUM BRACHYANTHERUM	MEADOW BARLEY	30.0000	25,500	85,000
BROMUS CARINATUS	CALIFORNIA BROME	10.0000	9,800	98,000

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

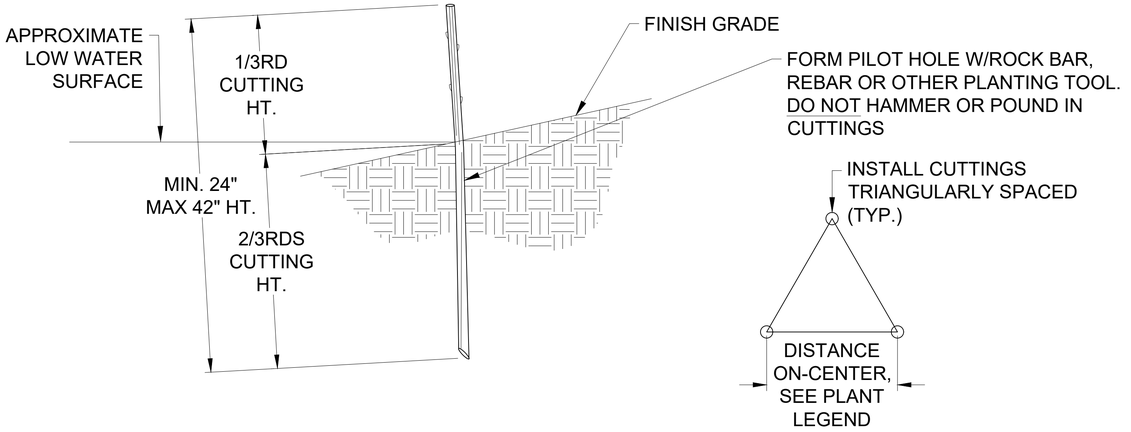
NO.	DATE	BY	REVISION
1	7/23	DRC	30% PLAN

PROJECT ENGINEER: DRC	SCALE:
DESIGNED BY: DRC	DATE: SEPTEMBER 2019
DRAWN BY: AWP	CHECKED BY: SDP
APPROVED BY:	

PORT OF EVERETT

PLANTING SCHEDULE

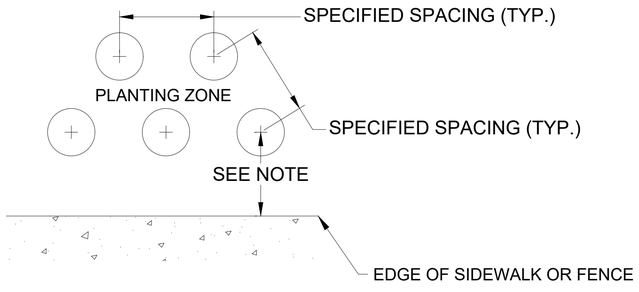
DWG. NO.
CIP NO.
PROJECT NO.
SHEET NO. 3 OF 6



NOTES:
1. BASAL END OF LIVE STAKES SHALL BE 1 TO 2 INCHES IN DIAMETER.
2. KEEP LIVE STAKES COVERED, COOL, & MOIST AT ALL TIMES PRIOR TO PLANTING. AT NO TIME SHOULD PLANT MATERIAL BE EXPOSED & ALLOWED TO DRY OUT. LIVE STAKES CAN BE TEMPORARILY STORED IN WATER PRIOR TO INSTALLATION.
3. PRE-DRIVE HOLE USING REBAR BEFORE INSERTING LIVE STAKE CUTTING & TAMP SOIL TO REMOVE AIR POCKETS. LIGHTLY DRIVE LIVE STAKE A MINIMUM OF $\frac{2}{3}$ LENGTH BELOW THE GROUND USING A RUBBER MALLET. ENSURE LIVE STAKE CUTTING HAS A MINIMUM OF TWO LIVE BUDS ABOVE GRADE.

LIVE STAKE INSTALLATION

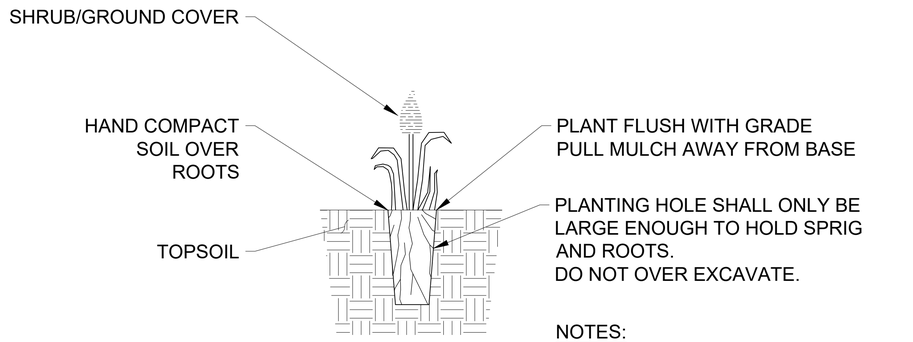
NTS



NOTES:
1. PLANT SHRUBS NO CLOSER THAN 2.5 FT. FROM PEDESTRIAN TRAIL AND FENCE.
2. PLANT TREES NO CLOSER THAN 10 FT. FROM PEDESTRIAN TRAIL AND FENCE.

PLANT SPACING

NTS

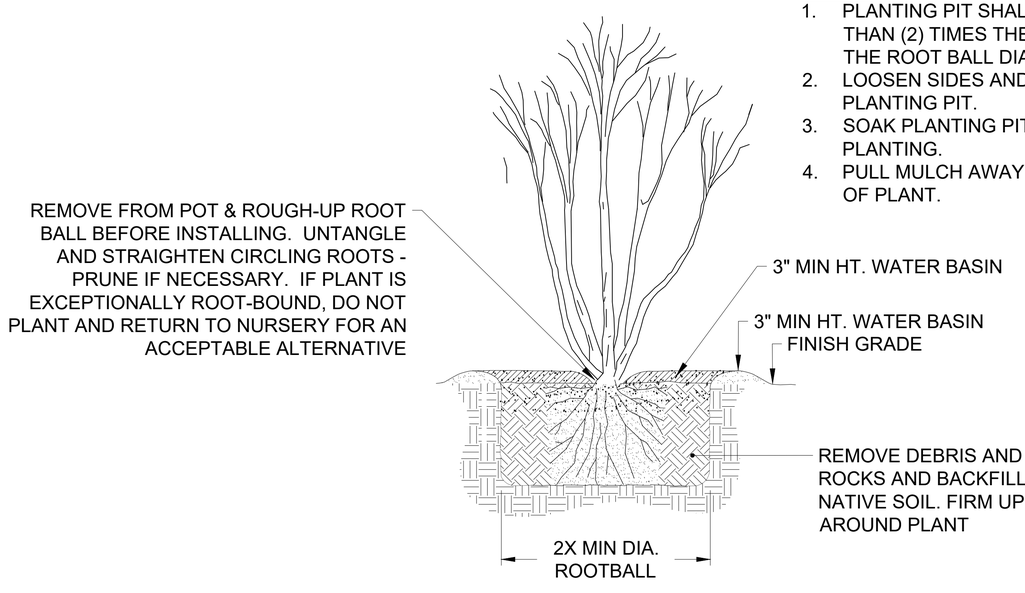


NOTES:
1. SOIL SHALL BE MOIST TO WET AT TIME OF PLANTING.

BARE ROOT EMERGENT PLANTING

NTS

NOTES:
1. PLANTING PIT SHALL NOT BE LESS THAN (2) TIMES THE WIDTH OF THE ROOT BALL DIA.
2. LOOSEN SIDES AND BOTTOMS OF PLANTING PIT.
3. SOAK PLANTING PIT AFTER PLANTING.
4. PULL MULCH AWAY FROM BASE OF PLANT.



1, 2, & 5 GALLON TREE & SHRUB PLANTING

NTS

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

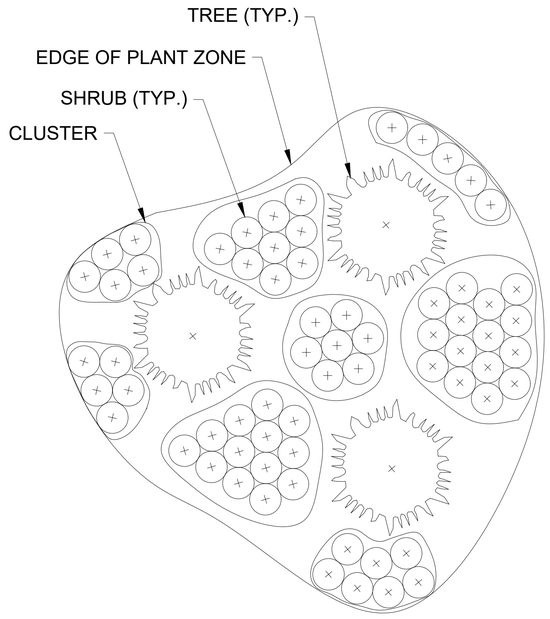
NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/23	DRC	30% PLAN				

PROJECT ENGINEER: DRC	SCALE:
DESIGNED BY: DRC	DATE: SEPTEMBER 2019
DRAWN BY: AWP	CHECKED BY: SDP
APPROVED BY:	

PORT OF EVERETT

PLANTING DETAILS (1)

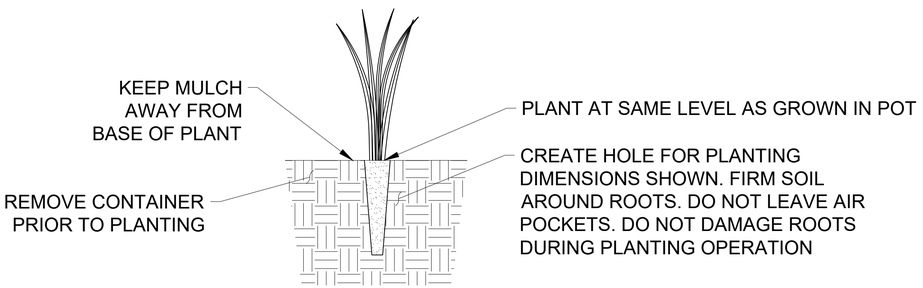
DWG. NO.
CIP NO.
PROJECT NO.
SHEET NO. 4 OF 6



NOTES:
1. PLANT SHRUBS IN CLUSTERS OF UNEVEN NUMBERS (E.G. THREE, FIVE, SEVEN, ETC.).
2. PLANT ONE SPECIES OF SHRUBS IN CLUSTERS OF THREE, FIVE, SEVEN, ETC.
3. EVENLY SPACE CLUSTERS THROUGHOUT PLANTING AREA.
4. INTENT OF SHRUB PLANTING IS TO APPEAR NATURAL AND INFORMAL.

SHRUB SPACING AROUND TREES

NTS



10 CUBIC-INCH PLUG PLANTING

NTS

PLANTING NOTES:
1. PRIOR TO CLEARING AND GRADING ACITIVIES, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES AS SHOWN IN THE TESC PLAN AND CONTRACTOR PROVIDED SWPPP.

2. CLEAR AND GRUB ALL BLACKBERRIES, SCOTCH BROOM, AND EXISTING VEGETATION FROM PLANTING ZONES. MATURE (GREATER THAN 6" DBH), NATIVE TREES TO REMAIN. REMOVE MATERIAL FROM THE SITE AND DISPOSE AT AN APPROVED LOCATION.

3. TOPSOIL WILL EITHER BE STOCKPILED ON SITE DURING GRADING ACTIVITIES AND REUSED, OR OBTAINED FROM A CLEAN, OFF-SITE LOCATION. ONLY CLEAN TOPSOIL EXCAVATED ONSITE FROM WETLANDS SHOULD BE PLACED IN LOWER AND MID SLOPE PLANTING AREAS. ANY TOPSOIL STOCKPILED FOR PROJECT USE SHALL BE PROTECTED TO PREVENT EROSION AND WEED GROWTH. AFTER TOPSOIL HAS BEEN SPREAD, ALL LARGE CLODS, HARD LUMPS, LITTER, AND ROCKS 2 INCHES IN DIAMETER AND LARGER SHALL BE RAKED UP, REMOVED, AND DISPOSED OF BY THE CONTRACTOR.

4. WHERE SOILS ARE COMPACTED BY CONSTRUCTION ACTIVITY, DE-COMPACT THE SOIL BY SCARIFYING THE TOP 12 INCHES OF SOIL FOR PLANTING. USE A BACKHOE, BOBCATE, OR TRACTOR WITH RIPPING TEETH OR A CULTIVATOR, DISK HARROW, OR OTHER PIECE OF MACHINERY TO RIP THE SOIL.

5. AMEND ALL PLANTING AREAS WITH MINIMUM 3 INCHES OF COMPOST AND MIX INTO DECOMPACTED SOILS TO A DEPTH OF 12 INCHES.

6. IMMEDIATELY AFTER SOIL PREPARATION, HYDROSEED EXPOSED SOILS IN RIPARIAN ZONE WITH APPROPRIATE NATIVE EROSION-CONTROL SEED MIX SPECIFIED MIXED WITH A TACKIFIER AT A RATIO RECOMMENDED BY THE SEED SUPPLIER. USING A TWO-PASS METHOD, APPLY SEED AND TACKIFIER TO SOIL IN FIRST PASS AND APPLY HYDROMULCH AND TACKIFIER IN SECOND PASS.

7. RECOMMENDED TIME FOR TREE, SHRUB, AND GROUNDCOVER INSTALLATION IS LATE FALL OR EARLY SPRING (BETWEEN NOVEMBER 1 AND MARCH 1). RECOMMENDED TIME FOR EMERGENT INSTALLATION IS EARLY SPRING (JANUARY 15 TO MARCH 1).

8. PROCURE PLANTS AND STORE PROPERTY. PLANTS SHALL CONFORM WITH THE CODE OF STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANT MATERIAL WILL BE NATIVE TO THE PACIFIC NORTHWEST AND FROM PLANT STOCK GENOMES FROM WESTERN WASHINGTON. ALL PLANTS SHOULD BE INSTALLED THE SAME DAY THEY ARE DELIVERED TO THE SITE. PLANTS THAT CANNOT BE PLANTED WITHIN ONE DAY AFTER ARRIVAL SHOULD BE "HEELED-IN' TO THE SOIL IN A SHADED LOCATION FOR PROTECTION AGAINST DRYING. PLANTS SHALL BE INSPECTED BY A QUALIFIED ECOLOGIST PRIOR TO INSTALLATION.
9. PLANT LAYOUT WILL BE DIRECTED AND APPROVED BY THE ONSITE ECOLOGIST.
10. INSTALL PLANTS AS SHOWN ON PLANS IN NATURAL, RANDOM CLUSTERS FOLLOWING THE DETAILS FOR CONTAIN-GROWN PLANTS, LIVE STAKES, BARE ROOT, AND PLUG CONDITIONS. TREES, SHRUBS, AND GROUNDCOVERS SHOULD BE INSTALLED PER THE CLUSTERING DETAIL. EMERGENTS SHOULD BE INSTALLED IN GROUPS OF 15 TO 20 INDIVIDUALS OF THE SAME SPECIES. FOR SPECIES IN THE LOWER SLOPE PLANTING ZONE, INSTALL PLANTS ALONG THE HIGHER ELEVATION.

11. DO NOT PLANT TREES WITHIN 10 FEET OF USACE TRAINING WALL, PEDESTRIAN PATH, OR DEVELOPMENT BOUNDARY.

12. WATER PLANTS THOROUGHLY TO AVOID CAPILLARY STRESS (TYPICALLY, PLANTED AREAS SHOULD BE WATERED WITH APPROXIMATELY 1 INCH OF WATER AFTER PLANTING).

13. COVER ALL BARE UPLAND AREAS WITH THREE INCHES OF GUARANTEED WEED-FREE COARSE WOOD CHIP MULCH. WOOD CHIPS SHALL BE MOVED AWAY FROM PLANT STEMS TO PREVENT STEM ROT.
14. INSTALL SPLIT RAIL FENCE ALONG DEVELOPMENT BOUNDARY WITH SENSITIVE AREA SIGNS.

MAINTENANCE:
1. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING ALL PLANTING AREAS FOR THE FIRST YEAR FOLLOWING CONSTRUCTION. THE PORT WILL BE RESPONSIBLE FOR MAINTAINING THE PLANTING AREAS FOR THE REMAINDER OF THE 10-YEAR MONITORING PERIOD. MAINTENANCE WILL INCLUDE WATERING, WEEDING AROUND THE BASE OF INSTALLED PLANTS, REPLACING OR ADDING PLANTS TO MEET SURVIVAL AND COVER REQUIREMENTS, REMOVING ALL CLASSES OF NOXIOUS WEEDS (SEE WASHINGTON STATE NOXIOUS WEEDS LIST, WAC 16-750-005, -011, AND -015 AND SNOHOMISH COUNTY'S NOXIOUS WEEDS LIST), AND IMPLEMENTING ANY OTHER MEASURES NEEDED TO ENSURE PLANT SURVIVAL. AN ECOLOGIST WILL REVIEW ALL PROPOSED MAINTENANCE.

2. TEMPORARY IRRIGATION OR WATERING SHALL BE PROVIDED TO THE UPPER SLOPE AND RIPARIAN PLANTING ZONES, AS NEEDED, FOR THE FIRST YEAR AFTER PLANT INSTALLATION TO FAVILITATE PLANT SURVIVAL AND ESTABLISHMENT. WATER SHOULD BE PROVIDED BY A TEMPORARY, ABOVE GROUND IRRIGATION SYSTEM AND/OR A WATER TRUCK. WATER SHOULD BE APPLIED AT A RATE OF 1 INCH OF WATER, TWO TIMES PER WEEK FROM JUNE 15 THROUGH SEPTEMBER 15. TIDES AND GROUNDWATER ARE ANTICIPATED TO SUPPLY ADEQUATE HYDROLOGY TO THE LOWER AND MID SLOPE PLANTING AREAS FOLLOWING CONSTRUCTION. IF A TEMPORARY IRRIGATION SYSTEM IS INSTALLED, IT SHOULD BE LEFT IN PLACE THROUGH AT LEAST THE SECOND YEAR OF MONITORING SO THAT IT IS AVAILABLE IF NEEDED.

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/23	DRC	30% PLAN				

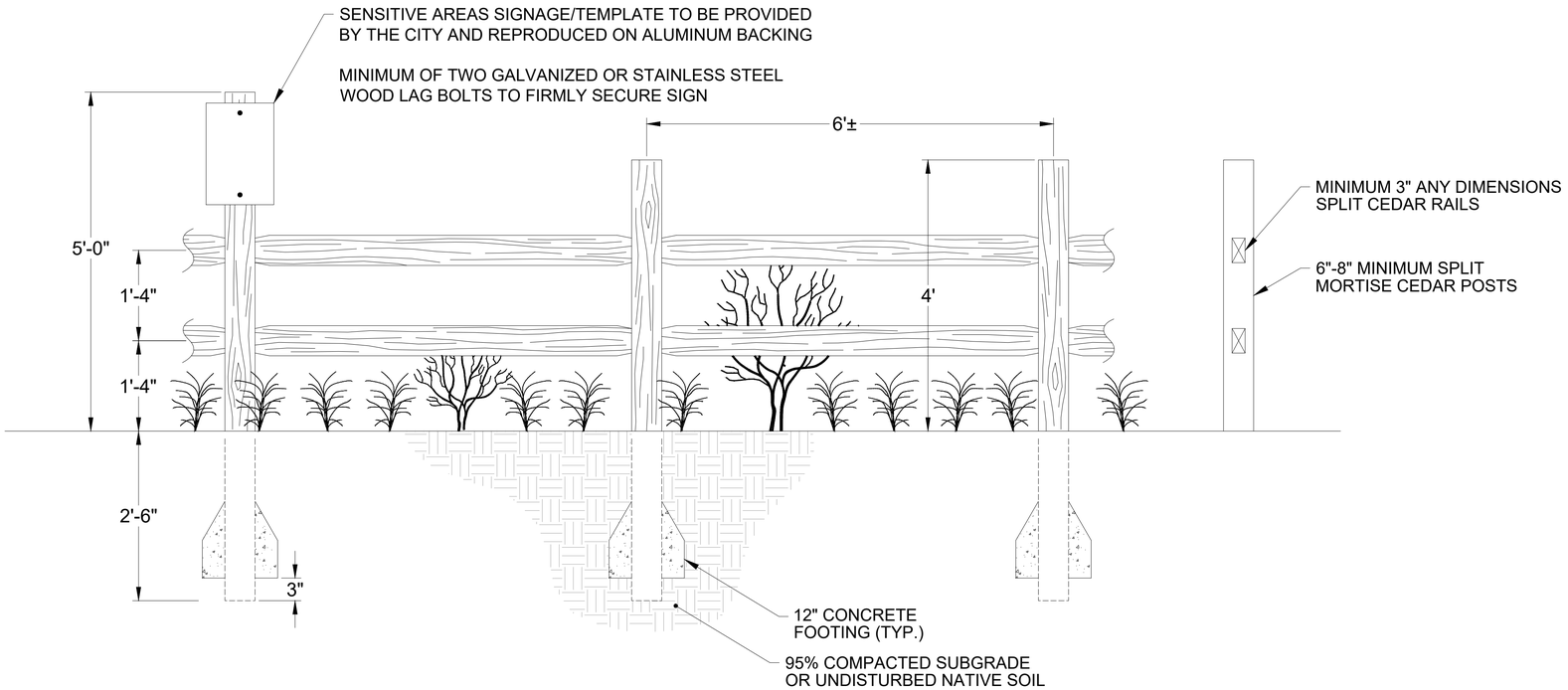
PROJECT ENGINEER: DRC	SCALE:
DESIGNED BY: DRC	DATE: SEPTEMBER 2019
DRAWN BY: AWP	CHECKED BY: SDP
APPROVED BY:	

PORT OF EVERETT

PLANTING DETAILS (2)

DWG. NO.
CIP NO.
PROJECT NO.
SHEET NO. 5 OF 6

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\102336_30%_Design.dwg Layout: 102336_18_PLANTING DETAILS (2) Date: 09-24-2019 Login: AWP



NOTES:

1. SPLIT-RAIL FENCE WILL BE INSTALLED AROUND THE PERIMETER OF THE BUFFER WHERE ACCESS INTO THE BUFFER IS NOT PROHIBITED BY A WALL OR SLOPE.
2. SENSITIVE AREA SIGNS SHALL BE SPACED APPROXIMATELY 100 FEET APART AROUND THE PERIMETER OF THE BUFFER AREA.
3. SIGN PLACEMENT SHALL BE SUBJECT TO THE APPROVAL OF THE CITY OF EVERETT.

SPLIT-RAIL FENCE WITH SENSITIVE AREA SIGN

NTS

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/23	DRC	30% PLAN				

PROJECT ENGINEER: DRC	SCALE:
DESIGNED BY: DRC	DATE: SEPTEMBER 2019
DRAWN BY: AWP	CHECKED BY: SDP
APPROVED BY:	

PORT OF EVERETT

FENCE DETAILS

DWG. NO.
CIP NO.
PROJECT NO.
SHEET NO. 6 OF 6

IMPORTANT INFORMATION

Important Information

About Your Wetland Report

IMPORTANT INFORMATION

A WETLAND/STREAM REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Wetland delineation/mitigation and stream classification reports are based on a unique set of project-specific factors. These typically include the general nature of the project and property involved, its size and configuration, historical use and practice, the location of the project on the site and its orientation, and the level of additional risk the client assumed by virtue of limitations imposed upon the exploratory program. The jurisdiction of any particular wetland/stream is determined by the regulatory authority(ies) issuing the permit(s). As a result, one or more agencies will have jurisdiction over a particular wetland or stream with sometimes confusing regulations. It is necessary to involve a consultant who understands which agency(ies) has jurisdiction over a particular wetland/stream and what the agency(ies) permitting requirements are for that wetland/stream. To help reduce or avoid potential costly problems, have the consultant determine how any factors or regulations (which can change subsequent to the report) may affect the recommendations.

Unless your consultant indicates otherwise, your report should not be used:

- If the size or configuration of the proposed project is altered.
- If the location or orientation of the proposed project is modified.
- If there is a change of ownership.
- For application to an adjacent site.
- For construction at an adjacent site or on site.
- Following floods, earthquakes, or other acts of nature.

Wetland/stream consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of our final report.

Wetland boundaries identified and stream classifications made by Shannon & Wilson are considered preliminary until validated by the U.S. Army Corps of Engineers (Corps) and/or the local jurisdictional agency. Validation by the regulating agency(ies) provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agency(ies) until a specified date, or until the regulations are modified, and that the stream has been properly classified. Only the regulating agency(ies) can provide this certification.

MOST WETLAND/STREAM "FINDINGS" ARE PROFESSIONAL ESTIMATES.

Site exploration identifies wetland/stream conditions at only those points where samples are taken and when they are taken, but the physical means of obtaining data preclude the determination of precise conditions. Consequently, the information obtained is intended to be sufficiently accurate for design but is subject to interpretation. Additionally, data derived through sampling and subsequent laboratory testing are extrapolated by the consultant who then renders an opinion about overall conditions, the likely reaction to proposed construction activity, and/or appropriate design. Even under optimal circumstances, actual conditions may differ from those thought to exist because no consultant, no matter how qualified, and no exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time. Nothing can be done to prevent the unanticipated, but steps can be taken to help reduce their impacts. For this reason, most experienced owners retain

IMPORTANT INFORMATION

their consultants through the construction or wetland mitigation/stream classification stage to identify variances, conduct additional evaluations that may be needed, and recommend solutions to problems encountered on site.

WETLAND/STREAM CONDITIONS CAN CHANGE.

Since natural systems are dynamic systems affected by both natural processes and human activities, changes in wetland boundaries and stream conditions may be expected. Therefore, delineated wetland boundaries and stream classifications cannot remain valid for an indefinite period of time. The Corps typically recognizes the validity of wetland delineations for a period of five years after completion. Some city and county agencies recognize the validity of wetland delineations for a period of two years. If a period of years has passed since the wetland/stream report was completed, the owner is advised to have the consultant reexamine the wetland/stream to determine if the classification is still accurate.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or water fluctuations may also affect conditions and, thus, the continuing adequacy of the wetland/stream report. The consultant should be kept apprised of any such events and consulted to determine if additional evaluation is necessary.

THE WETLAND/STREAM REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when plans are developed based on misinterpretation of a wetland/stream report. To help avoid these problems, the consultant should be retained to work with other appropriate professionals to explain relevant wetland, stream, geological, and other findings, and to review the adequacy of plans and specifications relative to these issues.

DATA FORMS SHOULD NOT BE SEPARATED FROM THE REPORT.

Final data forms are developed by the consultant based on interpretation of field sheets (assembled by site personnel) and laboratory evaluation of field samples. Only final data forms are customarily included in a report. These data forms should not, under any circumstances, be drawn for inclusion in other drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to reduce the possibility of misinterpreting the forms. When this occurs, delays, disputes, and unanticipated costs are frequently the result.

To reduce the likelihood of data from misinterpretation, contractors, engineers, and planners should be given ready access to the complete report. Those who do not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of information always insulates them from attendant liability. Providing the best available information to contractors, engineers, and planners helps prevent costly problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because a wetland delineation/stream classification is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in written transmittals. These are not exculpatory clauses designed to foist the consultant's liabilities onto someone else; rather, they are definitive clauses that identify where

the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

THERE MAY BE OTHER STEPS YOU CAN TAKE TO REDUCE RISK.

Your consultant will be pleased to discuss other techniques or designs that can be employed to mitigate the risk of delays and to provide a variety of alternatives that may be beneficial to your project.

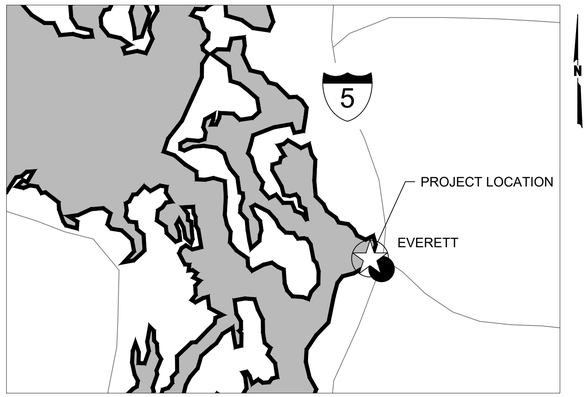
Contact your consultant for further information.

APPENDIX C

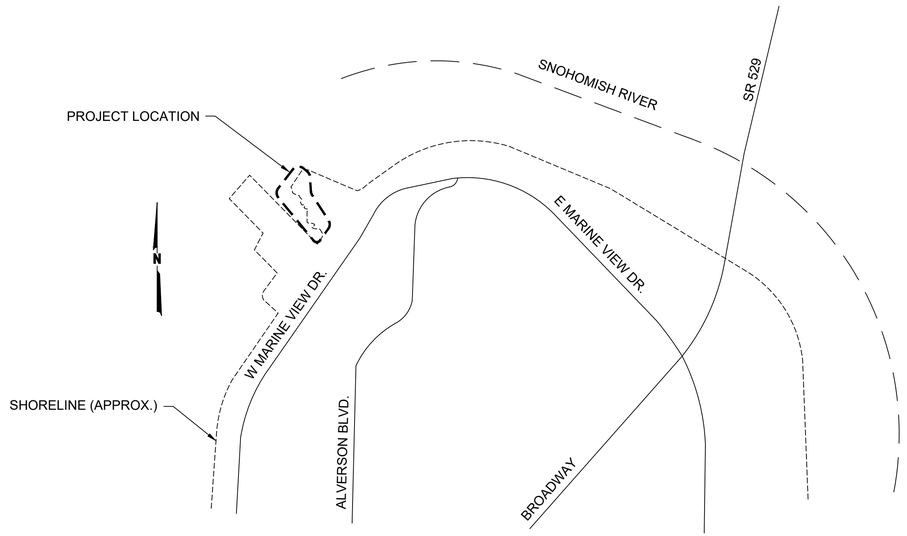
Shoreline Restoration and Low Area Excavation Design Plans

PORT OF EVERETT

EVERETT, WASHINGTON
BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP



LOCATION MAP
NTS



VICINITY MAP
NTS

SHEET LIST TABLE		
SHEET NO.	REV. NO.	SHEET TITLE
01	0	COVER SHEET
02	0	GENERAL NOTES & ABBREVIATIONS
03	0	LEGEND
04	0	EXISTING CONDITIONS
05	0	TESC PLAN
06	0	DEMOLITION PLAN (1)
07	0	DEMOLITION PLAN (2)
08	0	GRADING PLAN
09	0	DEMOLITION & GRADING PLAN (1)
10	0	DEMOLITION & GRADING PLAN (2)
11	0	DEMOLITION & GRADING PLAN (3)
12	0	TYPICAL SECTIONS
13	0	SOIL MANAGEMENT PLAN - TYPICAL SECTION
14	0	SECTIONS A - D
15	0	SECTIONS E - H
16	0	SECTIONS I - L
17	0	SECTIONS M
18	0	LWD DETAIL
19	0	PLANTING PLAN
20	0	PLANTING DETAILS (1)
21	0	PLANTING DETAILS (2)
22	0	PLANTING SCHEDULE
23	0	SPLIT RAIL FENCE & TRAIL DETAILS
24	0	LOW AREA CLEANUP PLAN
25	0	LOW AREA CLEANUP SECTIONS

PORT OF EVERETT
COMMISSIONERS
- GLEN BACHMAN
- TOM STIGER
- DAVID SIMPSON

PORT STAFF
- CHIEF EXECUTIVE OFFICER: LISA LEFEBER
- CHIEF OF BUSINESS DEVELOPMENT : TERRIE BATTUELLO
- CHIEF OF ENGINEERING: JOHN KLEKOTKA, P.E.
- DIRECTOR OF ENVIRONMENTAL PROGRAMS: ERIK GERKING,L.G.
- PORT PLANNER: LAURA GURLEY

CONSULTING ENGINEERS
- SHANNON & WILSON: DAVID CLINE, P.E.
- LANDAU ASSOCIATES

IN PARTNERSHIP WITH THE DEPARTMENT OF ECOLOGY

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE — STATE OF WASHINGTON — 23326 — REGISTERED PROFESSIONAL ENGINEER
8/10/2020

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

COVER SHEET

DWG. NO. **01**
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 01 OF 25

GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, SPECIFICATIONS AND LOCAL, STATE, AND FEDERAL STANDARDS AND REGULATIONS.

2. ALL WORK SHALL BE IN ACCORDANCE WITH, AND THE CONTRACTOR SHALL ADHERE TO, ALL TERMS AND CONDITIONS OF PROJECT PERMITS. THE CONTRACTOR IS RESPONSIBLE TO SECURE APPLICABLE PERMITS THAT HAVE NOT BEEN PROVIDED BY THE OWNER.

3. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS RELATED TO SAFETY OF PERSONNEL, OWNER'S REPRESENTATIVES AND THE PUBLIC. THE CONTRACTOR SHALL ADHERE TO ALL ENVIRONMENTAL LAWS, REGULATIONS, AND PERMIT CONDITIONS RELEVANT TO THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR THE HEALTH AND SAFETY OF PERSONNEL ONSITE.

4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THEIR OWN ELECTRICITY, COMMUNICATIONS, WATER AND SANITARY FACILITIES.

5. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS, OR AS SHOWN ON PLANS.

6. SEE TESC PLANS AND NOTES FOR EROSION AND SEDIMENTATION CONTROL REQUIREMENTS.

7. CONTAMINATED OR TURBID DEWATERING EFFLUENT FROM CONSTRUCTION EQUIPMENT OPERATION, TRUCK WASH WATER, OPEN TRENCHES OR SPECIAL HANDLING WASTE WATER SHALL BE HANDLED SEPARATELY FROM STORMWATER, TREATED AND DISPOSED PER THE SPECIFICATIONS AND LOCAL, STATE, AND FEDERAL REGULATIONS.

8. ALL STATIONING REFERS TO THE CENTERLINE OF CONSTRUCTION AND IS THE MEASURED HORIZONTAL DISTANCE.

9. ALL TRASH, RUBBLE, ASPHALT, CONCRETE, DEBRIS AND BURIED DEBRIS, WITHIN THE PROJECT WORK LIMITS, SHALL BE REMOVED AND DISPOSED OF OFFSITE BY THE CONTRACTOR AND IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

10. ANY MATERIALS EXCAVATED WATERWARD OF SPECIAL MATERIAL HANDLING BOUNDARY SHALL BE DISPOSED OF IN SUBTITLE D LANDFILL, AS APPROVED BY THE PORT.

11. THE CONTRACTOR SHALL PERFORM EXCAVATION IN A SAFE CONDITION AND IN A MANNER TO AVOID ADVERSE IMPACTS TO WATER QUALITY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SHORING, SHEETING, BRACING, BENCHING, DEWATERING AND ALL NECESSARY PROTECTIVE MEASURES TO PREVENT DAMAGE TO ADJACENT PROPERTIES, STRUCTURES OR UTILITIES.

12. IF UNANTICIPATED CONDITIONS ARE ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY BRING THE CONDITION TO THE ATTENTION OF THE ENGINEER/OWNER.

13. DETAILS ARE INTENDED TO SHOW FINAL CONDITIONS OF THE DESIGN. MODIFICATIONS MAY BE REQUIRED TO SUIT THE JOB SITE DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED IN THE WORK.

14. THE CONTRACTOR SHALL MAKE ALL NECESSARY PROVISIONS TO PROTECT AND REPAIR IMPACTS TO EXISTING STRUCTURES INCLUDING ROADWAYS, DRAINAGES, AND VEGETATION UNLESS SUCH ITEMS ARE TO BE DISTURBED OR REMOVED AS INDICATED IN THE CONSTRUCTION PLANS AND DOCUMENTS.

15. CONTRACTOR SHALL, IF PRESENT, COORDINATE CONSTRUCTION ACTIVITIES WITH ADJACENT UPLAND DEVELOPMENT CONSTRUCTION.

16. EXCAVATION AND GRADING LINES AND LIMITS ARE SHOWN ON THE PLANS. ANY EXCAVATION BEYOND THE LINES AND LIMITS SHOWN IN THE PLANS IS NOT ALLOWED.

17. OPPORTUNISTIC DEBRIS REMOVAL INCLUDES SMALL MARINE WOOD DEBRIS, QUARRY SPALLS, CONCRETE, AND METAL PIECES TO BE REMOVED BY PLUCKING AND PICKING DEBRIS FROM THE LOWER SHORELINE PER DIRECTION OF THE ENGINEER. CONTRACTOR SHALL PERFORM OPERATIONS IN FULL COORDINATION WITH THE PORT AND ENGINEER.

18. MASS EXCAVATION AND DREDGING OF SEDIMENTS AND SOILS SURROUNDING THE OPPORTUNISTIC DEBRIS PIECES IS NOT ALLOWED AND CONSIDERED OVER-EXCAVATION. PAYMENT FOR OVER-EXCAVATION IS NOT ALLOWED.

SURVEY NOTES

1. SURVEY DATUM IS WASHINGTON STATE PLANE NORTH NAD(83)/NGVD(29). CONVERSION TO MLLW AND NAVD88 ON SHEET 03.
2. UNLESS NOTED OTHERWISE ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SURVEY MONUMENTS AND OTHER SURVEY MARKERS DURING CONSTRUCTION. ANY DAMAGE TO SURVEY MARKERS AND MONUMENTS IS THE RESPONSIBILITY OF CONTRACTOR TO REPAIR.

UTILITY NOTES

1. THE LOCATIONS AND EXTENTS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT NECESSARILY COMPLETE. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE EXISTING UTILITIES BASED UPON AVAILABLE RECORDS & SURVEYS. THE CONTRACTOR SHALL DETERMINE THE TYPE, LOCATION, SIZE, AND/OR DEPTH OF THE EXISTING UTILITIES WITHIN THE WORK AREA BEFORE COMMENCING WORK. THE CONTRACTOR SHALL CONTACT THE UTILITIES UNDERGROUND LOCATION CENTER AT (800) 424-5555 OR 811 AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR DAMAGED UTILITIES. THE CONTRACTOR SHALL HIRE A PRIVATE LOCATOR PRIOR TO COMMENCING WORK.

2. AT NO TIME SHALL THE CONTRACTOR INTERRUPT THE OPERATION OF ANY UTILITIES WITHOUT PRIOR APPROVAL FROM THE UTILITY OWNERS. APPROVAL SHALL BE REQUESTED AT LEAST 48 HOURS IN ADVANCE OF THE TIME THAT THE INTERRUPTION OF THE SYSTEM IS REQUIRED.

3. ALL LOCATIONS OF EXISTING UTILITIES SHOWN SHOULD BE CONSIDERED APPROXIMATE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN OR NOT SHOWN ON THE PLANS. EXISTING UTILITIES SHALL BE AVOIDED, PROTECTED, SUPPORTED AND MAINTAINED DURING CONSTRUCTION AND ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL UTILITIES WITHIN CONSTRUCTION, STAGING AND ACCESS AREAS WILL BE FIELD-LOCATED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION.

SOIL QUANTITIES

DESCRIPTION	UNITS	CUT	FILL
EXCAVATION, HAUL & STOCKPILE - RUESABLE FILL	CY	9,203	
EXCAVATION, HAUL & DISPOSAL TO SOIL RECYCLING FACILITY	TONS	292	
OPPORTUNISTIC DEBRIS REMOVAL, HAUL & DISPOSAL	TONS	650	
EXCAVATION, HAUL & DISPOSAL - SPECIAL WASTE HANDLING (SUBTITLE D LANDFILL)	TONS	350	
EXCAVATION, HAUL & DISPOSAL FOR WOOD WASTE (SUBTITLE D LANDFILL)	TONS	2,600	
TOPSOIL IMPORT	TONS		4,995
SAND/GRAVEL IMPORT	TONS		2,565

MISC. QUANTITIES

DESCRIPTION	UNIT	QUANTITY
CLEAR AND GRUB	AC	5.23
MARINE STRUCTURE DEMOLITION	TONS	1,580
SILT FENCE	LF	2,650
LARGE WOODY DEBRIS, ANCHORS, FASTENERS, INSTALLATIONS	EA	50

ABBREVIATIONS

AC	-	ACRE
APPROX.	-	APPROXIMATE
BM	-	BENCH MARK
BTM	-	BOTTOM
BW	-	BOTTOM WIDTH
CB	-	CATCH BASIN
CL	-	CENTERLINE
CLL	-	CLEARING LIMITS
CLR.	-	CLEARANCE
CONC	-	CONCRETE
CSBC	-	CRUSHED SURFACING BASE COURSE
CSTC	-	CRUSHED SURFACING TOP COURSE
CY	-	CUBIC YARD
DBH	-	DIAMETER AT BREAST HEIGHT
E	-	EAST
EA.	-	EACH
ELEV	-	ELEVATION
EX	-	EXISTING
EG	-	EXISTING GRADE
FACW	-	FACULTATIVE WETLAND
FACU	-	FACULTATIVE UPLAND
FAC	-	FACULTATIVE
FG	-	FINISH GRADE
HDPE	-	HIGH DENSITY POLYETHYLENE
HT	-	HEIGHT
HTL	-	HIGH TIDE LEVEL
ID	-	INSIDE DIAMETER
IE	-	INVERT ELEVATION
INV	-	INVERT
KIP	-	THOUSAND POUNDS-FORCE
LF	-	LINEAR FEET
LWD	-	LARGE WOODY DEBRIS
MFG.	-	MANUFACTURER'S
MIN.	-	MINIMUM
MISC.	-	MISCELLANEOUS
MW	-	MONITORING WELL
N	-	NORTH
NE	-	NORTHEAST
NIC	-	NOT IN CONTRACT
NL	-	NOT LISTED
NO.	-	NUMBER
NTS	-	NO TO SCALE
NW	-	NORTHWEST
OC	-	ON CENTER
OHW	-	ORDINARY HIGH WATER
SPEC'S.	-	PROJECT SPECIFICATIONS
R	-	RADIUS
RD.	-	ROAD
REQ'D	-	REQUIRED
REV.	-	REVISION
R/W	-	RIGHT OF WAY
SD	-	STORM DRAIN
SE	-	SOUTHEAST
SEC.	-	SECTION
SHT.	-	SHEET
S	-	SOUTH
S.F.	-	SQUARE FEET
STA	-	STATION
TESC	-	TEMPORARY EROSION AND SEDIMENT CONTROL
TBD	-	TO BE DETERMINED
TOB	-	TOP OF BANK
TYP	-	TYPICAL
WDFW	-	WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
W.S.	-	WATER SURFACE
W	-	WEST
WL	-	WETLAND

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

STATE OF WASHINGTON · DAVID R. CLINE · 39326 · REGISTERED PROFESSIONAL ENGINEER
9/10/2020

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

GENERAL NOTES & ABBREVIATIONS

DWG. NO. **02**
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 02 OF 25

LEGEND

*NOTE: LEGEND PROVIDED ON SHEETS SUPERCEDES THIS LEGEND

EXISTING

- MAJOR CONTOUR (5')
- MINOR CONTOUR (1')
- RIPARIAN BUFFER LIMIT
- ORDINARY HIGH WATER (OHW)
- EXTREME TIDE (8.6')
- HTL (6.8')
- MHHW (5.4')
- TOP OF BANK
- PROPERTY LINE
- EXISTING MATERIAL
- WETLANDS
- WETLAND BUFFER
- RIVER SETBACK (100')
- SHORELINE MANAGEMENT ZONE (200')
- EXISTING SUBGRADE
- TP-1-19 TEST PIT, APPROXIMATE LOCATION
- TP-1 GRAB SAMPLE, APPROXIMATE LOCATION
- SURVEY CONTROL POINT
- QUARRY SPALL/WOOD WASTE
- MARINE STRUCTURES
- FENCE
- OVERHEAD POWER UTILITY
- EDGE OF PAVEMENT

PROPOSED

- MINOR DESIGN CONTOUR (1')
- MAJOR DESIGN CONTOUR (5')
- GRADING LIMITS
- SILT FENCE
- CONSTRUCTION LINE LIMIT
- MATERIAL REMOVAL OUTLINE
- OPPORTUNISTIC DEBRIS REMOVAL
- SPECIAL WASTE HANDLING BOUNDARY
- RIPARIAN BUFFER LIMIT
- SPLIT RAIL FENCE
- LARGE WOODY DEBRIS (LWD)
- RUSHES
- SEDGES
- GRASSES
- HERBS
- DUNE GRASSES
- SHRUBS
- TREE(S)

- OPPORTUNISTIC DEBRIS REMOVAL
- MARINE STRUCTURE DEMOLITION
- REUSABLE FILL STOCKPILE AREA
- SAND/GRAVEL LAYER
- TOPSOIL LAYER
- OPPORTUNISTIC DEBRIS REMOVAL **WITH NO** SPECIAL HANDLING WASTE AS DIRECTED BY PORT
- OPPORTUNISTIC DEBRIS REMOVAL **WITHIN** SPECIAL HANDLING WASTE AREA AS DIRECTED BY PORT
- 1' EXCAVATION AREA
- PEDESTRIAN TRAIL
- LOW AREA CLEANUP

DATUM

NGVD29

SURVEY DATUM:
NAD83 WASHINGTON STATE PLANE, NORTH ZONE, US FOOT

VERTICAL DATUM CONVERSIONS:
NGVD29 + 5.59' = MLLW
NGVD29 + 3.68' = NAVD88

SOURCE:
PUGET SOUND LiDAR CONSORTIUM
CEDAR RIVER WATERSHED, 2014
DEA SURVEY

1 A

NOTE REFERENCE

REFERENCE DESIGNATION TO NOTE APPEARING ON SAME SHEET

SHEET SYMBOLS

A / 1 — DETAIL DESIGNATION / SHEET LOCATED ON

DETAIL

A / 1 — SECTION DESIGNATION / SHEET LOCATED ON

SECTION

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER
8/10/20

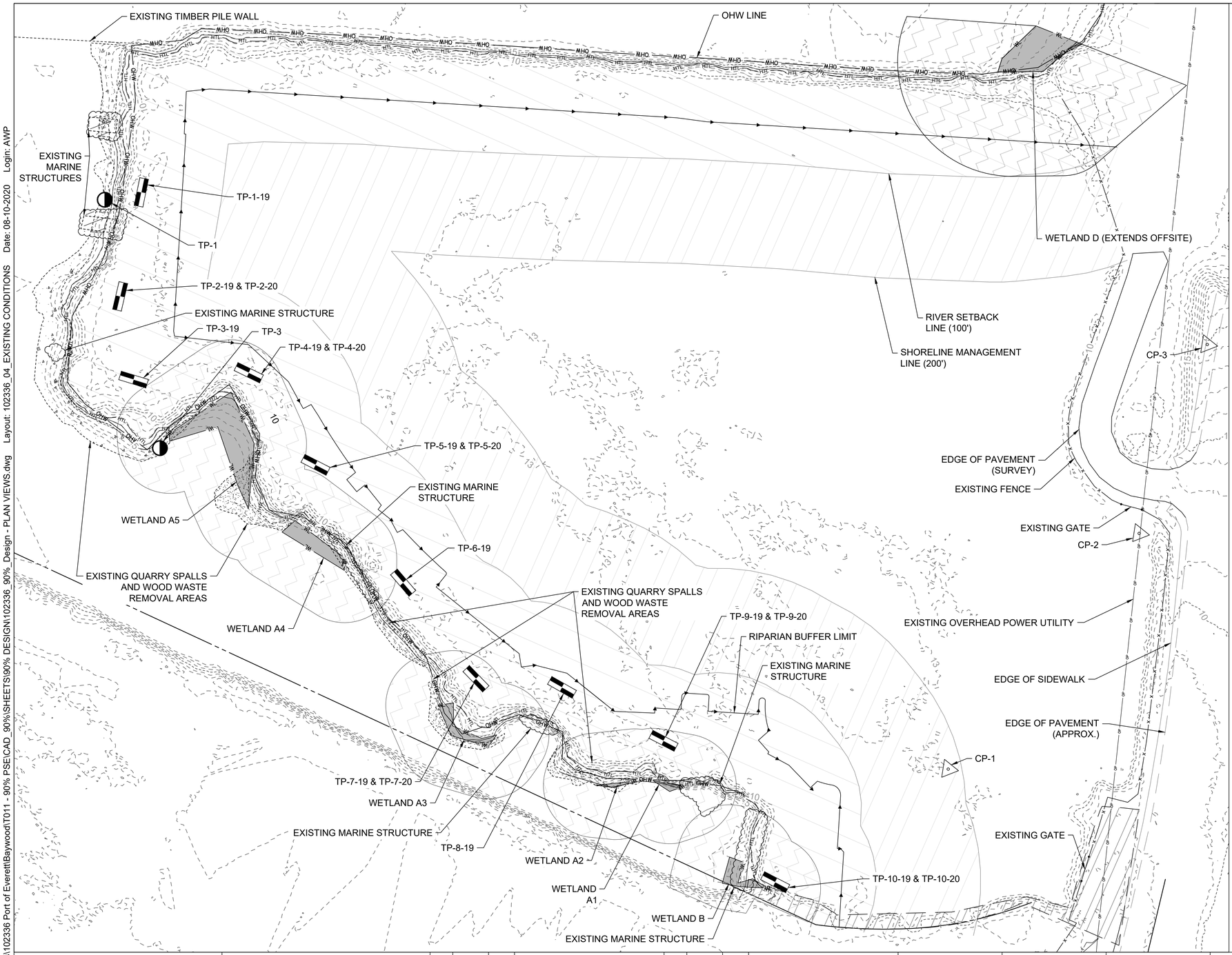
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

LEGEND

DWG. NO. **03**
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 03 OF 25



NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.
3. PUGET SOUND LiDAR CONSORTIUM (PSLC) CEDAR RIVER WATERSHED & FLOODPLAIN LiDAR, 2014.
4. LiDAR CONVERTED FROM NAVD88 TO NGVD29.
5. TEST PIT AND GRAB SAMPLE DATA CAN BE FOUND IN THE PROJECT SPECIFICATION.

SURVEY CONTROL POINTS			
POINT	NORTHING (NAD83)	EASTING (NAD83)	ELEVATION (FT.) (NGVD29)
CP-1	373563.63	1303765.75	12.94
CP-2	373419.43	1304017.62	12.80
CP-3	373708.59	1304143.77	19.65

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLAN VIEWS.dwg Layout: 102336_04_EXISTING CONDITIONS Date: 08-10-2020 Login: AWP

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER
8/10/20

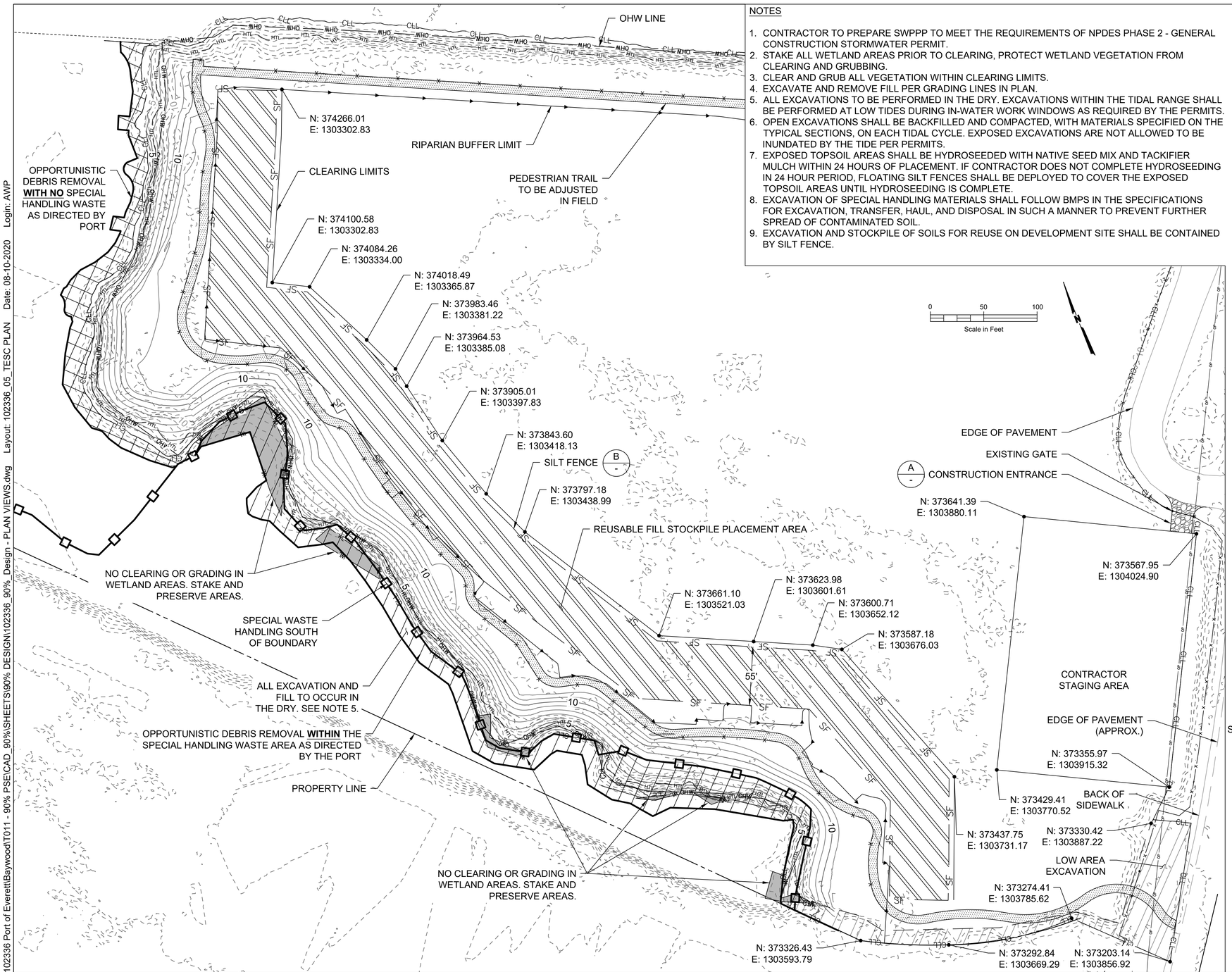
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

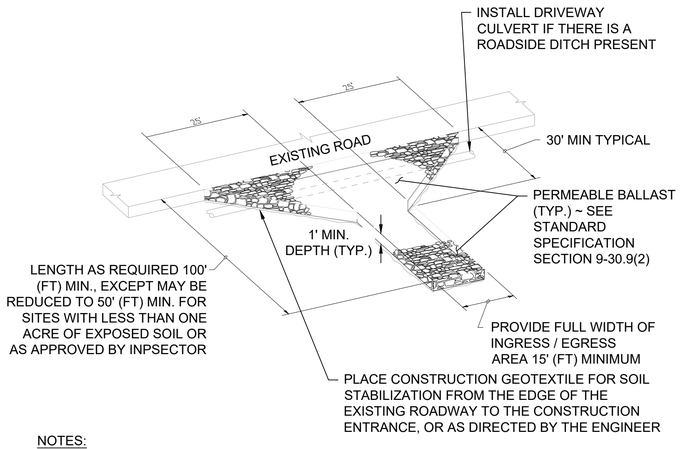
EXISTING CONDITIONS

DWG. NO. 04
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 04 OF 25



NOTES

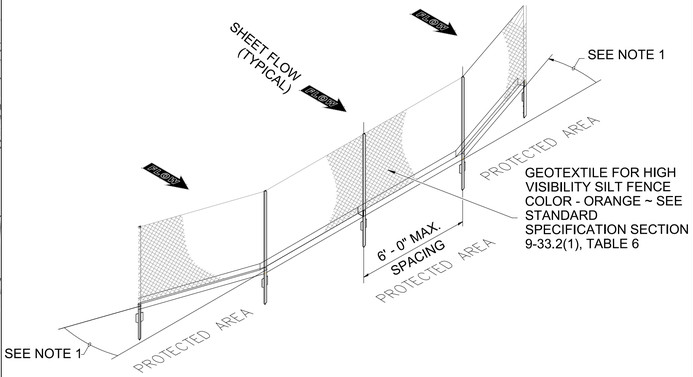
1. CONTRACTOR TO PREPARE SWPPP TO MEET THE REQUIREMENTS OF NPDES PHASE 2 - GENERAL CONSTRUCTION STORMWATER PERMIT.
2. STAKE ALL WETLAND AREAS PRIOR TO CLEARING, PROTECT WETLAND VEGETATION FROM CLEARING AND GRUBBING.
3. CLEAR AND GRUB ALL VEGETATION WITHIN CLEARING LIMITS.
4. EXCAVATE AND REMOVE FILL PER GRADING LINES IN PLAN.
5. ALL EXCAVATIONS TO BE PERFORMED IN THE DRY. EXCAVATIONS WITHIN THE TIDAL RANGE SHALL BE PERFORMED AT LOW TIDES DURING IN-WATER WORK WINDOWS AS REQUIRED BY THE PERMITS.
6. OPEN EXCAVATIONS SHALL BE BACKFILLED AND COMPACTED, WITH MATERIALS SPECIFIED ON THE TYPICAL SECTIONS, ON EACH TIDAL CYCLE. EXPOSED EXCAVATIONS ARE NOT ALLOWED TO BE INUNDATED BY THE TIDE PER PERMITS.
7. EXPOSED TOPSOIL AREAS SHALL BE HYDROSEEDED WITH NATIVE SEED MIX AND TACKIFIER MULCH WITHIN 24 HOURS OF PLACEMENT. IF CONTRACTOR DOES NOT COMPLETE HYDROSEEDING IN 24 HOUR PERIOD, FLOATING SILT FENCES SHALL BE DEPLOYED TO COVER THE EXPOSED TOPSOIL AREAS UNTIL HYDROSEEDING IS COMPLETE.
8. EXCAVATION OF SPECIAL HANDLING MATERIALS SHALL FOLLOW BMPS IN THE SPECIFICATIONS FOR EXCAVATION, TRANSFER, HAUL, AND DISPOSAL IN SUCH A MANNER TO PREVENT FURTHER SPREAD OF CONTAMINATED SOIL.
9. EXCAVATION AND STOCKPILE OF SOILS FOR REUSE ON DEVELOPMENT SITE SHALL BE CONTAINED BY SILT FENCE.



NOTES:

1. STABILIZED CONSTRUCTION ENTRANCE SHALL MEET THE REQUIREMENTS OF WSDOT STANDARD SPECIFICATION SECTION 8-01.3(7)

A DETAIL - CONSTRUCTION ENTRANCE
NTS (CITY OF EVERETT STANDARD DRAWING NO. 201)



NOTES:

1. INSTALL THE ENDS OF THE SILT FENCE TO POINT SLIGHTLY UPSLOPE TO PREVENT SEDIMENT FROM FLOWING AROUND THE ENDS OF THE FENCE.
2. PERFORM MAINTENANCE IN ACCORDANCE WITH THE WSDOT STANDARD SPECIFICATIONS 8-01(9)A AND 8-01.3(15).
3. SPLICES SHALL NEVER BE PLACED IN LOW SPOTS OR SUMP LOCATIONS. IF SPLICES ARE LOCATED IN LOW OR SUMP AREAS, THE FENCE MAY NEED TO BE REINSTALLED UNLESS OTHERWISE APPROVED.
4. INSTALL SILT FENCING PARALLEL TO MAPPED CONTOUR LINES
5. DURING EXCAVATION, MINIMIZE DISTURBING THE GROUND AROUND TRENCH AS MUCH AS IS FEASIBLE, AND SMOOTH SURFACE FOLLOWING EXCAVATION TO AVOID CONCENTRATING FLOWS. COMPACTION MUST BE ADEQUATE TO PREVENT UNDERCUTTING FLOWS

B SILT FENCE DETAIL
NTS (CITY OF EVERETT STANDARD DRAWING NO. 214)

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER
8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

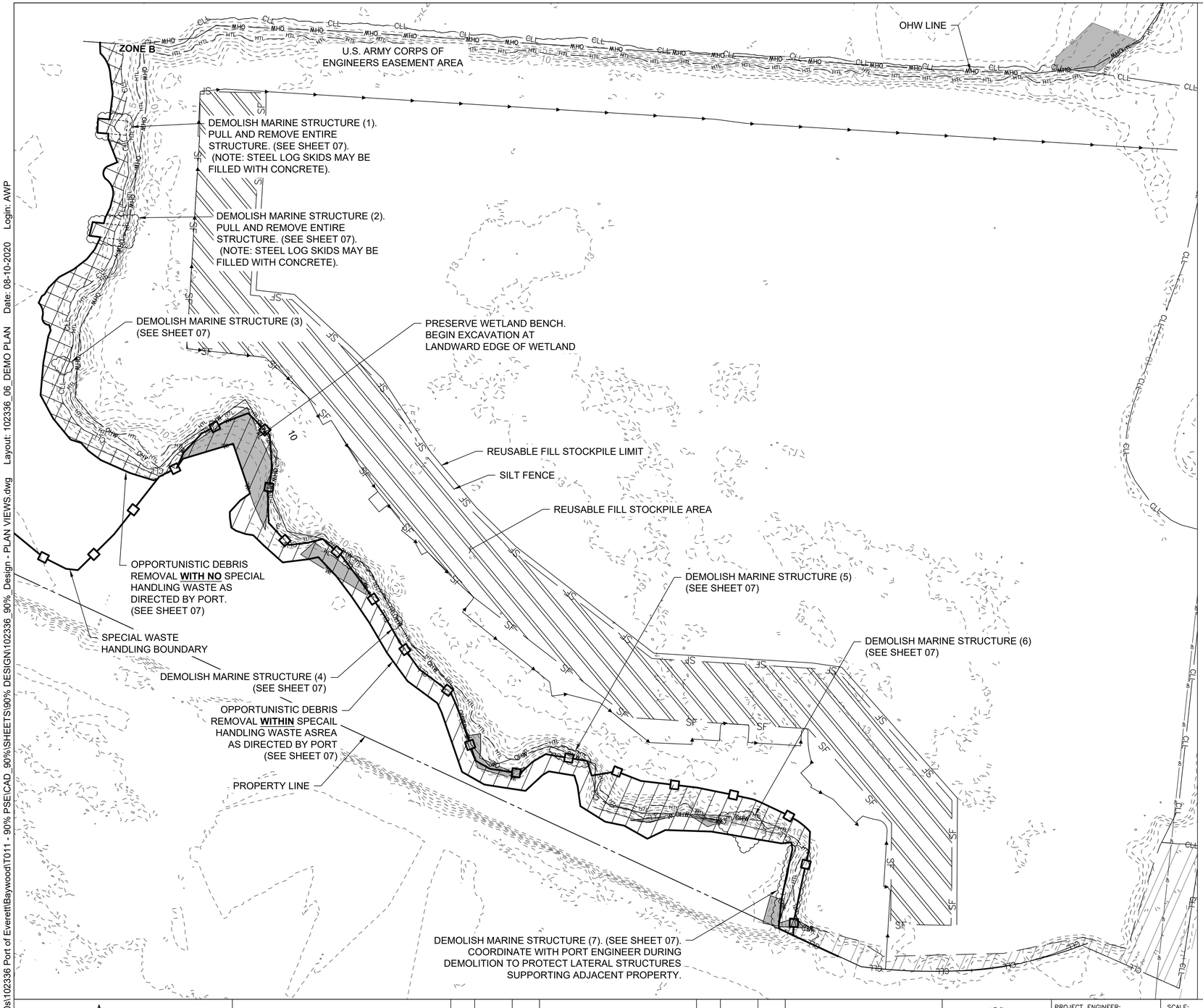
PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

TESC PLAN

DWG. NO. 05
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 05 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLAN VIEWS.dwg Layout: 102336_05_TESC PLAN Date: 08-10-2020 Login: AWP



NOTES

1. STAKE PROPERTY BOUNDARIES (WHITE), CLEARING LIMITS (YELLOW), WETLAND BOUNDARIES (GREEN), AND SPECIAL WASTE HANDLING BOUNDARIES (PINK) PRIOR TO STARTING CONSTRUCTION.
2. CLEAR AND GRUB ALL GRADING AREAS ABOVE THE OPPORTUNISTIC DEBRIS REMOVAL UPPER LIMIT. DISPOSE OF AT OFF-SITE FACILITY.
3. STRIP 1-FT OF SURFACE MATERIAL. SCREEN ORGANIC MATERIAL AND WOOD WASTE, DISPOSE OF OFF-SITE. REMAINING (CLEAN) SURFACE MATERIAL MAY BE PLACED IN REUSABLE FILL STOCKPILE.
4. EXCAVATE AND REUSE SUBSURFACE MATERIALS FREE OF ORGANICS AND DEBRIS, AND UPLAND OF THE SPECIAL WASTE HANDLING BOUNDARY IN THE REUSABLE FILL STOCKPILE.
5. EXCAVATE AND DISPOSE OF SUBSURFACE MATERIALS WATERWARD OF SPECIAL WASTE HANDLING BOUNDARY AT SUBTITLE D LANDFILL.
6. TRANSFER REUSABLE FILL TO REUSABLE FILL STOCKPILE AREA.
7. PERFORM OPPORTUNISTIC DEBRIS REMOVAL PER DIRECTION OF THE ENGINEER. MATERIALS REMOVED FROM UPLAND OF THE SPECIAL WASTE HANDLING BOUNDARY SHALL BE DISPOSED OF AT MUNICIPAL LANDFILL. MATERIALS REMOVED WATERWARD (BELOW) SPECIAL WASTE HANDLING BOUNDARY ELEVATION SHALL BE HANDLED FOLLOWING THE REQUIREMENTS IN THE SPECIFICATIONS AND DISPOSED OF AT SUBTITLE D LANDFILL OR TRANSFER STATION.
8. BACKFILL AREAS WITH TOPSOIL PRIOR TO TIDAL INUNDATION PER THE TOPSOIL COMPACTION SPECIFICATIONS PRIOR TO INUNDATION FOR EACH TIDAL CYCLE. EXPOSED SUBSURFACE SOILS ARE NOT ALLOWED IN TIDAL INUNDATION AREAS. BACKFILL AREAS IN OPPORTUNISTIC DEBRIS REMOVAL POCKETS WITH SAND/GRAVEL MIX. EXCAVATION AND BACKFILL NOT ALLOWED IN THE WET.

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

NO.	DATE	BY	REVISION

DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

DEMOLITION PLAN (1)

DWG. NO. 06
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 06 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90% Design - PLAN VIEWS.dwg Layout: 102336_06_DEMO PLAN Date: 08-10-2020 Login: AWP

MARINE STRUCTURE (1)

MARINE STRUCTURE (2)

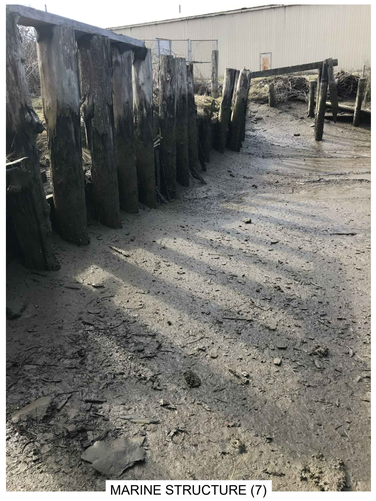
MARINE STRUCTURE (3)

MARINE STRUCTURE (4)

MARINE STRUCTURE (5)

MARINE STRUCTURE (6)
VIEW 1

MARINE STRUCTURE (6)
VIEW 2



MARINE STRUCTURE (7)

OPPORTUNISTIC DEBRIS
REMOVAL (TYP.)

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE
STATE OF WASHINGTON
39326
REGISTERED
PROFESSIONAL ENGINEER
10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

DEMOLITION PLAN (2)

DWG. NO. 07
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 07 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLAN VIEWS.dwg Layout: 102336_07_DEMO PLAN (2) Date: 08-10-2020 Login: AWP

ZONE B

U.S. ARMY CORPS OF ENGINEERS EASEMENT AREA

OHW LINE

SPLIT-RAIL FENCE TO FOLLOW PEDESTRIAN TRAIL ALIGNMENT AS MODIFIED IN FIELD

PEDESTRIAN TRAIL TO BE ADJUSTED IN FIELD

CLEARING LIMITS

PRESERVE WETLAND BENCH. BEGIN EXCAVATION AT LANDWARD EDGE OF WETLAND

ZONE B

ZONE A

RESUABLE FILL STOCKPILE LIMIT

SILT FENCE

REUSABLE FILL STOCKPILE AREA

OPPORTUNISTIC DEBRIS REMOVAL **WITH NO** SPECIAL HANDLING WASTE AS DIRECTED BY PORT

SPECIAL WASTE HANDLING BOUNDARY

OPPORTUNISTIC DEBRIS REMOVAL **WITHIN** SPECIAL HANDLING WASTE AREAS AS DIRECTED BY PORT

PROPERTY LINE

CONTRACTOR STAGING AREA

LOW AREA WORK

ZONE A

B 12

A 12

A 12

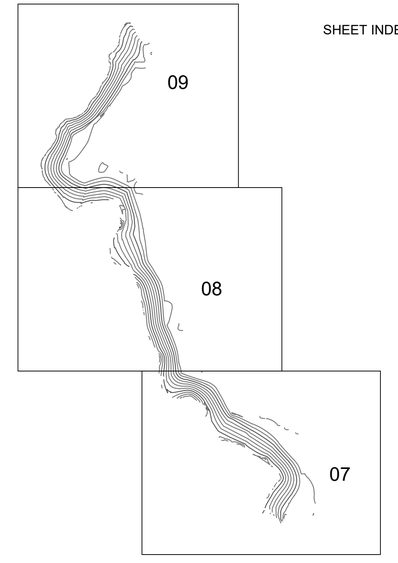
0 50 100

Scale in Feet

NOTES

1. STAKE PROPERTY BOUNDARIES (WHITE), CLEARING LIMITS (YELLOW), WETLAND BOUNDARIES (GREEN), AND SPECIAL WASTE HANDLING BOUNDARIES (PINK) PRIOR TO STARTING CONSTRUCTION.
2. CLEAR AND GRUB ALL GRADING AREAS ABOVE THE OPPORTUNISTIC DEBRIS REMOVAL UPPER LIMIT. DISPOSE OF AT OFF-SITE FACILITY.
3. STRIP 1-FT OF SURFACE MATERIAL. DISPOSE OF OFF-SITE.
4. EXCAVATE AND DISPOSE OF MATERIALS ABOVE THE OPPORTUNISTIC REMOVAL UPPER LIMIT.
5. DISPOSE OF WOOD WASTE MATERIALS AT OFF-SITE FACILITY.
6. TRANSFER REUSABLE FILL TO REUSABLE FILL STOCKPILE AREA.
7. PERFORM OPPORTUNISTIC DEBRIS REMOVAL OF WOOD WASTE, QUARRY SPALLS, AND OTHER WOODY MATERIALS PER THE DIRECTION OF THE PORT. MATERIALS FROM ABOVE THE SPECIAL MATERIAL HANDLING BOUNDARY SHALL BE DEWATERED, THEN DISPOSED OF AT AN OFF-SITE FACILITY. MATERIALS FROM BELOW THE SPECIAL MATERIAL HANDLING BOUNDARY, SHALL FOLLOW THE SPECIFICATIONS FOR REMOVAL, HANDLING, AND DISPOSAL OF CONTAMINATED SOILS AT AN AUTHORIZED FACILITY FOR ACCEPTING CONTAMINATED WASTE, AS APPROVED BY THE PORT. OPPORTUNISTIC DEBRIS REMOVAL SHALL AVOID WORK IN, AND IMPACT WETLAND AREAS.
8. BACKFILL AND RECOMPACT AREAS PRIOR TO TIDAL INUNDATION ON EACH TIDAL CYCLE. EXPOSED SOILS ARE NOT ALLOWED TO BE INUNDATED BY TIDES.

SHEET INDEX



Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

SIGNED DAVID R. CLINE, STATE OF WASHINGTON, 39326, REGISTERED PROFESSIONAL ENGINEER, 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

GRADING PLAN

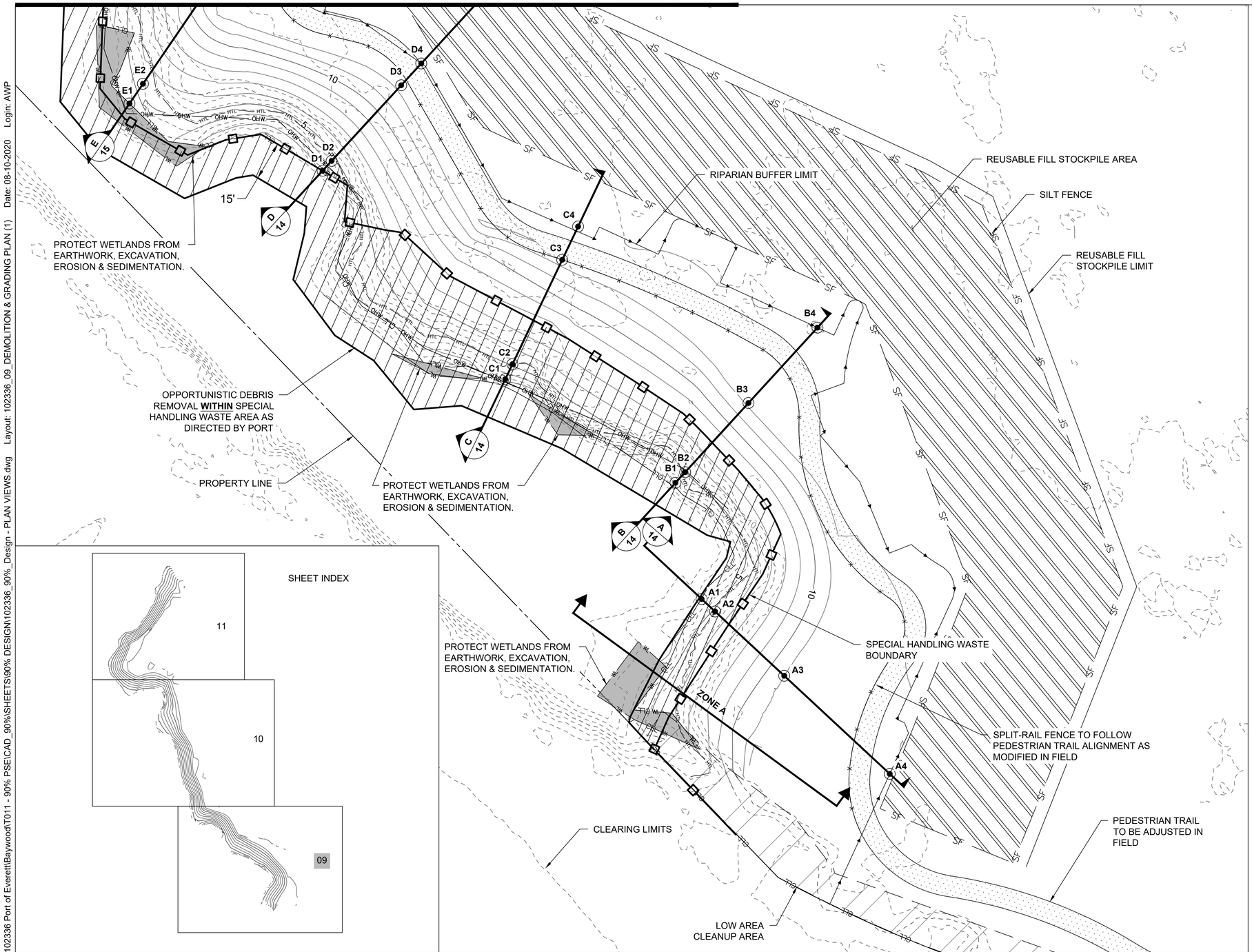
DWG. NO. 08

CIP NO.

PROJECT NO. PD-BW-2020

SHEET NO. 08 OF 25

MATCHLINE - SEE SHEET 10



SHEET INDEX

N

0 20 40

Scale in Feet

NOTES:

1. CONTRACTOR TO MAINTAIN SLOPE BETWEEN POINTS AND SECTIONS. CONTRACTOR TO SMOOTH TRANSITIONS BETWEEN SLOPES.
2. BACKFILL VOIDS WITH SAND/GRAVEL MIX.
3. ALL EXCAVATION AND BACKFILL TO BE PERFORMED IN THE DRY. FOR AREAS IN THE TIDAL RANGE, EXCAVATION AND BACKFILL TO OCCUR AT LOW TIDE. NO EXCAVATION OR BACKFILL IN THE WET ALLOWED. BACKFILL MUST OCCUR BEFORE INUNDATION FROM EACH TIDAL CYCLE.

GRADING TABLE

SECTION	POINT NO.	NORTHING (NGVD29)	EASTING (NAD83)	TAGET ELEV. (FT)
A	1	373433.00	1303564.57	4.02
	2	373428.22	1303569.72	4.14
	3	373403.60	1303596.20	11.03
	4	373366.05	1303636.60	11.77
B	1	373477.52	1303554.55	3.97
	2	373481.57	1303558.26	4.03
	3	373508.05	1303582.50	12.26
	4	373536.91	1303608.91	13.04
C	1	373517.20	1303489.40	3.28
	2	373522.91	1303492.13	3.42
	3	373562.88	1303511.19	12.48
	4	373575.62	1303517.26	12.83
D	1	373597.01	1303419.45	3.42
	2	373600.76	1303422.90	3.50
	3	373629.70	1303449.53	12.38
	4	373638.06	1303457.22	12.58
E	1	373622.74	1303345.51	4.69
	2	373630.27	1303350.66	4.87

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE — STATE OF WASHINGTON — 39328 — REGISTERED PROFESSIONAL ENGINEER
8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

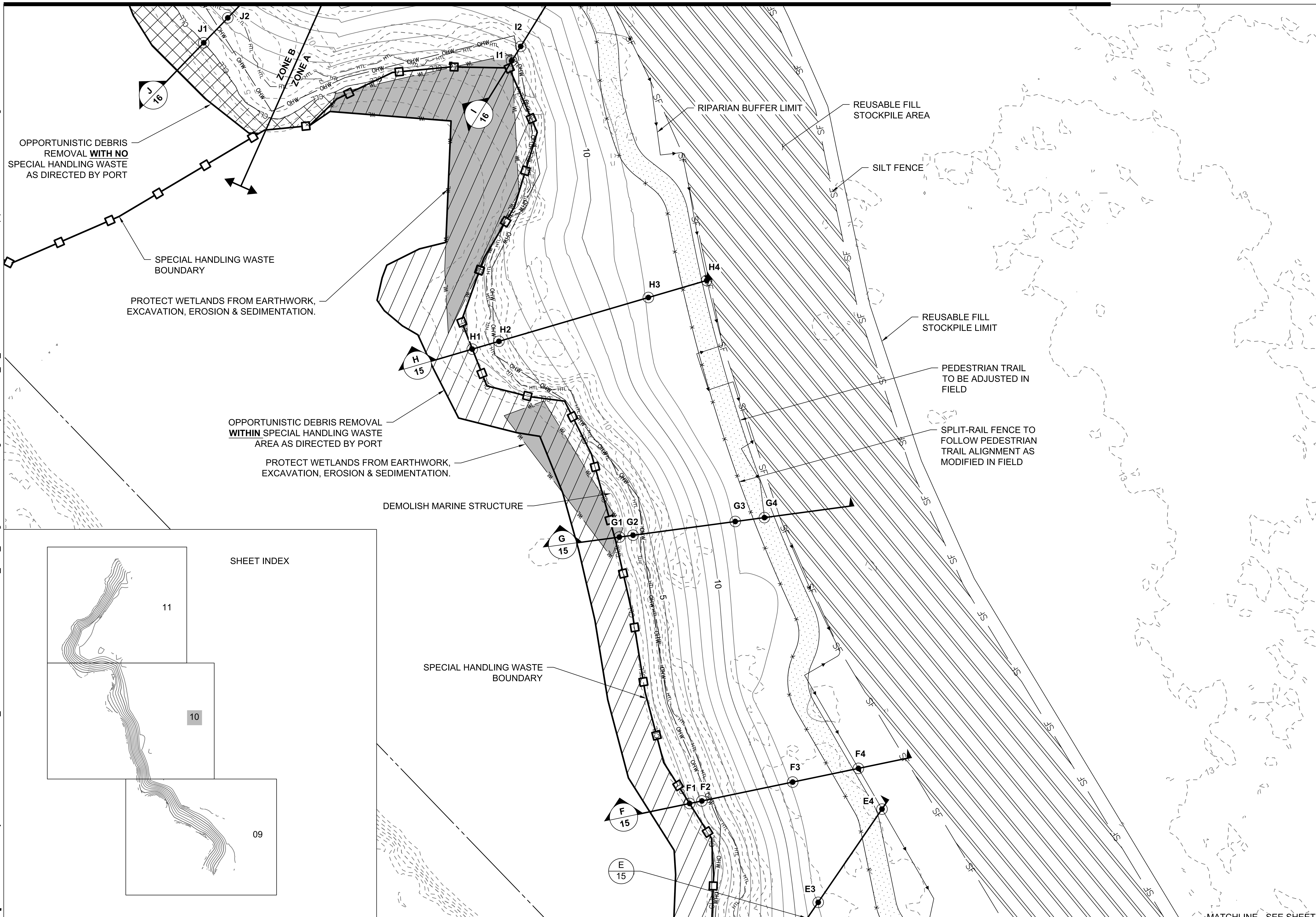
BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

DEMOLITION & GRADING PLAN (1)

DWG. NO. 09
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 09 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLAN VIEWS.dwg Layout: 102336_09_DEMOLITION & GRADING PLAN (1) Date: 08-10-2020 Login: AWP

MATCHLINE - SEE SHEET 11



N
0 20 40
Scale in Feet

NOTES:

1. CONTRACTOR TO MAINTAIN SLOPE BETWEEN POINTS AND SECTIONS. CONTRACTOR TO SMOOTH TRANSITIONS BETWEEN SLOPES.
2. BACKFILL VOIDS WITH SAND/GRAVEL MIX.
3. ALL EXCAVATION AND BACKFILL TO BE PERFORMED IN THE DRY. FOR AREAS IN THE TIDAL RANGE, EXCAVATION AND BACKFILL TO OCCUR AT LOW TIDE. NO EXCAVATION OR BACKFILL IN THE WET ALLOWED. BACKFILL MUST OCCUR BEFORE INUNDATION FROM EACH TIDAL CYCLE.

GRADING TABLE

SECTION	POINT NO.	NORTHING (NGVD29)	EASTING (NAD83)	TARGET ELEV. (FT)
E	3	373669.46	1303377.45	12.07
	4	373706.24	1303402.60	12.81
F	1	373708.45	1303326.73	2.87
	2	373709.46	1303331.59	2.96
	3	373716.91	1303367.38	12.28
	4	373722.30	1303393.30	12.85
G	1	373813.54	1303299.05	2.52
	2	373814.27	1303304.46	2.69
	3	373819.68	1303344.74	12.20
	4	373821.23	1303356.24	12.44
H	1	373887.68	1303241.06	4.10
	2	373890.75	1303251.55	4.31
	3	373908.03	1303310.48	12.23
	4	373914.78	1303333.48	12.72
I	1	374001.40	1303256.56	6.72
	2	374007.08	1303260.15	6.85
J	1	374008.52	1303135.18	3.99
	2	374018.36	1303144.67	4.27

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
△	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 8/10/20

PROJECT ENGINEER: D. CLINE
SCALE: AS SHOWN
DESIGNED BY: D. CLINE
DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI
CHECKED BY: J. KLEKOTKA
APPROVED BY:

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

DEMOLITION & GRADING PLAN (2)

DWG. NO. 10
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 10 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLAN VIEWS.dwg Layout: 102336_10_DEMOLITION & GRADING PLAN (2) Date: 08-10-2020 Login: AWP

PROTECT EXISTING TIMBER PILE WALL

THIS AREA ONLY STRIP 1-FT SURFACE LAYER. PLACE 1-FT TOPSOIL AND PLANT PER PLANTING PLAN (SEE SHEET 19)

CLEARING LIMITS

U.S. ARMY CORPS OF ENGINEERS EASEMENT AREA

PEDESTRIAN TRAIL TO BE ADJUSTED IN FIELD

SPLIT-RAIL FENCE TO FOLLOW PEDESTRIAN TRAIL ALIGNMENT AS MODIFIED IN FIELD

OPPORTUNISTIC DEBRIS REMOVAL **WITH NO** SPECIAL HANDLING WASTE AS DIRECTED BY PORT

RIPARIAN BUFFER LIMIT

SILT FENCE

REUSABLE FILL STOCKPILE LIMITS

REUSABLE FILL STOCKPILE AREA

ZONE A

ZONE B

ZONE B

M1 M2 M3 M4

L1 L2 L3 L4

K1 K2 K3 K4

J3 I3 I4

M 17

L 16

K 16

J 16

I 16

MATCHLINE - SEE SHEET 10

N

0 20 40

Scale in Feet

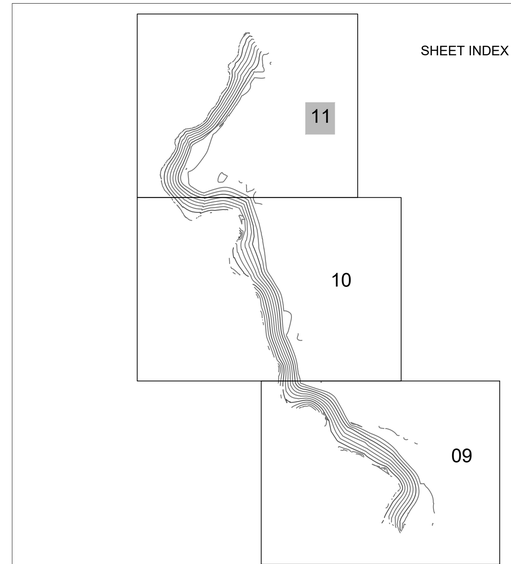
NOTES:

1. CONTRACTOR TO MAINTAIN SLOPE BETWEEN POINTS AND SECTIONS. CONTRACTOR TO SMOOTH TRANSITIONS BETWEEN SLOPES.
2. BACKFILL VOIDS WITH SAND/GRAVEL MIX.
3. ALL EXCAVATION AND BACKFILL TO BE PERFORMED IN THE DRY. FOR AREAS IN THE TIDAL RANGE, EXCAVATION AND BACKFILL TO OCCUR AT LOW TIDE. NO EXCAVATION OR BACKFILL IN THE WET ALLOWED. BACKFILL MUST OCCUR BEFORE INUNDATION FROM EACH TIDAL CYCLE.

GRADING TABLE

SECTION	POINT NO.	NORTHING (NGVD29)	EASTING (NAD83)	TARGET ELEV. (FT)
I	3	374033.04	1303276.15	12.94
	4	374043.46	1303282.56	13.16
J	3	374043.14	1303168.54	12.11
K	1	374121.92	1303132.62	4.00
	2	374118.61	1303141.59	4.20
	3	374111.07	1303162.00	11.37
	4	374085.94	1303230.02	12.82
L	1	374218.14	1303218.03	4.00
	2	374213.52	1303266.30	4.10
	3	374201.01	1303248.76	12.08
	4	374185.81	1303276.03	12.84
M	1	374322.34	1303257.64	4.00
	2	37313.77	1303273.26	4.34
	3	374294.21	1303308.90	11.80
	4	374287.70	1303320.77	12.08

SHEET INDEX



Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER — 10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

DEMOLITION & GRADING PLAN (3)

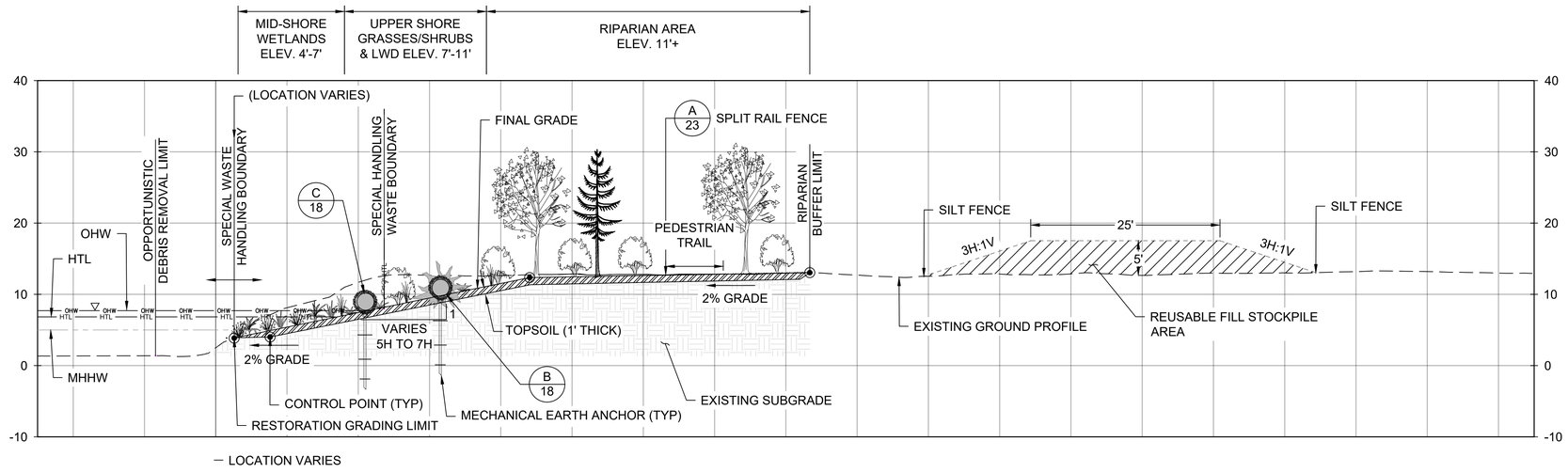
DWG. NO. 11

CIP NO.

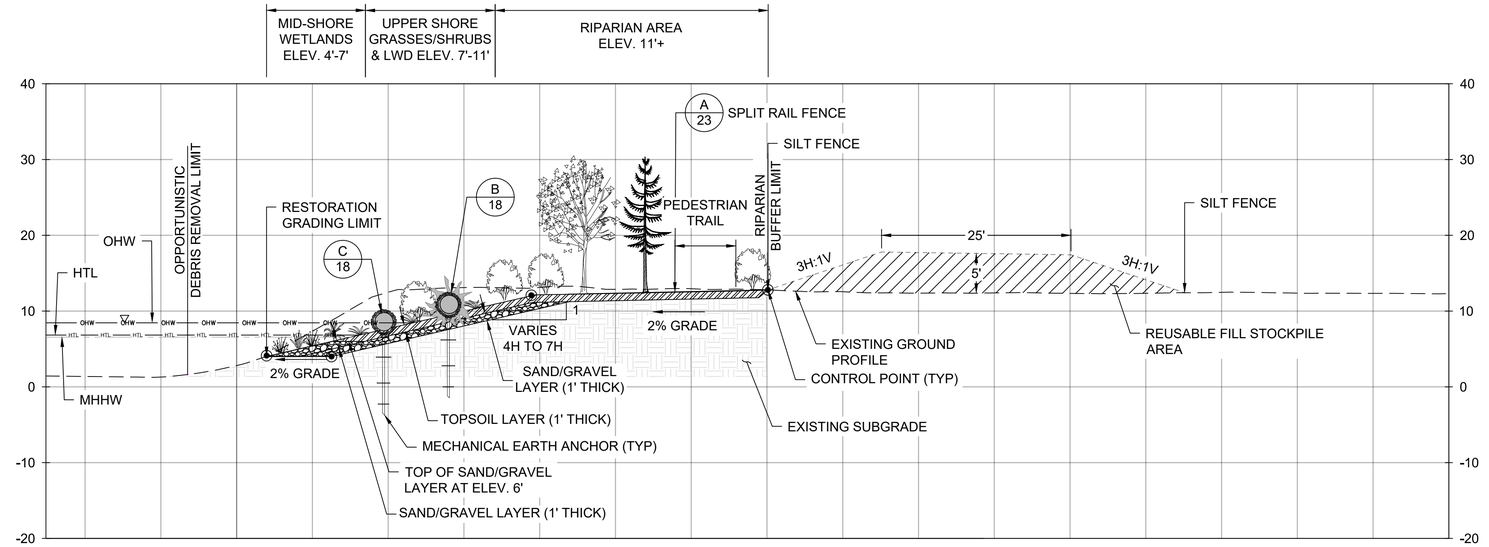
PROJECT NO. PD-BW-2020

SHEET NO. 11 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\IT011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLAN VIEWS.dwg Layout: 102336_11_DEMOLITION & GRADING PLAN (3) Date: 08-10-2020 Login: AWP



ZONE A TYPICAL SECTION DETAIL — A / 08



ZONE B TYPICAL SECTION DETAIL — B / 08

NOTES:

1. STAKE CLEARING LIMITS, WETLANDS, AND SPECIAL WASTE HANDLING BOUNDARY 50-FT O.C. WETLANDS AND SPECIAL WASTE HANDLING BOUNDARY SHALL BE STAKED USING NEON COLORS IDENTIFYING THOSE AREAS TO AVOID EXCAVATION OR PERFORM EXCAVATION USING SPECIAL WASTE HANDLING PROCEDURES. WETLANDS SHALL BE STAKED USING NEON GREEN STAKES AND FLAGGING AND SPECIAL WASTE HANDLING BOUNDARY SHALL BE STAKED USING NEON PINK STAKES AND FLAGGING. CONTRACTOR TO PROTECT AND MAINTAIN STAKING DURING CONSTRUCTION AND OBTAIN PORT APPROVAL PRIOR TO STARTING WORK.
2. CLEAR AND GRUB FROM THE CLEARING (GRADING) LIMITS TO THE OUTER EDGE OF THE REUSABLE FILL STOCKPILE AREA.
3. ALL WORK BELOW OHW SHALL BE PERFORMED DURING THE INWATER WORK WINDOW AS SPECIFIED IN THE PERMITS, JULY 16 - FEB. 15, AND IN THE DRY DURING LOW TIDES.
4. ALL EXCAVATIONS, DEBRIS REMOVALS, AND DEMOLITIONS BELOW OHW SHALL BE BACKFILLED AND COMPACTED WITH SAND/GRAVEL MATERIAL PRIOR TO TIDAL INUNDATION ON EACH TIDAL CYCLE.
5. STRIP 1' SURFACE LAYER AS SHOWN ON PLANS. DISPOSE OF AT MUNICIPAL LANDFILL OR RECYCLING FACILITY.
6. EXCAVATE REUSABLE FILL AND WOOD WASTE TO THE DESIGN GRADES. STOCKPILE REUSABLE FILL PER PLAN. DISPOSE OF WOOD WASTE AT MUNICIPAL LANDFILL.
7. PERFORM OPPORTUNISTIC DEBRIS REMOVAL PRIOR TO PLACEMENT OF TOPSOIL AND PLANTINGS. IN SPECIAL WASTE HANDLING AREAS EXCAVATION, HANDLING, AND DISPOSAL SHALL FOLLOW THE REQUIREMENTS IN THE SPECIFICATION "REMOVAL AND DISPOSAL OF CONTAMINATED SOILS".
8. BACKFILL OPPORTUNISTIC DEBRIS REMOVAL AND MARINE STRUCTURE DEMOLITION VOIDS/CUTS WITH SAND/GRAVEL MATERIAL AND COMPACT WITH EXCAVATOR BUCKET.
9. PLACE 2' THICK TOPSOIL (AND SAND/GRAVEL LAYER IN AREAS IDENTIFIED IN PLANS).
10. HYDROSEED AND PLANT TOPSOIL AREAS PER PLANTING PLAN AND SPECIFICATIONS.

0 10 20
Scale in Feet

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

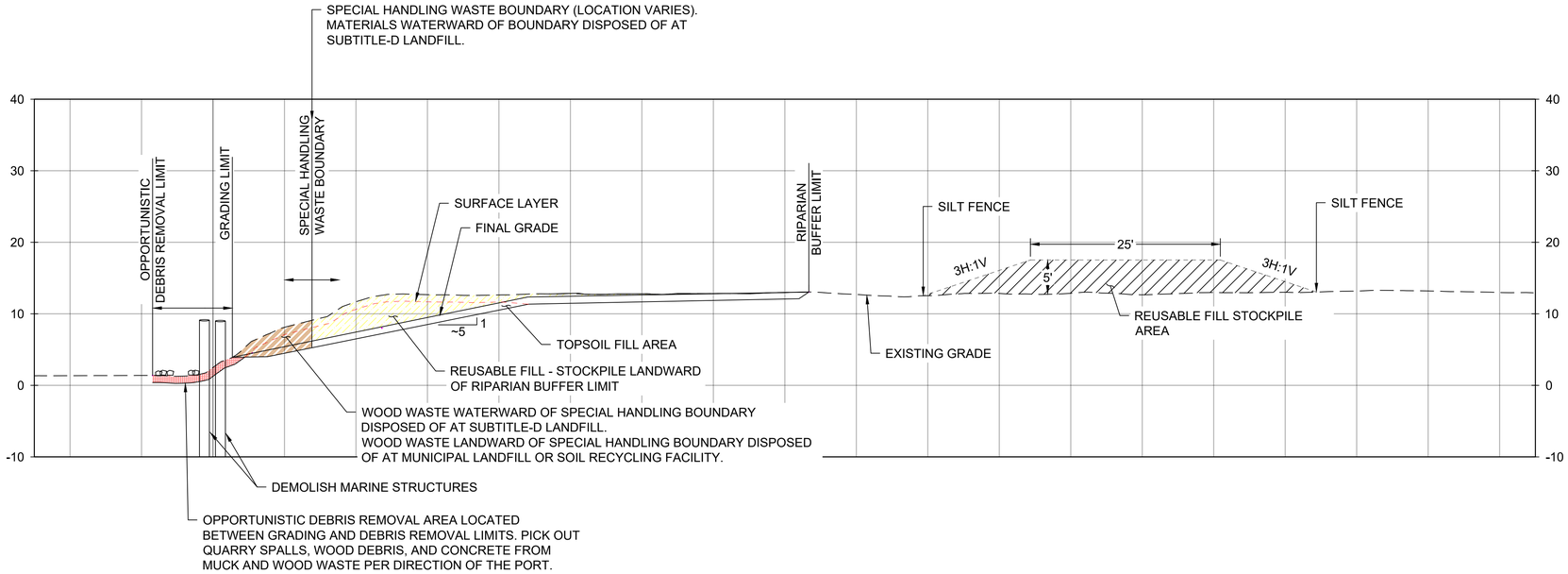
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

TYPICAL SECTIONS

DWG. NO. 12
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 12 OF 25



SOIL MANAGEMENT PLAN - TYPICAL SECTION

LEGEND:

- SURFACE LAYER - MIX OF TOPSOIL, ORGANIC MATERIAL, AGGREGATES, AND WOOD WASTE. WHEN ORGANICS AND WOOD WASTE MATERIAL REMOVED SURFACE LAYER IS REUSABLE FILL
- REUSABLE FILL
- WOOD WASTE (ALL WOOD WASTE TO SUBTITLE D LANDFILL)
- OPPORTUNISTIC DEBRIS REMOVAL BEYOND SPECIAL HANDLING WASTE BOUNDARY (PICK/PLUCK DEBRIS FROM THIS AREA, FULL EXCAVATION IS NOT ALLOWED)

NOTES:

1. CLEAR AND GRUB FROM THE CLEARING (GRADING) LIMITS TO THE OUTER EDGE OF THE REUSABLE FILL STOCKPILE AREA.
2. STRIP 1' SURFACE LAYER. HAUL AND STOCKPILE AS REUSABLE FILL FROM SPECIAL WASTE HANDLING BOUNDARY TO RIPARIAN BUFFER LIMIT.
3. EXCAVATE REUSABLE FILL AND WOOD WASTE TO THE DESIGN GRADES. STOCKPILE REUSABLE FILL PER PLAN. DISPOSE OF WOOD WASTE AT SUBTITLE-D LANDFILL FOR MATERIALS GENERATED FROM SPECIAL HANDLING WASTE AREAS. OVER EXCAVATION BEYOND THE DESIGN LIMIT LINES IS NOT ALLOWED AND WILL NOT BE PAID FOR BY THE PORT
4. PERFORM SELECTIVE OPPORTUNISTIC DEBRIS REMOVAL PER THE DIRECTION OF THE ENGINEER PRIOR TO PLACEMENT OF TOPSOIL AND PLANTINGS. DEBRIS REMOVAL SHALL INCLUDE PICKING OUT MARINE WOOD DEBRIS, QUARRY SPALLS, CONCRETE BLOCKS, AND OTHER WOOD WASTE, AND IS NOT WHOLESALE EXCAVATIONS OF THE AREAS. IN SPECIAL WASTE HANDLING AREAS EXCAVATION, HANDLING, AND DISPOSAL SHALL FOLLOW THE REQUIREMENTS IN THE SPECIFICATION REMOVAL AND DISPOSAL OF CONTAMINATED SOILS.
5. BACKFILL AND COMPACT OPPORTUNISTIC DEBRIS REMOVAL AND MARINE STRUCTURE DEMOLITION VOIDS/CUTS WITH SAND/GRAVEL MATERIAL WITH EXCAVATOR BUCKET.
6. PLACE 2' THICK TOPSOIL (AND SAND/GRAVEL LAYER IN AREAS IDENTIFIED IN PLANS).
7. HYDROSEED AND PLANT TOPSOIL AREAS PER PLANTING PLAN AND SPECIFICATIONS.

0 10 20
Scale in Feet

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

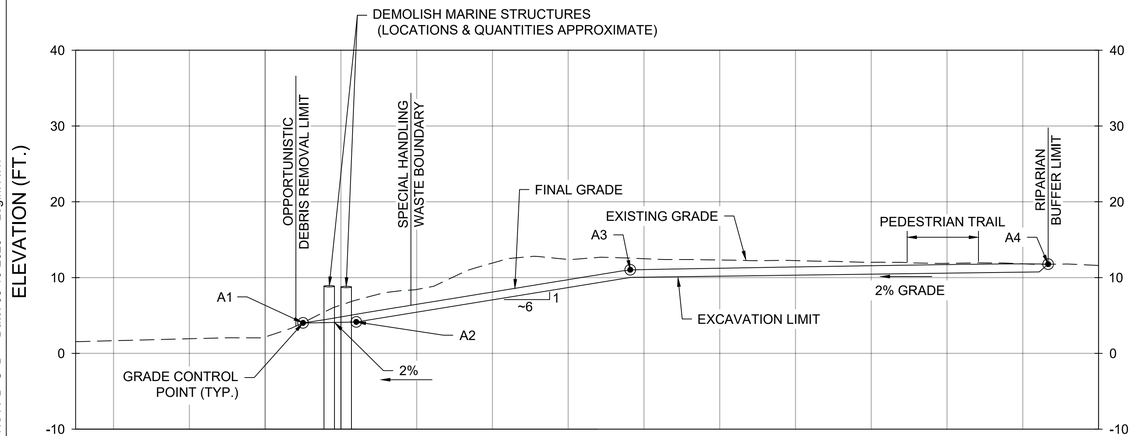
DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

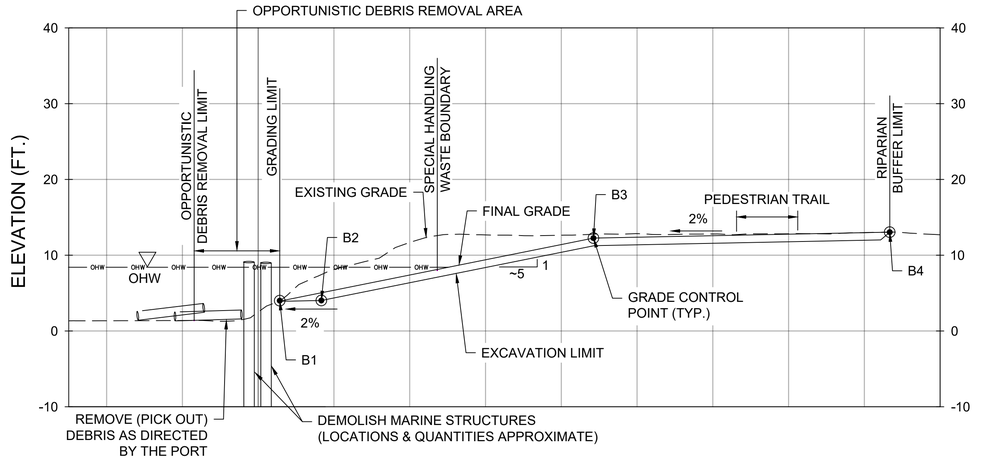
BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP
SOIL MANAGEMENT PLAN - TYPICAL SECTION

DWG. NO. **13**
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 13 OF 25



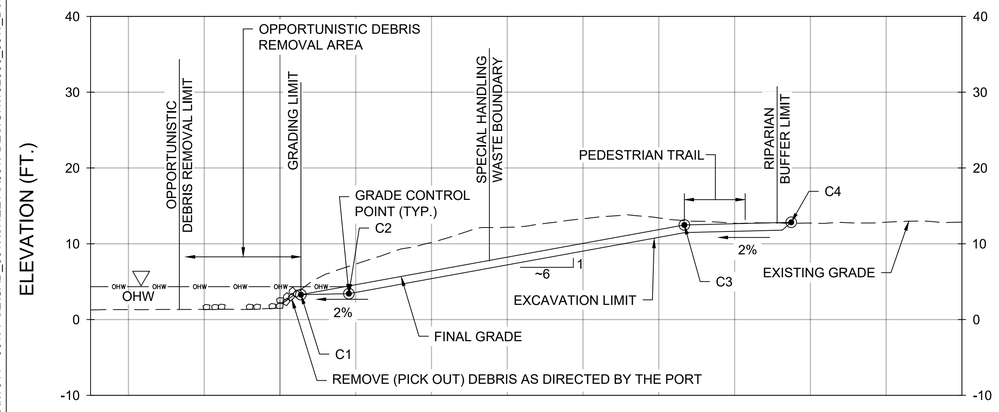
SECTION A — A / 09

TP-10 & TP-10-20 (TYP)



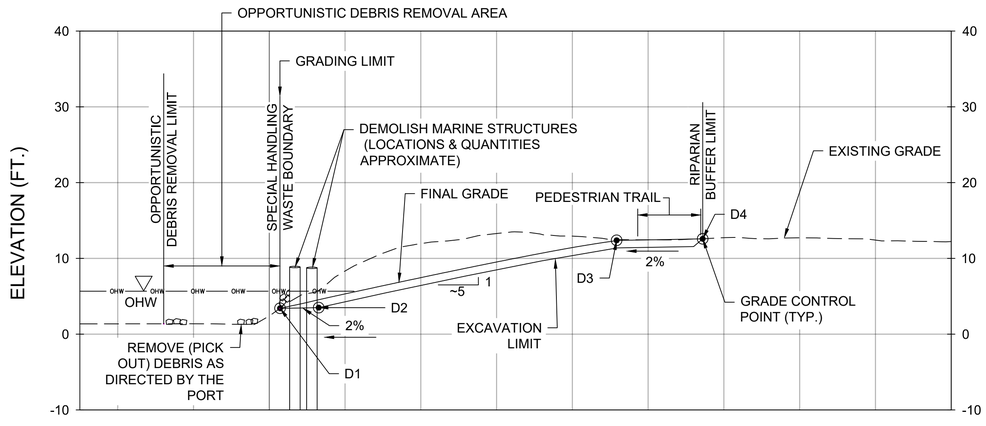
SECTION B — B / 09

TP-9 & TP-9-20 (TYP)



SECTION C — C / 09

TP-9 & TP-9-20 (TYP)



SECTION D — D / 09

TP-8 (TYP)

0 10 20
Scale in Feet

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 33326 — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

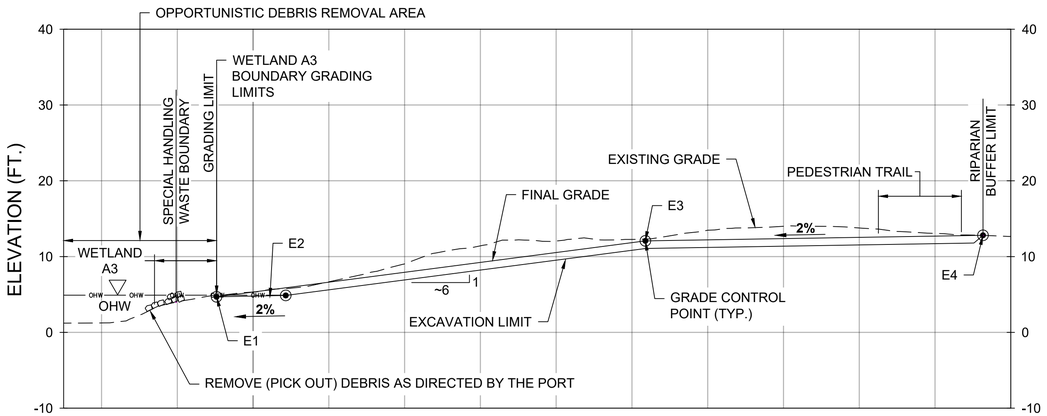
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

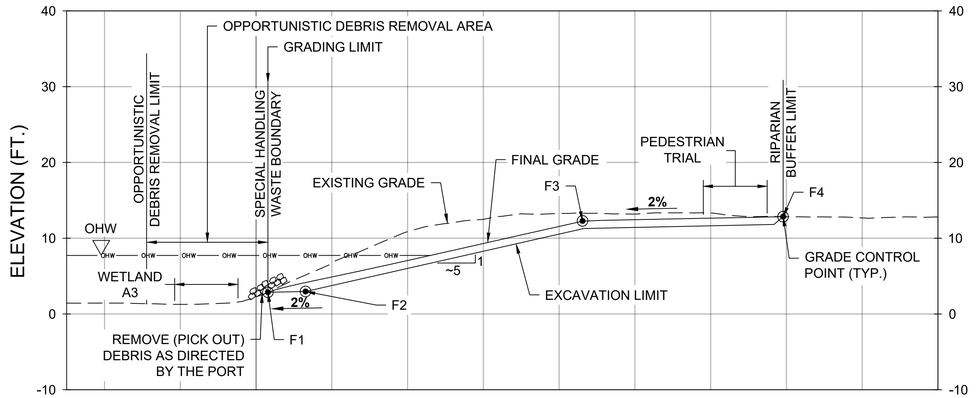
BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

SECTIONS A - D

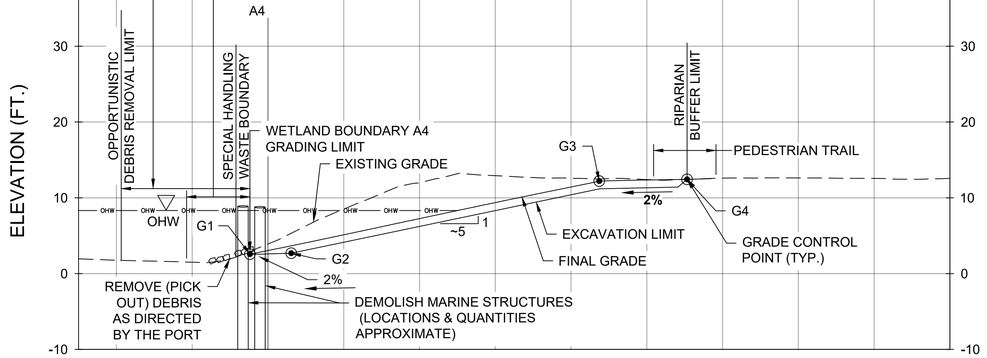
DWG. NO. 14
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 14 OF 25



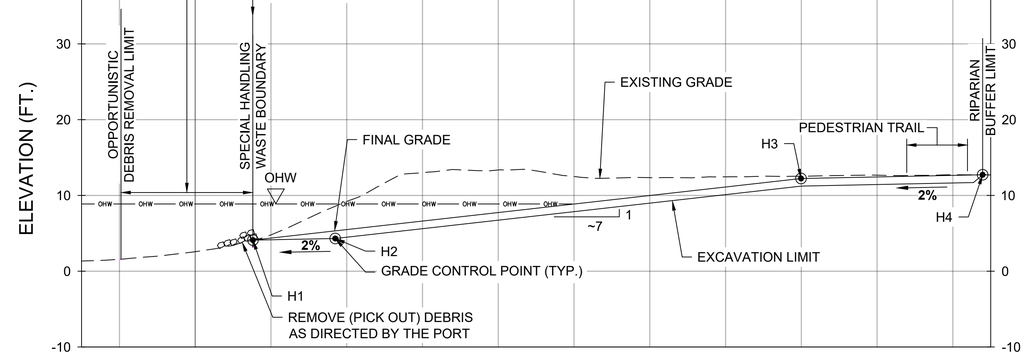
SECTION E — E
TP-7 & TP-7-20 (TYP) — 09,10



SECTION F — F
TP-6 (TYP) — 10



SECTION G — G
TP-6 (TYP) — 10



SECTION H — H
TP-5 & TP-5-20 (TYP) — 10

0 10 20
Scale in Feet

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE — STATE OF WASHINGTON — 39329 — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

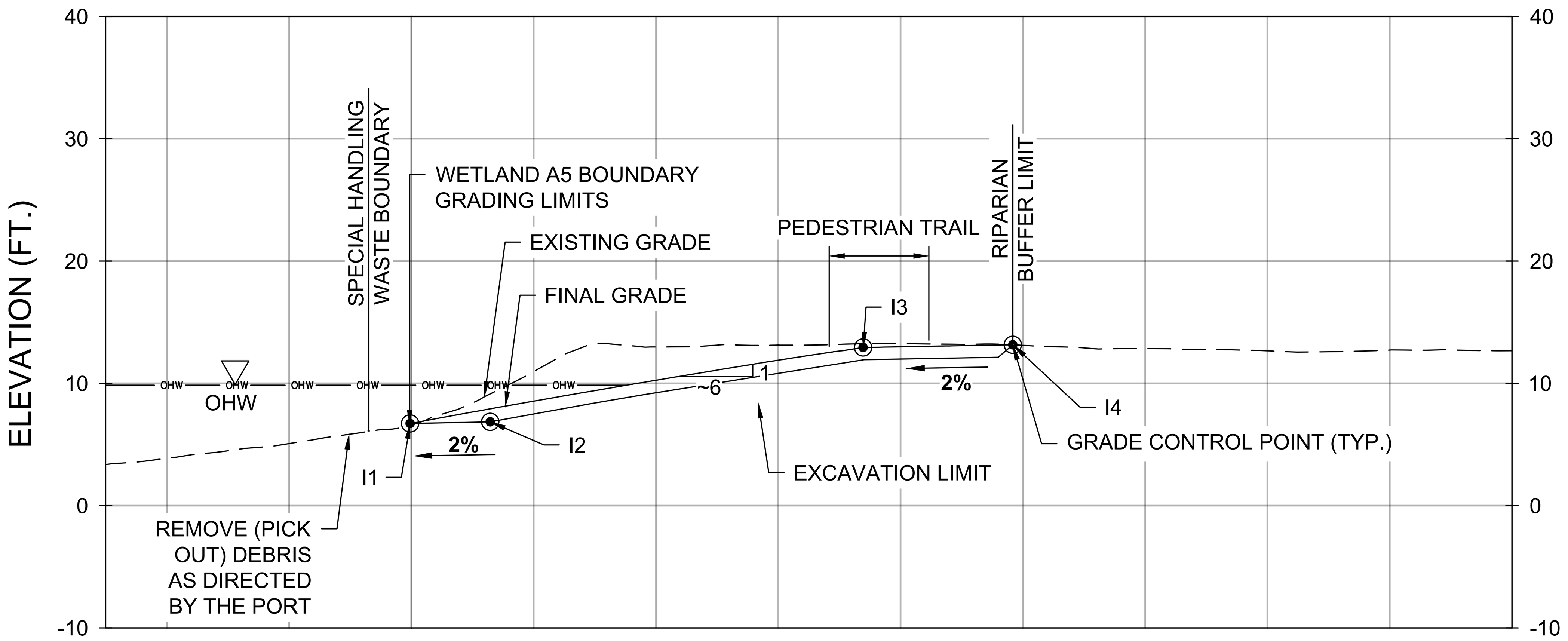
PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

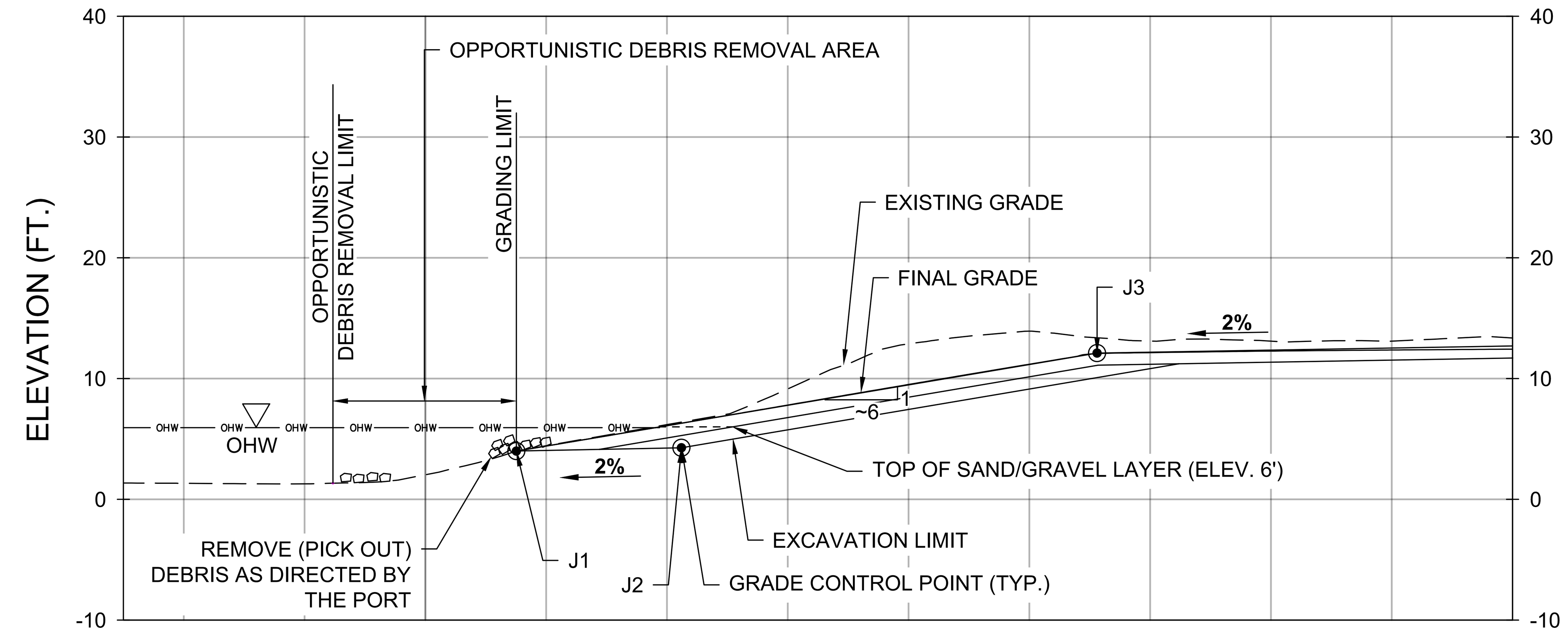
SECTIONS E - H

DWG. NO. 15
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 15 OF 25

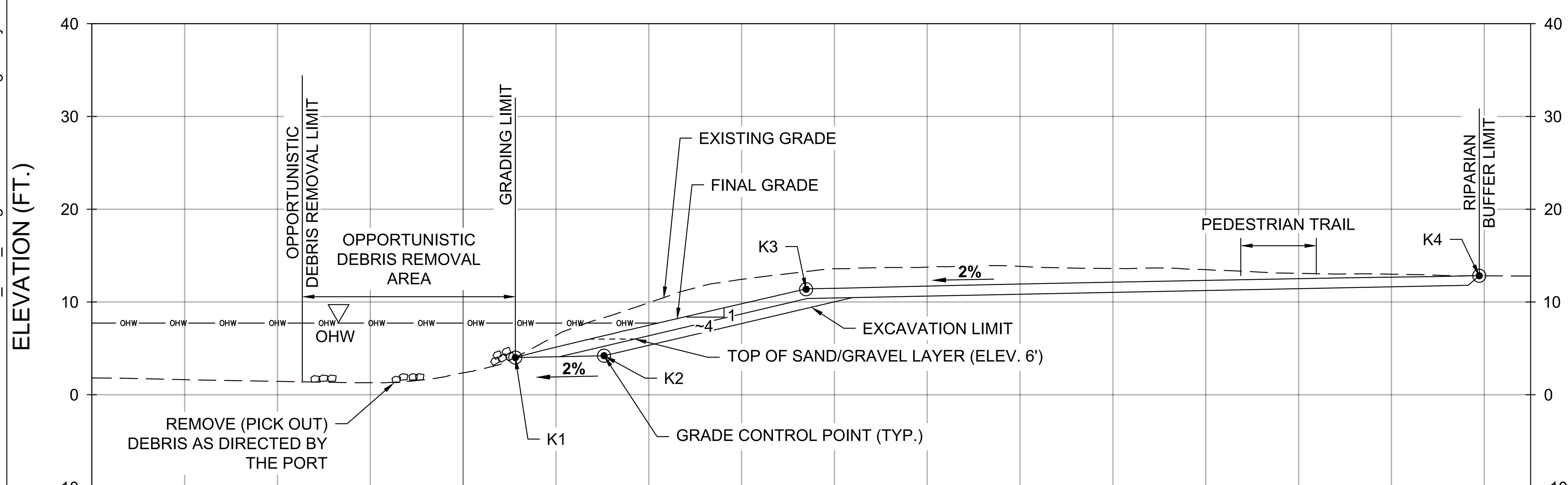
Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - SECTIONS.dwg Layout: 102336_15_SECTIONS E F G H Date: 08-10-2020 Login: AWP



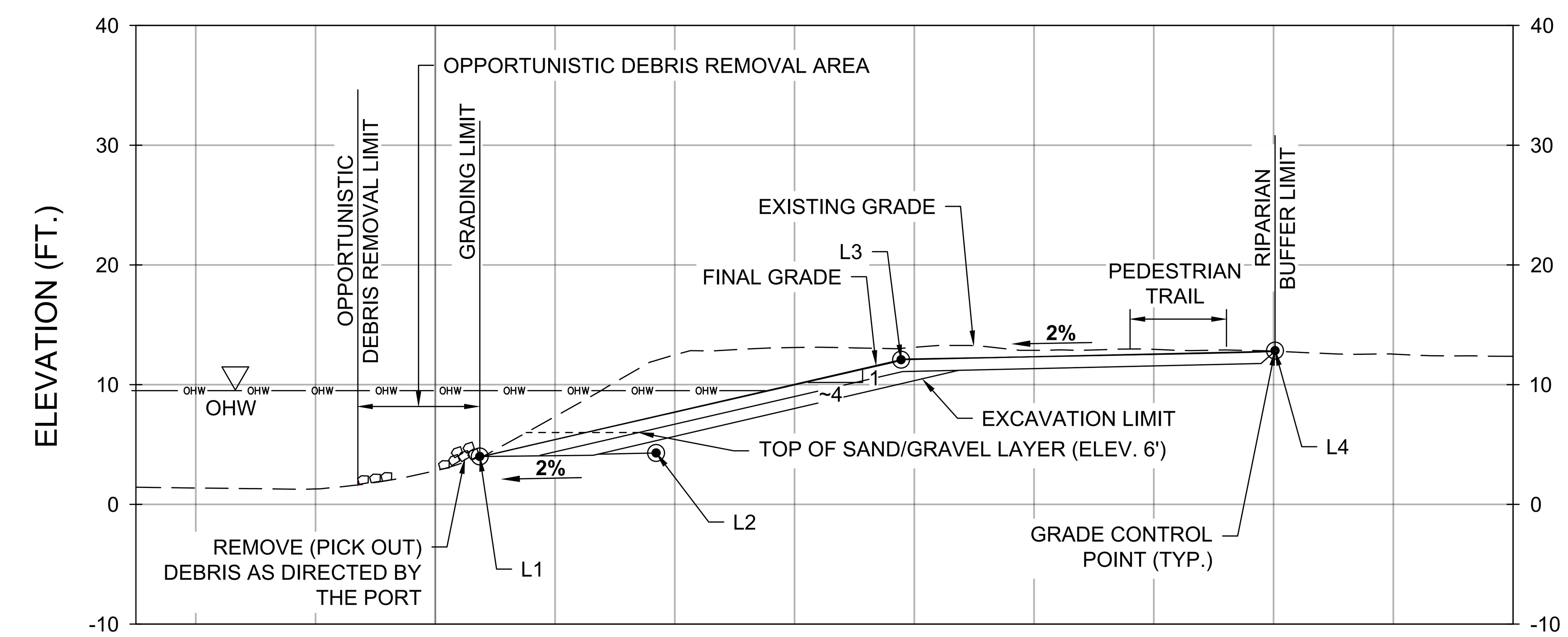
SECTION I
TP-4 & TP-4-20 (TYP)
I
10,11



SECTION J
TP-3 (TYP)
J
10,11



SECTION K
TP-2 & TP-2-20 (TYP)
K
11



SECTION L
TP-1 (TYP)
L
11

0 10 20
Scale in Feet

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - SECTIONS.dwg Layout: 102336_16_SECTIONS I J K L Date: 08-10-2020 Login: AWP

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 8/10/20

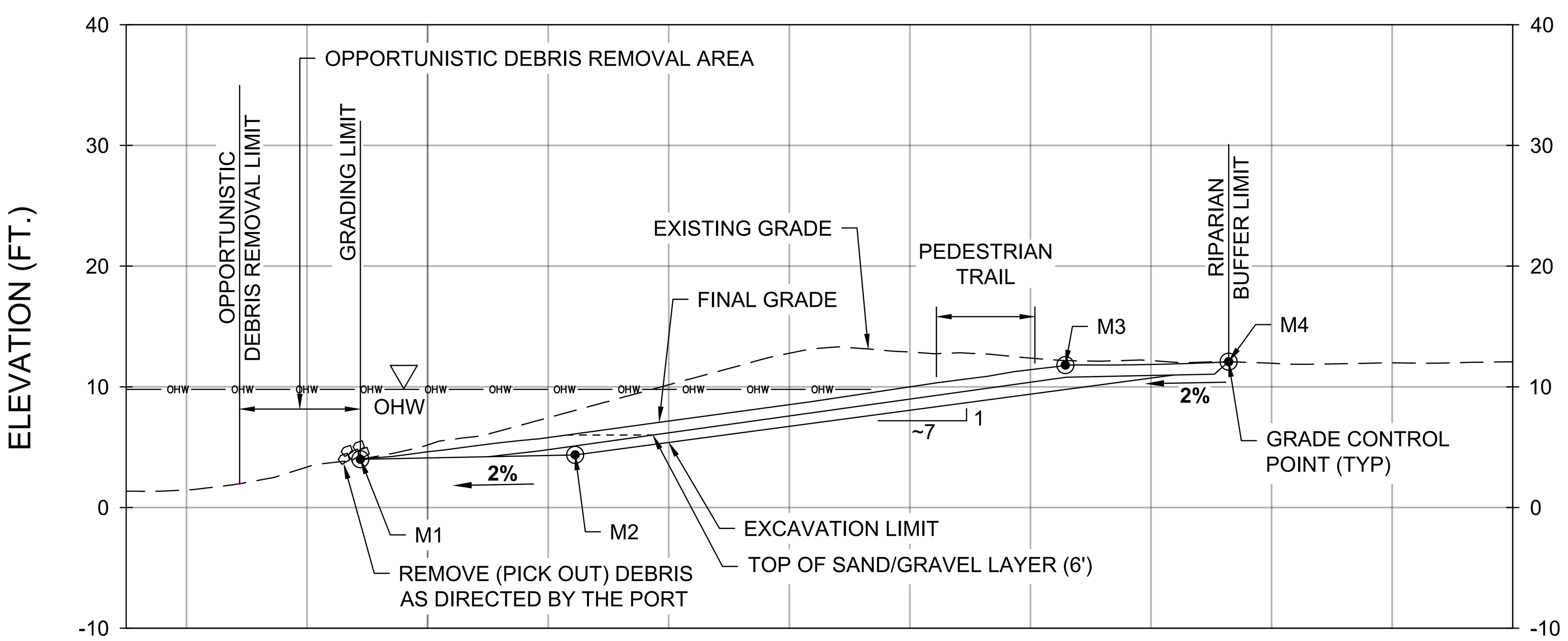
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

SECTIONS I - L

DWG. NO. 16
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 16 OF 25



SECTION M

TP-1 (TYP)

M
11

Scale in Feet: 0 10 20

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - SECTIONS.dwg Layout: 102336_17_SECTION M Date: 08-10-2020 Login: AWP

Port of Everett
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

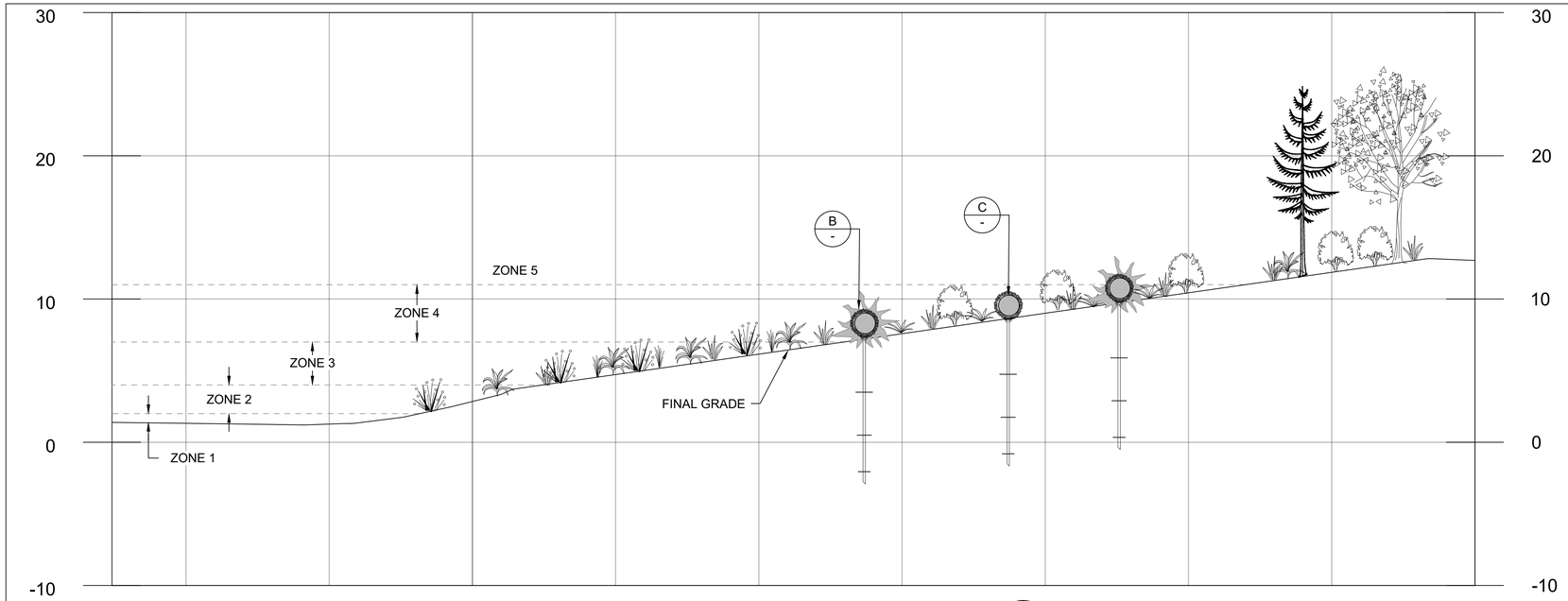
SECTION M

DWG. NO. 17

CIP NO.

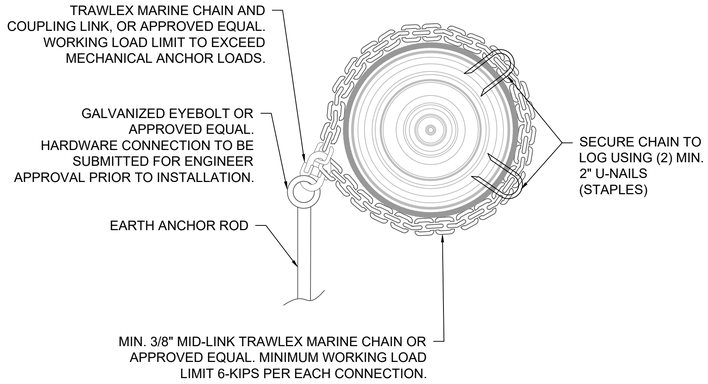
PROJECT NO. PD-BW-2020

SHEET NO. 17 OF 25



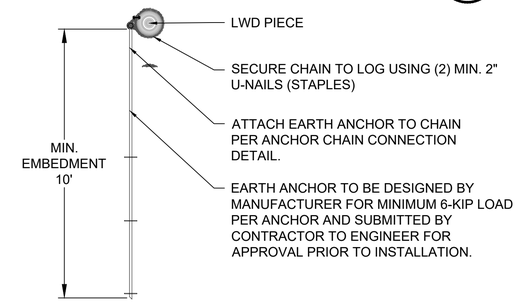
TYPICAL PLANTING SECTION — A -

0 5 10
Scale in Feet



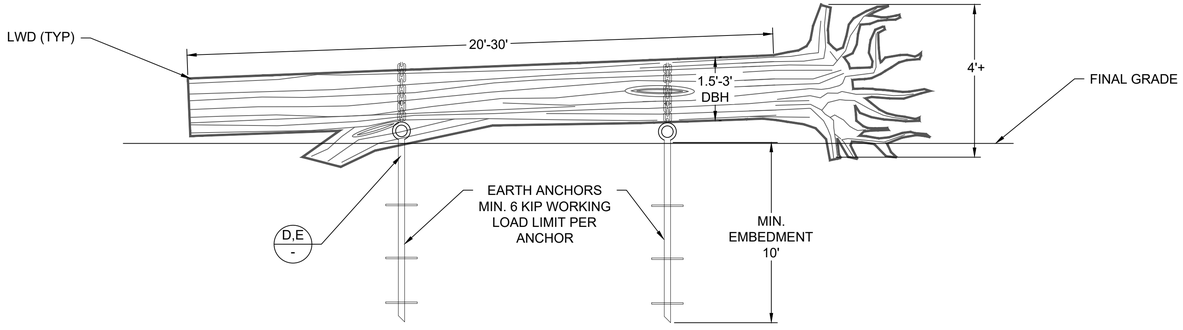
ANCHOR CHAIN CONNECTION DETAIL — D -

SCALE: NTS



ANCHOR/LWD CONNECTION DETAIL — E -

SCALE: NTS



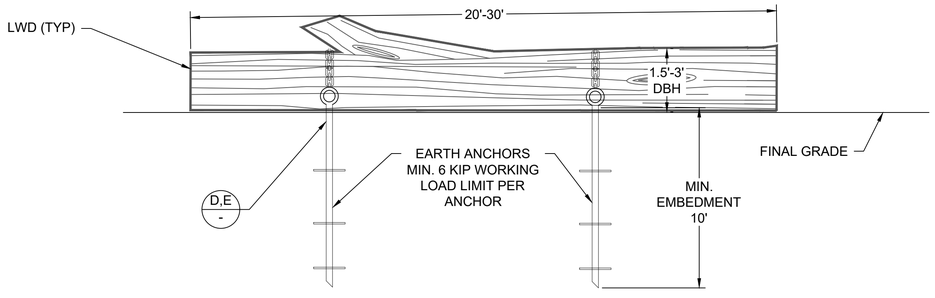
LARGE WOODY DEBRIS (LWD) WITH ROOTWAD — B -

SCALE: NTS

ZONE NO.	ELEVATION (NGVD-29)	PLANTING ZONE	TYPICAL SPEICIES
1	≤ 2'	MUDFLAT	NONE
2	2'-4'	LOW SHORE	RUSHES, SEDGES
3	4'-7'	MID SHORE	RUSHES, SEDGES, GRASSES, HERBS
4	7'-11'	UPPER SHORE & WOOD ZONE	DUNE GRASSES, SHRUBS, HERBS, LWD
5	11'+	RIPARIAN	TREES, SHRUBS, HERBS

NOTES:

1. 50 LWD PIECES TOTAL.
2. HALF OF LWD PIECES WILL HAVE ROOTWADS (25). HALF OF LWD PIECES WILL BE CUT LOGS WITHOUT ROOTWADS (25).



LARGE WOODY DEBRIS (LWD) CUT LOG — C -

SCALE: NTS

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 39329 — REGISTERED PROFESSIONAL ENGINEER
7/10/20

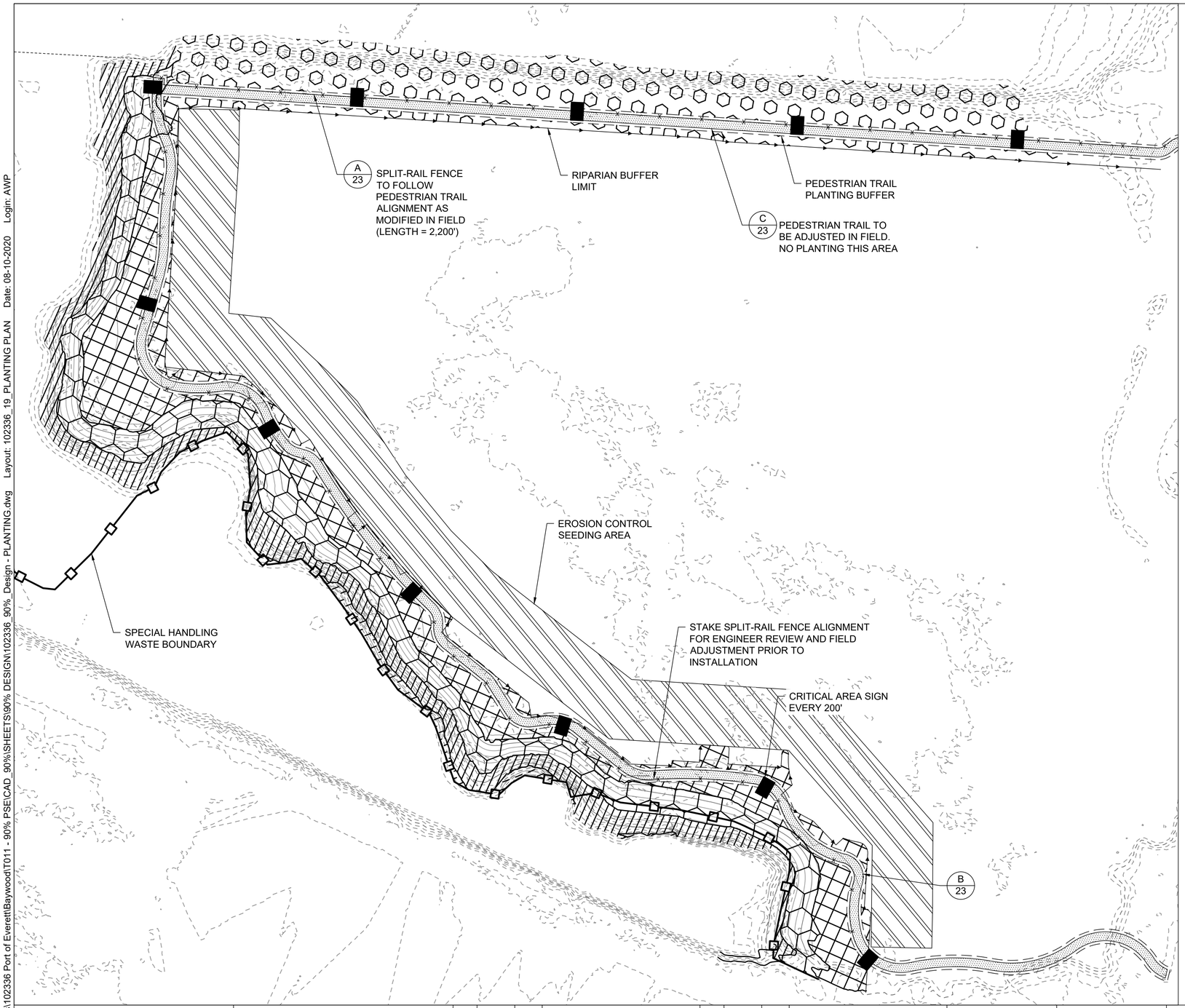
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

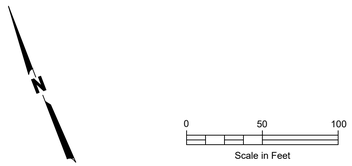
PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

LWD DETAIL

DWG. NO. 18
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 18 OF 25





LEGEND

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- RIPARIAN BUFFER LIMIT
- PEDESTRIAN TRAIL PLANTING BUFFER
- SPLIT-RAIL FENCE
- LOWER SLOPE PLANTING ZONE (WETLANDS) (EL. 2'-4')
- MID SLOPE PLANTING ZONE (WETLAND/RIPARIAN MIX) (EL. 4'-7')
- UPPER SLOPE PLANTING ZONE (RIPARIAN) (EL. 7'-11')
- RIPARIAN PLANTING ZONE (1) (RIPARIAN) (EL. 11'+)
- RIPARIAN PLANTING ZONE (2) (RIPARIAN, NO TREES)
- PEDESTRIAN TRAIL
- EROSION CONTROL SEEDING AREA
- CRITICAL AREA SIGN

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLANTING.dwg Layout: 102336_19_PLANTING PLAN Date: 08-10-2020 Login: AWP

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE — STATE OF WASHINGTON — 39320 — REGISTERED PROFESSIONAL ENGINEER
8/10/20

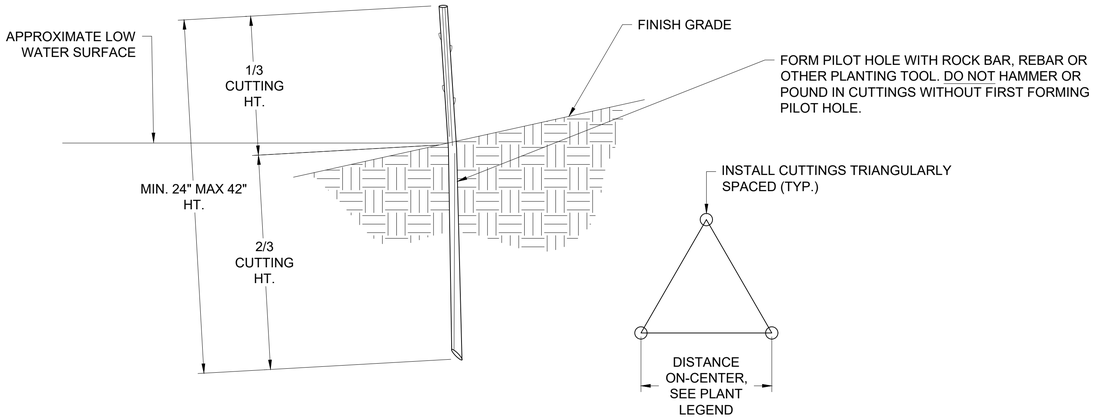
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

PLANTING PLAN

DWG. NO. 19
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 19 OF 25

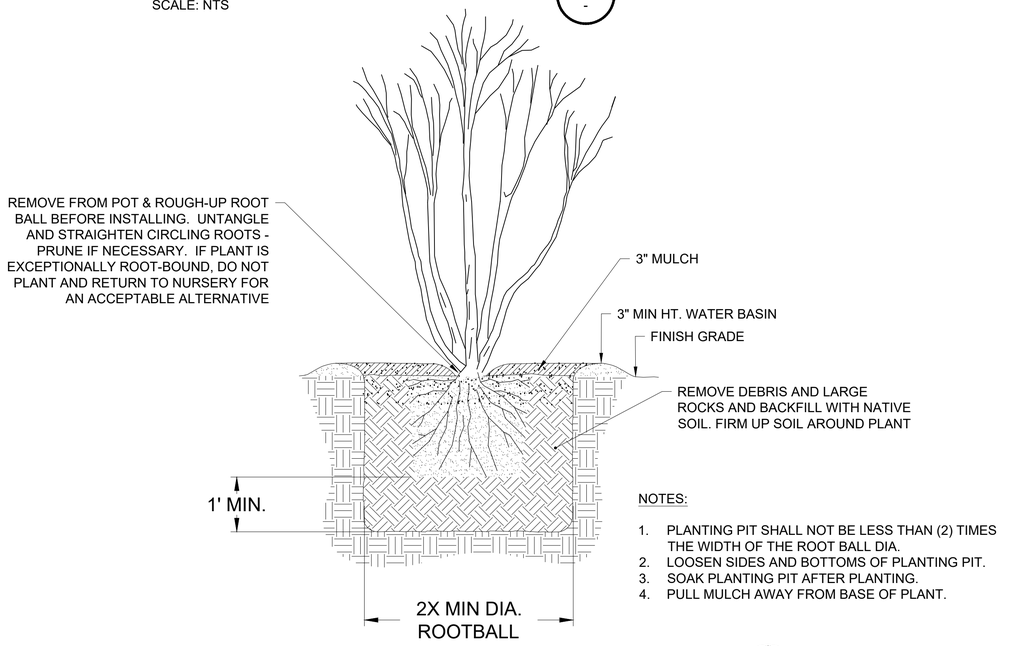


NOTES:

1. BASAL END OF LIVE STAKES SHALL BE 1 TO 2 INCHES IN DIAMETER.
2. KEEP LIVE STAKES COVERED, COOL, & MOIST AT ALL TIMES PRIOR TO PLANTING. AT NO TIME SHOULD PLANT MATERIAL BE EXPOSED & ALLOWED TO DRY OUT. LIVE STAKES CAN BE TEMPORARILY STORED IN WATER PRIOR TO INSTALLATION.
3. PRE-DRIVE HOLE USING REBAR BEFORE INSERTING LIVE STAKE CUTTING & TAMP SOIL TO REMOVE AIR POCKETS. LIGHTLY TAP LIVE STAKE A MINIMUM OF $\frac{2}{3}$ LENGTH BELOW THE GROUND USING A RUBBER MALLET. ENSURE LIVE STAKE CUTTING HAS A MINIMUM OF TWO LIVE BUDS ABOVE GRADE.

LIVE STAKE INSTALLATION — A

SCALE: NTS

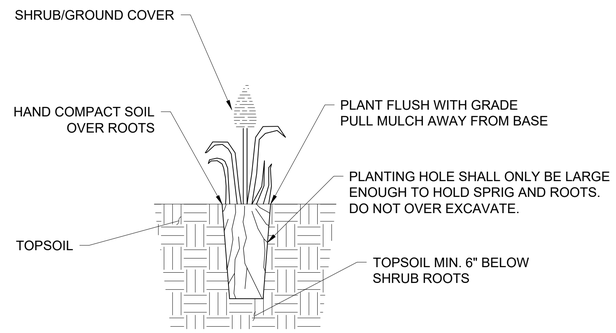


NOTES:

1. PLANTING PIT SHALL NOT BE LESS THAN (2) TIMES THE WIDTH OF THE ROOT BALL DIA.
2. LOOSEN SIDES AND BOTTOMS OF PLANTING PIT.
3. SOAK PLANTING PIT AFTER PLANTING.
4. PULL MULCH AWAY FROM BASE OF PLANT.

1, 2, & 5 GALLON TREE & SHRUB PLANTING — D

SCALE: NTS

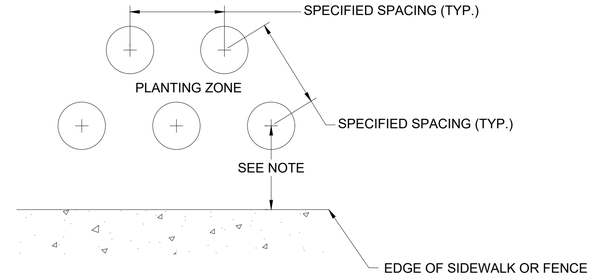


NOTES:

1. SOIL SHALL BE MOIST TO WET AT TIME OF PLANTING.

BARE ROOT EMERGENT PLANTING — B

SCALE: NTS



NOTES:

1. PLANT SHRUBS NO CLOSER THAN 2.5 FT. FROM PEDESTRIAN TRAIL AND FENCE.

PLANTING SPACING — C

SCALE: NTS

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 39320 — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

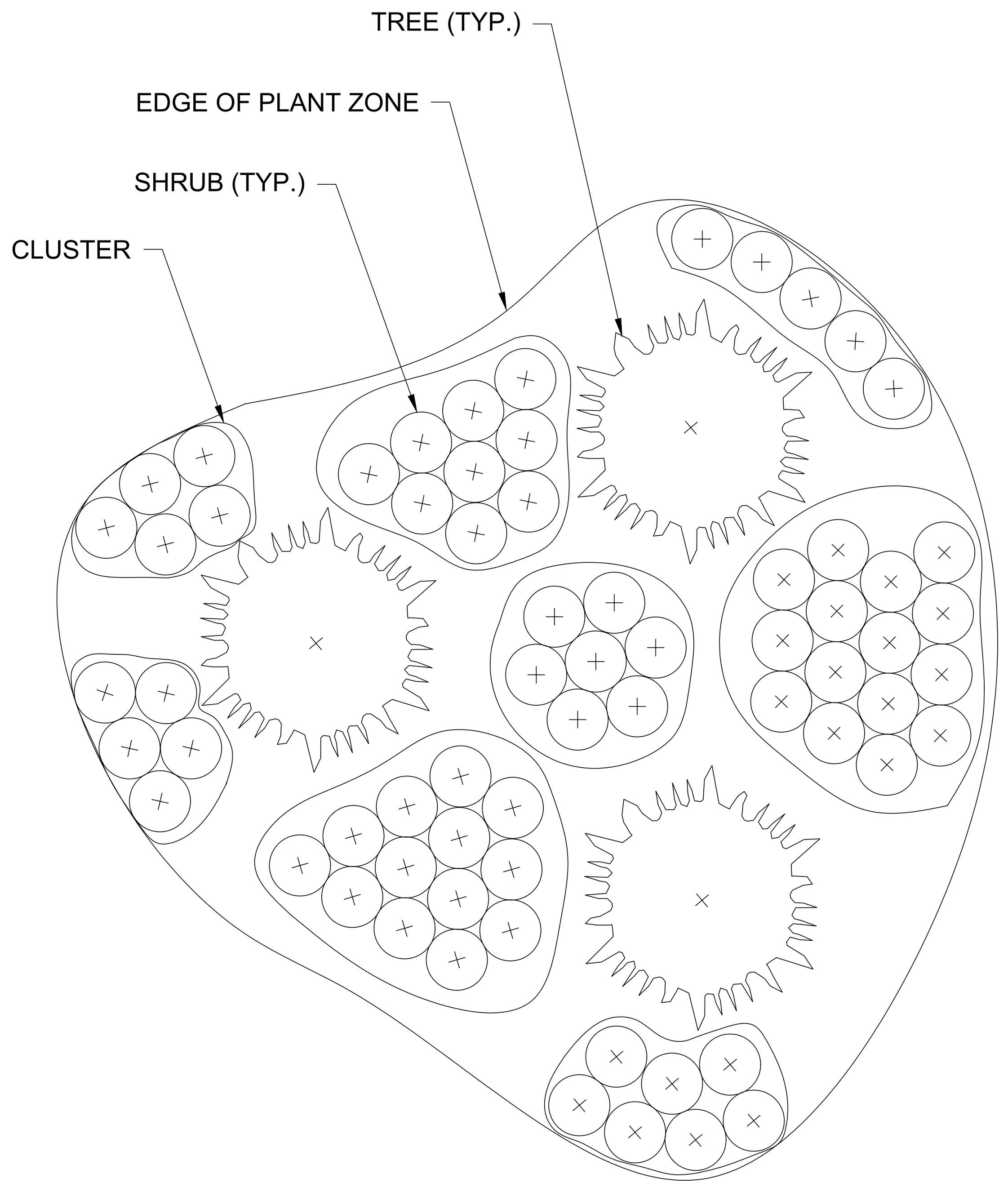
PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

PLANTING DETAILS (1)

DWG. NO. 20
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 20 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLANTING.dwg Layout: 102336_21_PLANTING DETAILS (2) Date: 08-10-2020 Login: AWP

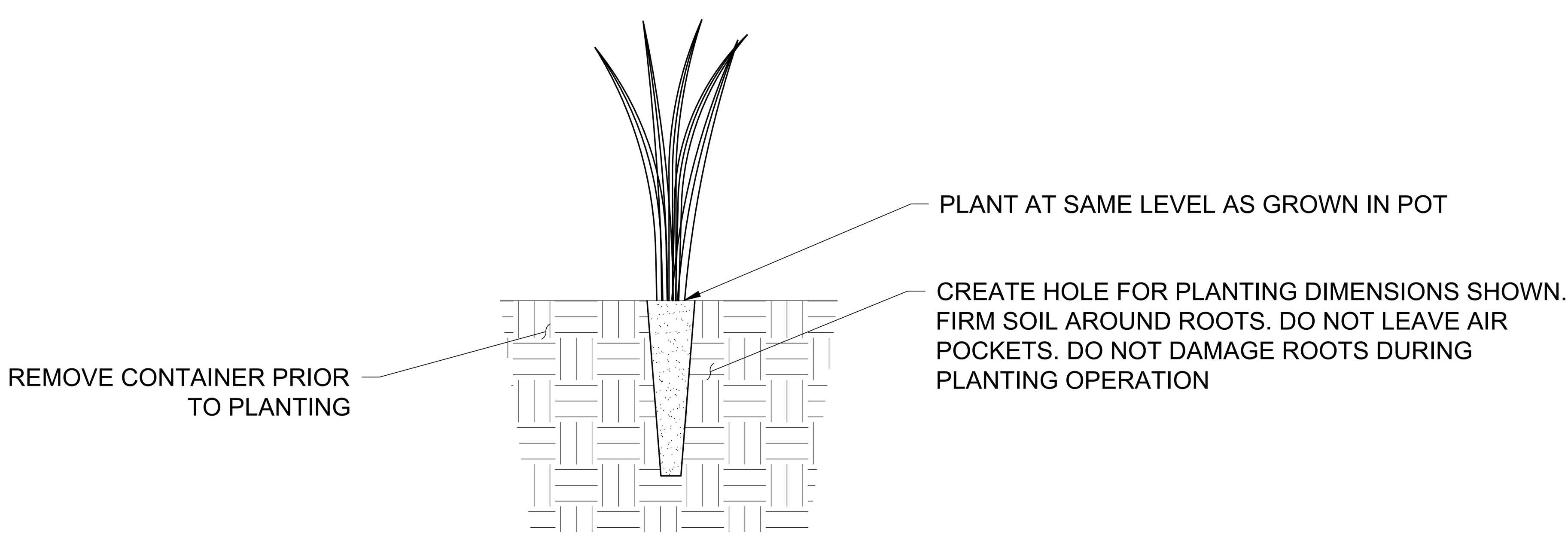


NOTES:

1. PLANT SHRUBS IN CLUSTERS OF UNEVEN NUMBERS (E.G. THREE, FIVE, SEVEN, ETC.).
2. PLANT ONE SPECIES OF SHRUBS IN CLUSTERS OF THREE, FIVE, SEVEN, ETC.
3. EVENLY SPACE CLUSTERS THROUGHOUT PLANTING AREA.
4. INTENT OF SHRUB PLANTING IS TO APPEAR NATURAL AND INFORMAL.

SHRUB SPACING AROUND TREES F / -

SCALE: NTS



10 CUBIC-INCH PLUG PLANTING G / -

SCALE: NTS

PLANTING NOTES:

1. PRIOR TO CLEARING AND GRADING ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES AS SHOWN IN THE TESC PLAN AND CONTRACTOR PROVIDED SWPPP.
2. CLEAR AND GRUB ALL BLACKBERRIES, SCOTCH BROOM, AND EXISTING VEGETATION FROM PLANTING ZONES. REMOVE MATERIAL FROM THE SITE AND DISPOSE AT AN APPROVED LOCATION.
3. TOPSOIL WILL EITHER BE STOCKPILED ON SITE DURING GRADING ACTIVITIES AND REUSED, OR OBTAINED FROM A CLEAN, OFF-SITE LOCATION. ONLY CLEAN TOPSOIL EXCAVATED ONSITE FROM WETLANDS SHOULD BE PLACED IN LOWER AND MID SLOPE PLANTING AREAS. ANY TOPSOIL STOCKPILED FOR PROJECT USE SHALL BE PROTECTED TO PREVENT EROSION AND WEED GROWTH. AFTER TOPSOIL HAS BEEN SPREAD, ALL LARGE CLODS, HARD LUMPS, LITTER, AND ROCKS 2 INCHES IN DIAMETER AND LARGER SHALL BE RAKED UP, REMOVED, AND DISPOSED OF BY THE CONTRACTOR.
4. WHERE SOILS ARE COMPACTED BY CONSTRUCTION ACTIVITY, DECOMPACT THE SOIL AS SPECIFIED IN SECTIONS 31 20 20 AND 31 20 30.
5. AMEND ALL PLANTING AREAS WITH MINIMUM 3 INCHES OF COMPOST AND MIX INTO DECOMPACTED SOILS TO A DEPTH OF 12 INCHES.
6. IMMEDIATELY AFTER SOIL PREPARATION, HYDROSEED EXPOSED SOILS IN RIPARIAN ZONE WITH APPROPRIATE NATIVE EROSION-CONTROL SEED MIX SPECIFIED MIXED WITH A TACKIFIER AT A RATIO RECOMMENDED BY THE SEED SUPPLIER. USING A TWO-PASS METHOD, APPLY SEED AND TACKIFIER TO SOIL IN FIRST PASS AND APPLY HYDROMULCH AND TACKIFIER IN SECOND PASS.
7. RECOMMENDED TIME FOR TREE, SHRUB, AND GROUNDCOVER INSTALLATION IS LATE FALL OR EARLY SPRING (BETWEEN NOVEMBER 1 AND MARCH 31). RECOMMENDED TIME FOR EMERGENT INSTALLATION IS EARLY SPRING (JANUARY 15 TO MARCH 1). RECOMMENDED TIME FOR SEEDING IS MARCH 15 TO SEPTEMBER 1.
8. PROCURE PLANTS AND STORE PROPERLY. PLANTS SHALL CONFORM WITH THE CODE OF STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANT MATERIAL WILL BE NATIVE TO THE PACIFIC NORTHWEST AND FROM PLANT STOCK GENOMES FROM WESTERN WASHINGTON. ALL PLANTS SHOULD BE INSTALLED THE SAME DAY THEY ARE DELIVERED TO THE SITE. PLANTS THAT CANNOT BE PLANTED WITHIN ONE DAY AFTER ARRIVAL SHOULD BE "HEELED-IN" TO THE SOIL IN A SHADED LOCATION FOR PROTECTION AGAINST DRYING. PLANTS SHALL BE INSPECTED BY A QUALIFIED ECOLOGIST PRIOR TO INSTALLATION.
9. PLANT LAYOUT WILL BE DIRECTED AND APPROVED BY THE ONSITE ECOLOGIST.
10. INSTALL PLANTS AS SHOWN ON PLANS IN NATURAL, RANDOM CLUSTERS FOLLOWING THE DETAILS FOR CONTAINER-GROWN PLANTS, LIVE STAKES, BARE ROOT, AND PLUG CONDITIONS. TREES, SHRUBS, AND GROUNDCOVERS SHOULD BE INSTALLED PER THE CLUSTERING DETAIL. EMERGENTS SHOULD BE INSTALLED IN GROUPS OF 15 TO 20 INDIVIDUALS OF THE SAME SPECIES. FOR SPECIES IN THE LOWER SLOPE PLANTING ZONE, INSTALL PLANTS ALONG THE HIGHER ELEVATION.
11. WATER PLANTS THOROUGHLY TO AVOID CAPILLARY STRESS (TYPICALLY, PLANTED AREAS SHOULD BE WATERED WITH APPROXIMATELY 1 INCH OF WATER AFTER PLANTING).
12. INSTALL MULCH RINGS AROUND SHRUBS AND TREES. RINGS SHOULD BE THREE INCHES OF GUARANTEED WEED-FREE COARSE WOOD CHIP MULCH. WOOD CHIPS SHALL BE MOVED AWAY FROM PLANT STEMS TO PREVENT STEM ROT.

MAINTENANCE:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING ALL PLANTING AREAS FOR THE FIRST THREE YEARS FOLLOWING CONSTRUCTION. THE PORT WILL BE RESPONSIBLE FOR MAINTAINING THE PLANTING AREAS FOR THE REMAINDER OF THE 10-YEAR MONITORING PERIOD. MAINTENANCE WILL INCLUDE WATERING, WEEDING AROUND THE BASE OF INSTALLED PLANTS, REPLACING OR ADDING PLANTS TO MEET SURVIVAL AND COVER REQUIREMENTS, REMOVING ALL CLASSES OF NOXIOUS WEEDS (SEE WASHINGTON STATE NOXIOUS WEEDS LIST, WAC 16-750-005, -011, AND -015 AND SNOHOMISH COUNTY'S NOXIOUS WEEDS LIST), AND IMPLEMENTING ANY OTHER MEASURES NEEDED TO ENSURE PLANT SURVIVAL. AN ECOLOGIST WILL REVIEW PROPOSED MAINTENANCE.
2. TEMPORARY IRRIGATION OR WATERING SHALL BE PROVIDED TO THE UPPER SLOPE AND RIPARIAN PLANTING ZONES, AS NEEDED, FOR THE FIRST THREE YEARS AFTER PLANT INSTALLATION TO FACILITATE PLANT SURVIVAL AND ESTABLISHMENT. WATER SHOULD BE PROVIDED BY A TEMPORARY, ABOVE GROUND IRRIGATION SYSTEM AND/OR A WATER TRUCK. WATER SHOULD BE APPLIED AT A RATE OF 1 INCH OF WATER, TWO TIMES PER WEEK FROM JUNE 15 THROUGH SEPTEMBER 15, OR AS DIRECTED BY THE PORT. TIDES AND GROUNDWATER ARE ANTICIPATED TO SUPPLY ADEQUATE HYDROLOGY TO THE LOWER AND MID SLOPE PLANTING AREAS FOLLOWING CONSTRUCTION. IF A TEMPORARY IRRIGATION SYSTEM IS INSTALLED, IT SHOULD BE LEFT IN PLACE THROUGH AT LEAST THE SECOND YEAR OF MONITORING SO THAT IT IS AVAILABLE IF NEEDED.

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
△	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION				

DAVID R. CLINE — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

PLANTING DETAILS (2)

DWG. NO. 21
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 21 OF 25

STRATUM	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	SIZE AND CONDITION	SPACING	TOTAL QUANTITY	PLANTING ZONE				
							RIPARIAN 1	RIPARIAN 2	UPPER SHORE	MID SHORE	LOW SHORE
							11 FT+	11 FT+	7-11FT	4-7 FT	2-4 FT
TREE	ACER MACROPHYLLUM	BIG LEAF MAPLE	FACU	1-GAL CONT.	15' O.C.	20	20	0			
	ALNUS RUBRA	RED ALDER	FAC	1-GAL CONT.	15' O.C.	10	10	0			
	MALUS FUSCA	PACIFIC CRABAPPLE	FACW	1-GAL CONT.	15' O.C.	20	20	0			
	PICEA SITCHENSIS	SITKA SPRUCE	FAC	1-GAL CONT.	15' O.C.	20	20	0			
	PINUS CONTORTA	SHORE PINE	FAC	1-GAL CONT.	15' O.C.	20	20	0			
	POPULUS BALSAMIFERA SPP TRICHOCARPA	BLACK COTTONWOOD	FAC	1-GAL CONT.	15' O.C.	10	10	0			
	PSEUDOTSUGA MENSIEZII	DOUGLAS FIR	FACU	1-GAL CONT.	15' O.C.	20	20	0			
	TSUGA HETEROPHYLLA	WESTERN HEMLOCK	FACU	1-GAL CONT.	15' O.C.	20	20	0			
SHRUB	AMELANCHIER ALNIFOLIA	SERVICEBERRY	FACU	BARE ROOT	5' O.C.	230	95	135			
	GAULTHERIA SHALLON	SALAL	FACU	BARE ROOT	5' O.C.	230	95	135			
	HOLODISCUS DISCOLOR	OCEANSPRAY	FACU	BARE ROOT	5' O.C.	230	95	135			
	LONICERA INVOLUCRATA	BLACK TWINBERRY	FAC	BARE ROOT	5' O.C.	230	95	135			
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	FACU	BARE ROOT	5' O.C.	230	95	135			
	PHILADELPHUS LEWISII	MOCK ORANGE	NL	BARE ROOT	5' O.C.	230	95	135			
	RIBES DIVARICATUM	BLACK GOOSEBERRY	FAC	BARE ROOT	5' O.C.	230	95	135			
	ROSA NUTKANA	NOOTKA ROSE	FAC	BARE ROOT	5' O.C.	230	95	135			
	RUBUS PARVIFLORUS	THIMBLEBERRY	FACU	BARE ROOT	5' O.C.	230	95	135			
	SALIX HOOKERIANA	HOOKER WILLOW	FACW	LIVE STAKE	5' O.C.	570			570		
	SALIX SCOULERIANA	SCOULER'S WILLOW	FAC	LIVE STAKE	5' O.C.	800	95	135	570		
	SAMBUCUS RACEMOSA	RED ELDERBERRY	FACU	BARE ROOT	5' O.C.	230	95	135			
	SYMPORICARPOS ALBUS	SNOWBERRY	FACU	BARE ROOT	5' O.C.	230	95	135			
GROUNDCOVER	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	FACU	BARE ROOT	2.5' O.C.	620			620		
	FRAGARIA CHILOENSIS	COAST STRAWBERRY	FACU	BARE ROOT	2.5' O.C.	620			620		
	GRINDELIA INTEGRIFOLIA	COAST GUMWEED	FACW	10 INCH PLUG	2.5' O.C.	620			620		
	LEYMUS MOLLIS	AMERICAN DUNE GRASS	FACU	10 INCH PLUG	2.5' O.C.	620			620		
	LUPINUS LITTORALIS	SEASHORE LUPINE	NL	10 INCH PLUG	2.5' O.C.	620			620		
	SYMPHYOTRICHUM SUBSPICATUM	DOUGLAS ASTER	FACW	10 INCH PLUG	2.5' O.C.	620			620		
EMERGENT	AGROSTIS EXARATA	SPIKE BENTGRASS	FACW	10 INCH PLUG	2.5' O.C.	225				225	
	CAREX LYNGBYEI	LYNGBYE'S SEDGE	OBL	10 INCH PLUG	2.5' O.C.	285				225	60
	DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS	FACW	10 INCH PLUG	2.5' O.C.	225				225	
	DISTICHLIS SPICATA	SALTGRASS	FACW	10 INCH PLUG	2.5' O.C.	225				225	
	ELEOCHARIS PALUSTRIS	COMMON SPIKERUSH	OBL	10 INCH PLUG	2.5' O.C.	285				225	60
	GRINDELIA INTEGRIFOLIA	COAST GUMWEED	FACW	10 INCH PLUG	2.5' O.C.	225				225	
	JUNCUS ARCTICUS SSP LITTORALIS	BALTIC RUSH	FACW	10 INCH PLUG	2.5' O.C.	225				225	
	PLANTAGO MARITIMA	SEA PLANTAIN	FACW	10 INCH PLUG	2.5' O.C.	225				225	
	POTENTILLA ANSERINA	PACIFIC SILVERWEED	OBL	10 INCH PLUG	2.5' O.C.	285				225	60
	SCHOENOPLECTUS ACUTUS	HARDSTEM BULRUSH	OBL	10 INCH PLUG	2.5' O.C.	285				225	60
	SYMPHYOTRICHUM SUBSPICATUM	DOUGLAS ASTER	FACW	10 INCH PLUG	2.5' O.C.	225				225	
	TRIGLOCHIN MARITIMA	SEASIDE ARROWGRASS	OBL	10 INCH PLUG	2.5' O.C.	285				225	60

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 39... — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

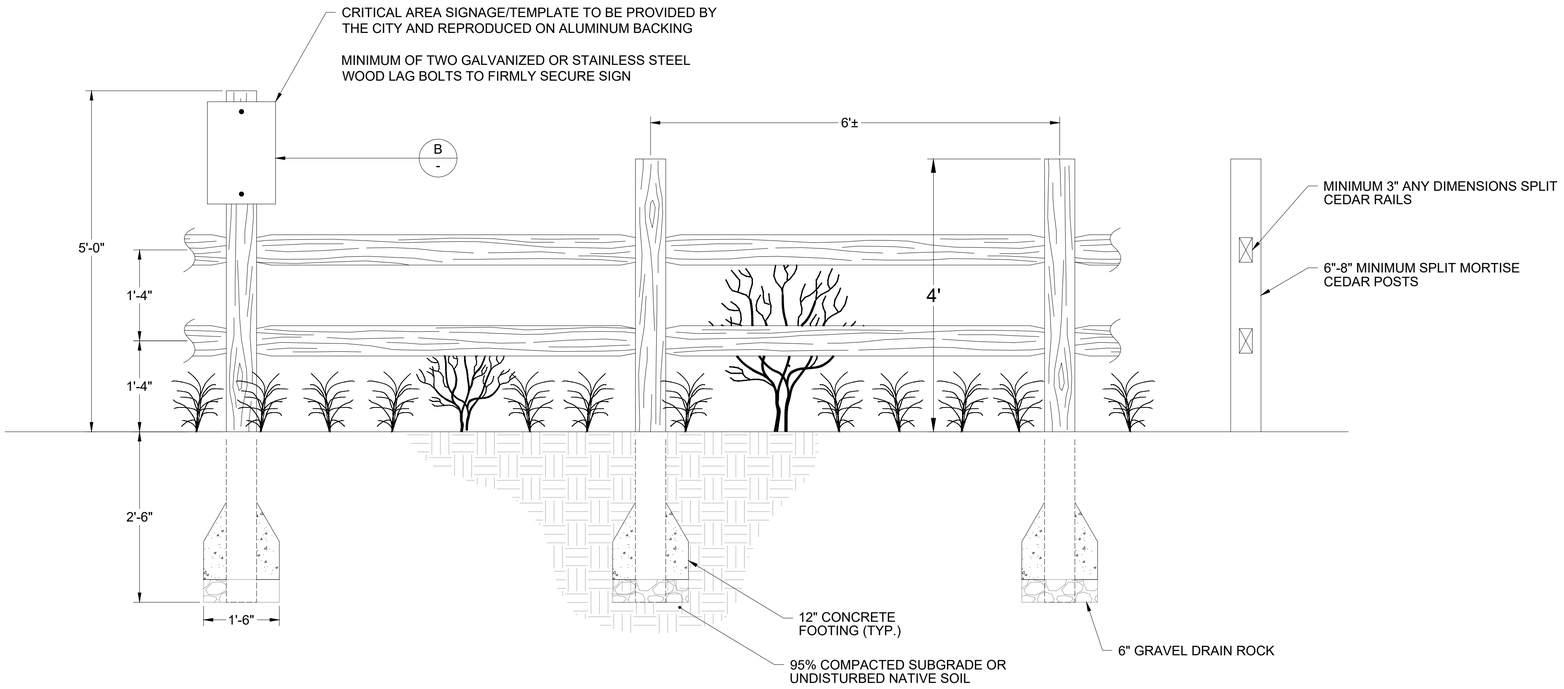
PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

PLANTING SCHEDULE

DWG. NO. 22
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 22 OF 25



NOTES:

1. SPLIT-RAIL FENCE WILL BE INSTALLED ON THE WATERWARD SIDE OF THE PEDESTRIAN TRAIL.
2. STAKE SPLIT-RAIL FENCE ALIGNMENT FOR ENGINEER REVIEW AND FIELD ADJUSTMENT PRIOR TO INSTALLATION.
3. CRITICAL AREA SIGNS SHALL BE SPACED APPROXIMATELY 200 FEET APART AROUND THE PERIMETER OF THE BUFFER AREA.
4. SIGN PLACEMENT SHALL BE SUBJECT TO THE APPROVAL OF THE CITY OF EVERETT.

SPLIT-RAIL FENCE WITH CRITICAL AREA SIGN

SCALE: NTS

A 19

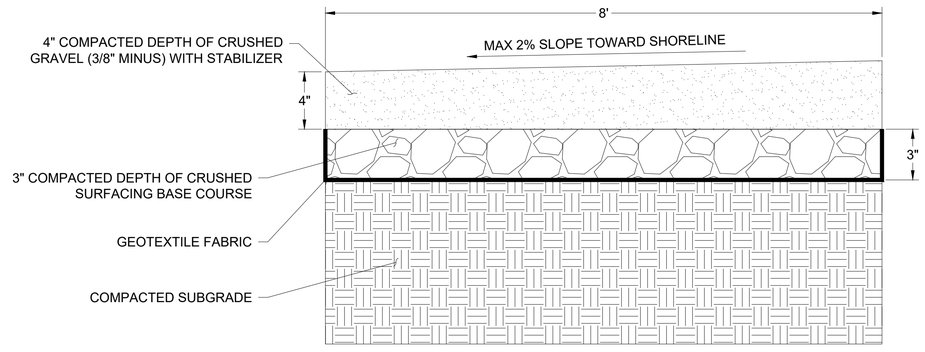
NOTES:

1. PREFABRICATED CRITICAL AREA SIGNS TO BE PURCHASED BY THE CONTRACTOR FROM CITY OF EVERETT

CRITICAL AREA SIGN

SCALE: NTS

B 19



PEDESTRIAN TRAIL DETAIL

SCALE: NTS

C 19

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
400 North 34th Street, Suite 100
Seattle, Washington 98103
P.O. Box 300303
(206) 632-8020 FAX: (206) 633-6777

NO.	DATE	BY	REVISION
1	7/01/20	AWP	ISSUED FOR BID & CONSTRUCTION

DAVID R. CLINE — STATE OF WASHINGTON — 39326 — REGISTERED PROFESSIONAL ENGINEER — 8/10/20

PROJECT ENGINEER: D. CLINE	SCALE: AS SHOWN
DESIGNED BY: D. CLINE	DATE: AUGUST 10, 2020
DRAWN BY: A. PICCINI	CHECKED BY: J. KLEKOTKA
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

SPLIT RAIL FENCE DETAIL

DWG. NO. **23**
CIP NO.
PROJECT NO. PD-BW-2020
SHEET NO. 23 OF 25

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\T011 - 90% PSE\CAD_90%\SHEETS\90% DESIGN\102336_90%_Design - PLANTING.dwg Layout: 102336_23_FENCE DETAIL Date: 08-10-2020 Login: AWP

LEGEND

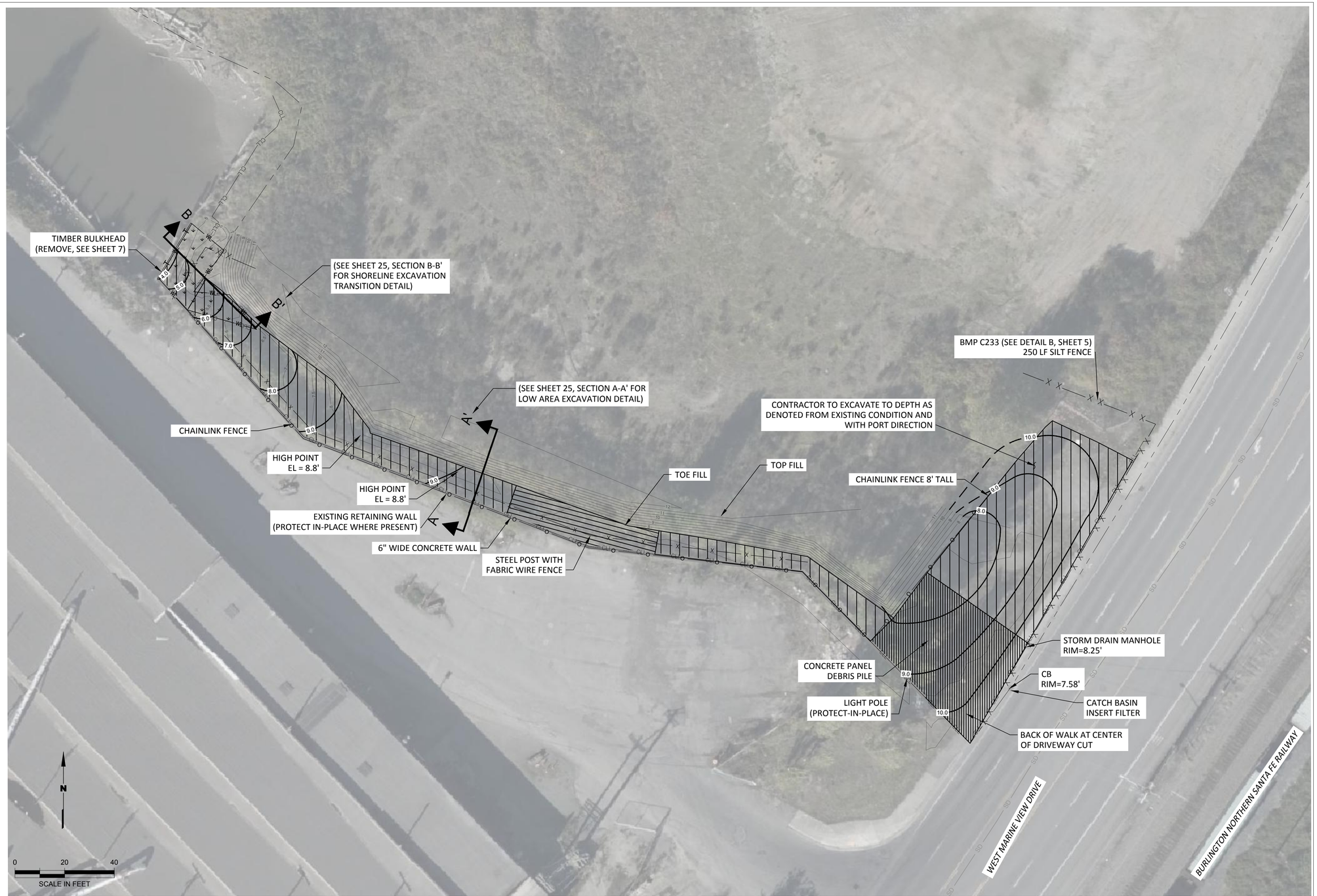
- SITE BOUNDARY
- CONSTRUCTION ZONE BOUNDARY
- RETAINING WALL
- TIMBER BULKHEAD
- WETLAND
- SILT FENCE
- EXISTING GRADE (FT)
- APPROXIMATE FINISH GRADE ELEVATION (FT)
- EXCAVATION DEPTH = 1 FT
- EXCAVATION DEPTH = 2 FT
- EXCAVATION DEPTH = 3 FT

NOTES:

1. CONTRACTOR SHALL CONFIRM EXISTING ELEVATIONS, PRESENCE OF DEBRIS, AND UTILITIES IN THE EXCAVATION BOUNDARY AND IMPLEMENT TESC MEASURES.
2. REMOVE VEGETATION AND DEBRIS THROUGHOUT EXCAVATION BOUNDARY AND DISPOSE OF OFFSITE.
3. EXCAVATE TO THE DEPTHS INDICATED (1, 2, OR 3 FT) TO REMOVE CONTAMINATION, AND DISPOSE OF THE SOILS OFFSITE AT A RCRA SUBTITLE D DISPOSAL FACILITY.
4. AFTER EXCAVATION TO FINAL DEPTHS, PROVIDE ACCESS TO PORT FOR OBSERVATION AND SAMPLE COLLECTION PRIOR TO BACKFILLING.
5. AFTER THE PORT HAS COMPLETED OBSERVATIONS OF THE FINAL EXCAVATION FLOOR AND SIDEWALLS AND APPROVES THE EXCAVATION, INSTALL GEOTEXTILE / STEEL MESH STABILIZATION / ECOLOGICAL BARRIER ON BASE AND SIDEWALLS, OVERLAPPING PANELS BY 12 INCHES.
6. PLACE AND COMPACT A MINIMUM SOIL COVER 2 FT IN THICKNESS THROUGHOUT THE REMOVAL AREA TO ACHIEVE FINISHED GRADE ELEVATIONS USING REUSABLE FILL SOURCED ONSITE.
7. COVER SOIL AT FINISHED GRADE WITH STRAW FOR STORMWATER RUNOFF PROTECTION.
8. FINAL SURFACE VERTICAL ELEVATION DATUM HAS BEEN CONVERTED FROM NAVD88 TO NGVD29
9. COORDINATE EXCAVATION AND BACKFILL OF THESE AREAS WITH THE PORT/ENGINEER TO ENSURE A SMOOTH TRANSITION TO SURROUNDING GRADE AND TO PROTECT EXISTING FEATURES THAT WILL REMAIN IN PLACE.
10. LOCATION AND EXTENT OF MARINE INFRASTRUCTURE SHOWN IS APPROXIMATE AND SHOULD BE CONFIRMED BY THE CONTRACTOR.
11. EXISTING RETAINING WALL HEIGHT IS UNKNOWN AND MAY VARY FROM WHAT IS SHOWN ON THE DRAWINGS. ACTUAL DEPTH OF WALL TO BE VERIFIED IN THE FIELD BY CONTRACTOR.

VERTICAL ELEVATION DATUM: NGVD29

BASE SOURCE:
TOPOGRAPHIC SURVEY: METRON AND ASSOCIATES INC., NOVEMBER 2018
SURVEY VERTICAL ELEVATION DATUM: NAVD88
AERIAL IMAGE: BING AERIAL IMAGERY, 2020



Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, Washington 98020
(425) 778-0907

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION
1	9/02/20	DHF	ISSUED AS ADDENDUM FOR BID AND CONSTRUCTION				
0	7/30/20	DHF	ISSUED FOR BID AND CONSTRUCTION				

JEREMY MICHAEL DAVIS — STATE OF WASHINGTON — 43775 — REGISTERED PROFESSIONAL ENGINEER

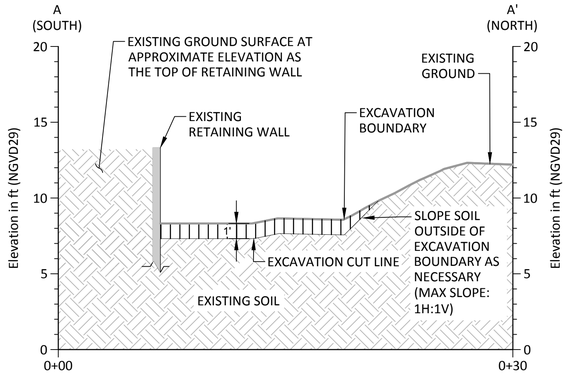
PROJECT ENGINEER: J DAVIS	SCALE: 1" = 20'
DESIGNED BY: J DAVIS	DATE: AUGUST 2020
DRAWN BY: J VALLUZZI	CHECKED BY: D FRAZER
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

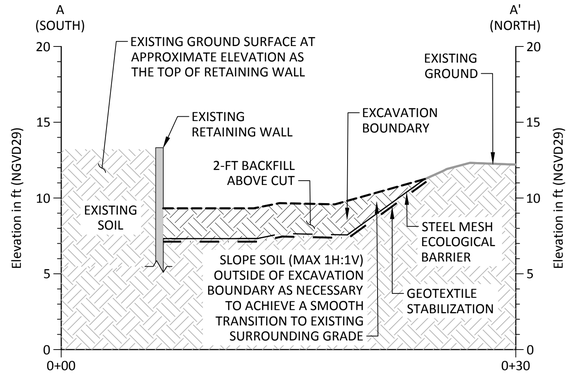
LOW AREA CLEANUP PLAN

DWG. NO. 24
CIP NO. 3-0-012-022
PROJECT NO. PD-BW-2020-05
SHEET NO. 24 OF 25



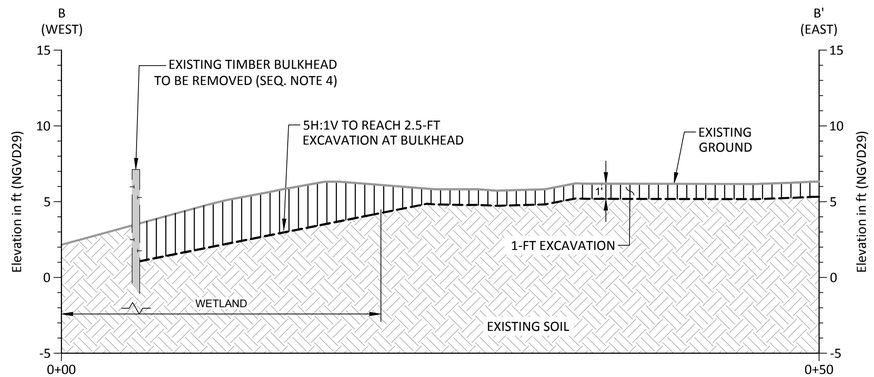
SECTION A-A': EXCAVATION

Horizontal Scale in Feet: 1"=5'
Vertical Scale in Feet: 1"=5'



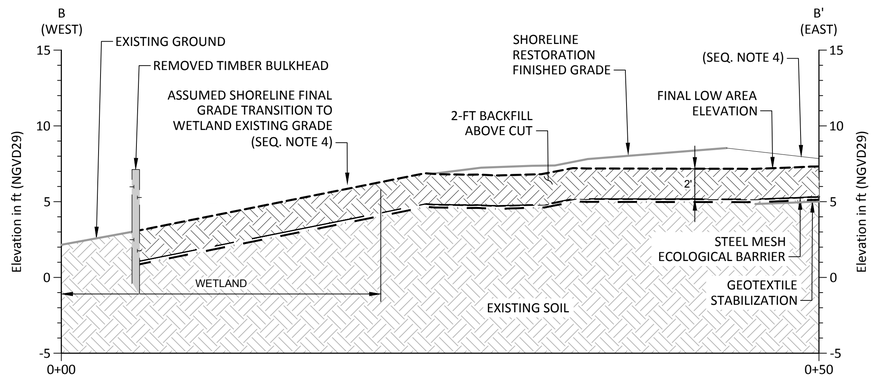
SECTION A-A': BACKFILL

Horizontal Scale in Feet: 1"=5'
Vertical Scale in Feet: 1"=5'



SECTION B-B': EXCAVATION

Horizontal Scale in Feet: 1"=5'
Vertical Scale in Feet: 1"=5'



SECTION B-B': BACKFILL

Horizontal Scale in Feet: 1"=5'
Vertical Scale in Feet: 1"=5'

SEQUENCING NOTES:

1. EXCAVATE LOW AREA TO DEPTH AS NOTED ON SHEET 24.
2. INSTALL GEOTEXTILE/STEEL MESH STABILIZATION/ECOLOGICAL BARRIER AT BASE OF EXCAVATION.
3. ADD FILL TO 2-FT DEPTH ON TOP OF INSTALLED BARRIER, AND GRADE TO MATCH FINAL ELEVATIONS SHOWN ON FIGURE 24.
4. SHORELINE RESTORATION WORK WILL INCLUDE REMOVAL OF THE BULKHEAD AND REGRADING SHORELINE. SHORELINE RESTORATION GRADE SHOWN CONCEPTUALLY FOR REFERENCE. WORK AT THE TRANSITION BETWEEN THE LOW AREA EXCAVATION AND THE SHORELINE RESTORATION MUST BE CONDUCTED UNDER DIRECTION OF PORT REPRESENTATIVES.
5. EXISTING RETAINING WALL HEIGHT IS UNKNOWN AND MAY VARY FROM WHAT IS SHOWN ON THE DRAWINGS. ACTUAL DEPTH OF WALL TO BE VERIFIED IN THE FIELD BY CONTRACTOR.

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, Washington 98020
(425) 778-0907

NO.	DATE	BY	REVISION
1	9/02/20	DHF	ISSUED AS ADDENDUM FOR BID AND CONSTRUCTION
0	7/30/20	DHF	ISSUED FOR BID AND CONSTRUCTION

JEREMY MICHAEL DAVIS STATE OF WASHINGTON 43775 REGISTERED PROFESSIONAL ENGINEER

PROJECT ENGINEER: J DAVIS	SCALE:
DESIGNED BY: J DAVIS	DATE: AUGUST 2020
DRAWN BY: J VALLUZZI	CHECKED BY: D FRAZER
APPROVED BY:	

PORT OF EVERETT

BAY WOOD INTERIM ACTION - SHORELINE RESTORATION & CLEANUP

LOW AREA CLEANUP SECTIONS

DWG. NO. 25
CIP NO. 3-0-012-022
PROJECT NO. PD-BW-2020-05
SHEET NO. 25 OF 25

APPENDIX D

Interim Action Cost Estimate

Engineer's Opinion of Probable Cost (8/12/20)				Cost Estimate	
Item No.	Approx. Qty	Unit	Description of Item	Unit Price Dlrs. Cents	Total Price Dlrs. Cents
A-1	1	LS	Mobilization & Demobilization	$ 20,000.00	$ 20,000.00
A-2	1	LS	Survey / Staking	$ 20,000.00	$ 20,000.00
A-3	1	LS	Temporary Facilities & Controls	$ 20,000.00	$ 20,000.00
A-4	1	LS	Erosion & Sediment Control	$ 25,000.00	$ 25,000.00
A-5	5.23	AC	Clear & Grub, Haul & Disposal	$ 4,000.00	$ 20,920.00
A-6	1,580	TONS	Demolition, Haul & Disposal	$ 71.40	$ 112,776.30
A-7	9,203	CY	Excavation Including Haul & Stockpile (Reusable Fill)	$ 7.00	$ 64,419.53
A-8	292	TONS	Excavation Including Haul & Disposal (Recycling) - Per Approval of PORT	$ 71.40	$ 20,815.83
A-9	2,600	TONS	Excavation Including Haul & Disposal for Wood Waste (Subtitle D Landfill)	$ 81.40	$ 211,640.00
A-10	650	TONS	Opportunistic Debris Excavation Including Haul & Disposal (Recycling)	$ 71.40	$ 46,374.30
A-11	350	TONS	Opportunistic Debris Excavation Including Haul & Disposal for Special Handling Waste (Subtitle D Landfill)	$ 81.40	$ 28,490.00
A-12	2,565	TONS	Sand/Gravel Import, Placement & Compaction	$ 54.40	$ 139,536.00
A-13	4,995	TONS	Topsoil Import, Placement & Compaction	$ 46.75	$ 233,516.25
A-14	50	EA	Large Woody Debris, Anchors, Fasteners, Installations	$ 2,000.00	$ 100,000.00
A-15	1.44	AC	Seeding (Hydroseed) - Erosion Control for Stockpiles	$ 3,000.00	$ 4,313.21
A-16	2.69	AC	Seeding (Hydroseed) - Riparian/Shoreline Areas	$ 6,000.00	$ 16,140.00
A-17	2.69	AC	Shoreline/Riparian Plantings	$ 14,680.30	$ 39,490.00
A-18	1	LS	Plant Guarantee	$ 123,109.46	$ 123,109.46
A-19	1	LS	Split Rail Fence & Signs	$ 47,515.00	$ 47,515.00
A-20	1	FA	Minor Changes	$ 10,000.00	$ 10,000.00
Subtotal				**$**	**1,304,055.88**
WA State Sales Tax (9.8%)				$	127,797.48
Total Amount of Schedule A – Base Bid				**$**	**1,431,853.35**

Table D-2
Low Area Engineer's Preliminary Cost Estimate (9/14/20)
Bay Wood Products Cleanup Site
Everett, Washington

				Cost Estimate	
Item No.	**Approx. Qty.**	**Unit**	**Description of Item**	**Unit Price**	**Total Price**
B-1	0.26	AC	Clear and Grub	$ 4,000.00	$ 1,040.00
B-2	990	TONS	Excavation Including Haul & Disposal for Special Handling Waste	$ 81.40	$ 80,586.00
B-3	12,400	SF	Cover System – Geotextile and Ecological Barrier	$ 1.60	$ 19,840.00
B-4	1,130	CY	Cover System – Soil Placement and Compaction	$ 10.00	$ 11,300.00
B-5	1	LS	Straw Stormwater Runoff Protection	$ 1,300.00	$ 1,300.00
Subtotal				$	114,066.00
WA State Sales Tax (9.8%)				$	11,178.47
Total Amount of Schedule B - Base Bid				**$**	**125,244.47**

Note:

Mobilization, temporary facilities, temporary erosion and sediment control (TESC), demolition, and minor field change costs included in Shoreline Restoration cost estimate.

Abbreviations and Acronyms:

% = percent
AC = acre
Approx = approximate
CY = cubic yard
LS = lump sum
Qty = quantity
SF = square foot

APPENDIX E

Restoration Design Criteria (Shannon & Wilson 2019)

SHANNON & WILSON

MEMORANDUM

TO: Port of Everett (Laura Gurley; Erik Gerking, LG; and Elise Gronewald, PE)

FROM: Shannon & Wilson (Katie Walter, PWS; Shelby Petro, PWS; and Dave Cline, PE)

DATE: June 20, 2019

PROJECT: Bay Wood Redevelopment and Shoreline Interim Cleanup and Restoration, Everett, Washington

PROJ. #: 102336-006

SUBJECT: Restoration Design Criteria

TABLE OF CONTENTS

1 INTRODUCTION

This memorandum is being provided on behalf of the Port of Everett (Port) to the City of Everett Planning Department (City) and the Washington State Department of Ecology (Ecology) Toxics Cleanup Program to provide design criteria for the proposed shoreline cleanup and restoration at the Bay Wood Property (Property). The proposed restoration is being planned as part of the Puget Sound Initiative environmental cleanup and in conjunction with and to support site redevelopment. The primary goals of the design criteria are to establish the basic parameters of the restoration that is intended to significantly improve ecological function of the shoreline as part of an interim remedial action with Ecology, and to fulfill the requirements of a critical area buffer reduction request to the City to support the future upland development of the Property. The Port of Everett is working with Ecology under a Model Toxics Control Act (MTCA) Agreed Order (No. 5490) to clean up and restore this Property as part of the State of Washington's Puget Sound Initiative.

In response to this technical memorandum, the Port is seeking written correspondence from the City and Ecology to confirm that the City, Ecology, and the Port agree that the design criteria described in this technical memorandum will govern the final design and performance of the restoration. This is with the express understanding that doing so will suffice in allowing for early City approval of a critical area buffer reduction to 50 feet in support of State Environmental Policy Act and Shoreline Management Act permit reviews. This will also suffice in allowing for Ecology's acceptance relative to meeting expectations of the Port's cleanup and restoration goals under the Agreed Order. All restoration work presented herein is anticipated to be a MTCA Interim Cleanup Action.

1.1 Project Location

The Property is located at 200 West Marine View Drive, Everett, Washington (Section 07, Township 29N, Range 05E) (Figure 1). The project area for this Restoration Design Criteria technical memorandum includes the shoreline of parcel no. 29050700100300 and the 50 feet extending upland from the top of bank of the shoreline (Figure 2). Adjacent land uses include tidal mudflats and vacant land owned by Kimberly-Clark Worldwide, Inc. to the north; West Marine View Drive, BNSF Railway railroad tracks, and Maulsby Swamp to the east; Jeld-Wen property to the south; and the Snohomish River to the west (Figure 2).

1.2 Project Description

The Port proposes to implement approximately 1,300 linear feet of shoreline restoration and 2,200 linear feet of buffer enhancement measures along the shoreline at the Property for the purposes described above. The Property shoreline is currently challenged by a low-functioning, publicly inaccessible shoreline that is overgrown with invasive plant species, has scattered industrial debris, has over-steepened shoreline embankment made of quarry spalls and wood debris, dilapidated creosote-treated bulkheads, and other unnatural features.

In general, the restoration work will involve removing invasive plant species, industrial debris, creosote-treated wood structures, and wood waste and sculpting significant portions of the shoreline by excavation and backfilling with habitat-friendly and geotechnically suitable material. It will also involve planting a variety of native plant species, installing large woody debris (LWD), and constructing a trail for public access purposes. Monitoring and maintaining the restoration until it has become established will also be included.

Note, the Property has some limitations that affect the extent of restoration that is possible. To the north, the U.S. Army Corps of Engineers (Corps) holds a 100-foot-wide easement on

the training wall structure that places practical limitations on the extent of work that can be done along the entire length of the northern shoreline area. To the south, the Jeld-Wen MTCA cleanup site boundary extends onto the Property shoreline and will place limits on the extent of the cleanup and restoration work. These limitations are described more thoroughly in the following sections.

This restoration work is expected to be done in conjunction with development of the upland portion of the Property and under appropriate administrative processes with Ecology, as required. The Port anticipates this restoration work being done under all applicable local, state, and federal permits and as a MTCA interim cleanup action.

1.3 Previous Land Use

The Property was the site of a sawmill and log processing yard from the 1940s through the 1990s. In the late 1990s, the site was significantly altered to rehabilitate it by the removal of bark, rock, and wood chips; the construction of a dike; and backfilling the upland areas with sand. All structures on the Property were removed. The Property has remained vacant since 1995 (GeoEngineers, 2018). Additional upland cleanup occurred between 2012 and 2013.

1.4 Model Toxics Control Act (MTCA) Cleanup Project Limits

The shoreline restoration area is located within the Bay Wood MTCA cleanup site boundaries (Figure 3). Within the narrow inlet that separates the Property from the Jeld-Wen-owned property to the south, Ecology has identified sediment contamination. In a letter from Ecology dated June 22, 2016, to Jeld-Wen, Ecology confirmed the sediment contamination located within the inlet is attributed to releases from the Jeld-Wen cleanup site (Kallus, 2016). The boundary of the Jeld-Wen contamination extends into the Port-owned Bay Wood property, including the shoreline restoration area being described as part of this document. The contaminated sediments on Port-owned property will be addressed as part of the future Jeld-Wen cleanup. While the intent of the shoreline restoration is to restore the Port-owned property that is only within the Bay Wood cleanup site, not within the Jeld-Wen cleanup site, the Port and Ecology are currently evaluating the possible removal of physical anthropogenic debris, specifically quarry spalls and wood, that is located on the Bay Wood shoreline but is within the Jeld-Wen cleanup site. The extent of and methods for removal of this debris as part of the Bay Wood restoration is under consideration and will be determined in close coordination with Ecology during the engineering design process. The added complexities of removal and handling of the debris

contaminated by Jeld-Wen-contaminated sediment and the associated administrative and legal processes and project cost implications, in addition to other factors, will be considered as part of this decision-making process.

1.5 Existing Conditions

Existing conditions at the project site were characterized based on site visits in January 2019 to delineate and characterize aquatic and upland habitats (Shannon & Wilson, 2019) and during a site walk with the Port (L. Gurley, E. Gerking, and E. Gronewald), the City (K. Stewart and S. Ingalsbe), Ecology (C. Abercrombie and S. Meng), and Shannon & Wilson (S. Petro, A. Summe, and D. Cline) on March 22, 2019.

The Property is located along the lower Snohomish River channel in a reach characterized by hardened banks, bulkheads, docks, pilings, industrialized areas, intensive water uses, and highly modified or artificially created habitats (City, 2016). The Property is vacant and vegetated with invasive species around the edges with sparsely vegetated areas and unvegetated, disturbed, sandy soils in the central portion of the upland area.

The project area consists of a degraded shoreline and disturbed upland buffer. Multiple defunct marine industrial structures, including mooring piles, piers, and bulkheads, are found along the entire site shoreline. Debris found along all aspects of the shoreline includes riprap, asphalt, concrete, steel pipe log skids, creosote timber piles, wire cables, trash, tires, wood debris and waste ranging from dimensional lumber to sawdust, and other miscellaneous anthropogenic materials. Mud and sand flats extend waterward of the project area into the Snohomish River estuary.

The northern shoreline is a riprap and pile "training wall" maintained by the Corps in a 100-foot-wide easement (Figure 3). The mudflats north of this shoreline are part of a future and final MTCA cleanup for the site (GeoEngineers, 2018). The western shoreline consists of slopes that are eroded by tides and wave action, exposing fill material and debris left over from prior land uses at the site. The southern shoreline follows an inlet channel and is relatively protected from wind and wave erosion. This shoreline includes areas of gentle slopes with vegetated wetlands in the upper tidal reaches in addition to areas with steep, unvegetated slopes. LWD is present on portions of the shoreline along the upper banks. Along this inlet channel are freshwater seeps that are exposed during low tide. At the terminus of the channel, a drainage channel and wetland lie behind failing bulkhead. The mud substrate of the inlet channel is contaminated and is part of a future MTCA cleanup on and adjacent to the Jeld-Wen property (GeoEngineers, 2018).

Three wetlands, Wetlands A, B, and D, were delineated within the project area on low-aspect slopes of the upper reaches of the shoreline (Figure 3; Shannon & Wilson, 2019). Wetlands A and B are within the proposed shoreline restoration area, and Wetland D is mostly offsite on the adjacent Kimberly-Clark property. Another area was previously identified as Wetland C; however, after further investigation and data gathering, its history indicates that the area is a stormwater drainage channel and a known location of illicit stormwater discharge from the neighboring property (SLR, 2018). Therefore, this area was not identified as a regulated wetland. In addition, it is outside of the restoration project area and therefore not discussed further in this memorandum (Shannon & Wilson, 2019). Exhibit 1-1 describes the wetland classifications, categorization, and regulatory buffer widths. Within the project area, the Snohomish River is designated as a Shoreline of the State and a Category I river (Everett Municipal Code [EMC] 19.33D.480). The river is afforded a 100-foot buffer from the top of the upper bank (EMC 19.33D.490). Regulatory buffers are further described in Section 2.

Exhibit 1-1: Wetlands Delineated in the Project Area

Wetland Name	Size (square feet)	USFWS Classification[a]	HGM Classification[b]	Ecology Category[c]	City of Everett Category[d]	Buffer Width (feet)[e]
A	4,390	E2EM1	Estuarine	II	III	50
B	501	E2EM1	Estuarine	II	III	50
D[f]	--	E2EM1	Estuarine	II	I	100

NOTES:

a. U.S. Fish and Wildlife Service (USFWS) classification is based on Cowardin (Federal Geographic Data Committee, 2013): estuarine intertidal emergent persistent wetland (E2EM1), palustrine emergent saturated wetland (PEMB), and palustrine emergent (PEM).

b. Hydrogeomorphic (HGM) classification is based on Brinson (1993).

c. Wetland categories are based on the Washington State Wetland Rating System for Western Washington, 2014 Update (Hruby, 2014).

d. Wetlands A, B, and D categories are in accordance with EMC 19.33D.440, because they are located within the shoreline management zone.

e. Wetland A, B, and D buffer widths are determined in accordance with EMC 19.33D.450, because they are located within the shoreline management zone.

f. Wetland D extends offsite; therefore, the total wetland size was not calculated and the classifications, categorization, and associated regulatory buffer widths are only estimates based on visual observations and a review of available information.

Wetland A is composed of five small wetland units (A-1 through A-5) along the inlet channel on the southern shoreline. Wetland A provides minimal functions at the site due to its size, position in the landscape, and site-specific characteristics. Situated just below the ordinary high water mark (OHWM) of the Snohomish River, the wetland is sparsely vegetated in mud substrate. It provides some habitat for aquatic invertebrates and foraging shorebirds but does not provide shade, litter, and woody debris recruitment or refugia for

fish or wildlife species. Furthermore, Shannon & Wilson field staff observed anthropogenic debris such as asphalt, fill material, concrete, rubber, and metal debris in portions of the wetland. The wetland provides some protection from tidal and wave erosion due to its vegetated structure; however, because the vegetation is emergent and not woody in structure, the wetland does not provide a high level of erosion control functions and could be lost during an erosive storm event (Shannon & Wilson, 2019). We note that the wetland in part is protected by the Corps training structure that causes sediment deposition in the channel. Unit A-5 within Wetland A has greater native vegetation cover, structure, and diversity and is located in a pocket of the shoreline, which provides refuge from wind and waves (Figure 3). This wetland unit provides greater habitat and erosion control functions than the other wetland units on site.

Wetland B provides minimal functions. Situated behind a decaying wooden bulkhead at the terminus of the inlet channel, Wetland B is inundated during high tides and captures sediments in depressions as the tide recedes. The wetland is sparsely vegetated with emergent vegetation and provides some habitat for foraging shorebirds but does not provide shade, litter, and woody debris recruitment or refugia for fish or wildlife species. Furthermore, it is heavily disturbed and anthropogenic debris such as concrete, wood, metal posts, and rubber and metal debris was observed in portions of the wetland. Because the wetland is confined behind the wooden bulkhead, it provides little erosion control from tides and wave action and portions of the wetland were observed to be eroding into the inlet channel between failing sections of the bulkhead (Shannon & Wilson, 2019).

Wetland D is an estuarine wetland located north of the project area and Corps training wall on a low-aspect slope. The wetland is densely vegetated along the lower and intermediate slope with emergent vegetation that provides erosion control, water filtration, and sediment stabilization and deposition functions in addition to habitat for invertebrates, foraging shorebirds, and upland wildlife species. The wetland areas at the top of the slope are vegetated with shrubs that provide shade, litter, woody debris recruitment, refugia, and food production for local wildlife species (Shannon & Wilson, 2019). This wetland will serve as a reference site for designing a shoreline restoration vegetation structure and a native species planting palate.

The upland shoreline is disturbed from previous land uses and excavation and fill activities. The area is currently vegetated with predominantly invasive species, including scotch broom (*Cytisus scoparius*) and Himalayan blackberry (*Rubus armeniacus*). A few native trees are present along the shoreline, including red alder (*Alnus rubra*) and Pacific crabapple (*Malus fusca*). The remainder of the upland portion of the Property consists of sparsely

vegetated areas and unvegetated, disturbed, sandy soils. The uplands provide marginal habitat for wildlife species, including small mammals, passerines, and waterfowl, in addition to foraging habitat for birds of prey such as hawks (Shannon & Wilson, 2019).

The potential for providing habitat is limited by landscape restrictions including being cut off from Maulsby Swamp by West Marine View Drive and BNSF railroad tracks and environmental stressors, including surrounding industrial land uses and boat traffic in the river. In addition, the surrounding intertidal mudflats are part of proposed cleanup actions (GeoEngineers, 2018).

2 BUFFER REDUCTION

The Port is requesting a critical area (i.e., wetland and stream) buffer reduction from the City, to be vested under the existing Shoreline code (EMC 19.33D) to support redevelopment of the upland portion of the Property. Under this code, the largest critical area buffer within the restoration area on site is 100 feet, extending upland from the top of the shoreline bank. The Port is requesting a buffer reduction of 50 feet (or 50% of the standard 100-foot buffer) to a 50-foot critical area buffer for Wetland D and the Snohomish River. Wetlands A and B are by code already afforded a 50-foot buffer and therefore not included in this buffer reduction request. The following sections describe the relevant City code, Planning Director Interpretations (PDIs), and the development objectives that drive this buffer reduction request.

2.1 Development Objectives

The Port is currently reviewing possible commercial and industrial uses for site redevelopment by others. The Port is requesting the critical area buffer reduction on behalf of the developer to maximize developable land on the Property.

Within the City's Shoreline Master Program (City, 2016), the Shoreline Public Access Plan (SPAP) describes the City's goal to provide public access to the shoreline along the Snohomish River. At the Property, the SPAP proposes a spur trail along the north shore within the Corps training wall easement. At a minimum, the proposed project trail will meet the SPAP concept with a trail that will connect to a trail along West Marine View Drive and include a lookout at the end of the spur with views to the north and west of Mount Baker and the Snohomish River.

2.2 Code Review

Wetlands and streams are regulated by the City through the critical areas ordinance and Shoreline Master Program (City, 2016). The shoreline management zone includes areas within 200 feet of the OHWM of waters of the state, including the section of the Snohomish River within the project area and wetlands contiguous with the shoreline. In the City's Shoreline Master Program, the project area below the top of bank is designated as an aquatic conservancy zone, and the area landward of the top of bank is designated as urban industrial zone (City, 2016). Critical areas (e.g., wetlands and streams) within the 200-foot shoreline management zone are subject to the guidelines outlined in the City's shoreline overlay district zoning code (EMC 19.33D). Wetlands A, B, and D are contiguous with the shoreline and are within shoreline jurisdiction and are therefore rated under the Everett shoreline code. Critical areas outside of the 200-foot zone are subject to the critical areas chapter of the zoning code (EMC 19.37). There are no critical areas on this site that are outside of the 200-foot zone.

The following sections of EMC and PDIs are relevant to the project site, proposed shoreline cleanup and restoration, and buffer reduction request:

EMC 19.33D.440 – Wetland delineation and rating
Wetlands A and B are rated as Category III, because they are not associated with a documented habitat of primary association, are not high-quality native wetlands, are less than 1 acre in size, and although they are estuarine wetlands, their functions are minimal and can be replaced through shoreline restoration efforts focused on functional uplift. Wetland D is rated as Category I, because it is a relatively high-quality estuarine wetland with functions that would be harder to replace. Wetland D is located within a future MTCA cleanup area that is under an Agreed Order.

EMC 19.33D.450 – Standard wetland buffer width requirements
Category I wetlands are afforded a 100-foot buffer, and Category III wetlands are afforded a 50-foot buffer (Figure 3).

EMC 19.33D.480 – Stream rating
The Snohomish River is used by salmonids and is listed in the City's Shoreline Master Program (City, 2016) and is therefore a Category I river.

19.33D.490 – Standard Stream Buffer Requirements
The critical area buffer is measured from the top of bank (Figure 3). The Snohomish River is afforded a 100-foot buffer at the project site. Per code, the buffer may be less than 100 feet

with the incorporation of public access. For a standard stream buffer width reduction, the City's Planning Director may reduce the standard buffer when there has been "substantial legal alteration" of the buffer. As described in Section 1, the project area was previously significantly disturbed, and vegetation was eliminated. The planning director may allow a buffer reduction (rather than buffer averaging) when the proposal includes a buffer enhancement plan that improves the functional values of the buffer and stream. Section 4 describes design criteria for buffer enhancement at the project site. Buffers are not allowed to be reduced more than 50% of the standard buffer; therefore, the Port requests a buffer reduction from 100 feet to 50 feet. This is further described in PDI 01-005.

Planning Director's Interpretation (PDI) 01-005

PDI 01-005 provides clarification on the interpretation of code and outlines the parameters under which the City allows for buffer reductions. The prior alterations at the project site meet the legal alteration criteria for "The activity predates the City's Environmental Sensitive Areas Ordinance (EMC 1/31/91) (and has not been substantially revegetated with native vegetation)." In addition, the buffers at the project site are substantially altered from past uses, grading, and placement of fill material such that the buffer is vegetated with primarily invasive species (Himalayan blackberry and scotch broom) covering more than 75% of the buffer area. Clearing of the buffer was part of an authorized action and revegetation with native species has not occurred.

The enhancement plan that accompanies the buffer reduction request must increase the functions and values of the wetland and/or stream and include a monitoring, maintenance, and assurance device. Section 4 outlines the proposed design criteria for buffer restoration and enhancement.

3 GOALS AND OBJECTIVES

To meet the requirements of cleanup and to satisfy the buffer reduction request, the Port proposes to clean up and restore the shoreline at the project site and enhance the buffer to improve the ecological functions at the site and provide public access. The actions described in the design criteria in Section 4 support the following goals and objectives. Goals and objectives are based on the City's Shoreline Master Program (City, 2016), the recovery actions for the Snohomish Estuary found in the Snohomish River Basin Salmon Conservation Plan (Snohomish Basin Salmon Recovery Forum, 2005), and the Snohomish Estuary Wetland Integration Plan (SEWIP; City, 1997).

While not an explicit requirement, the Port is participating in the Puget Sound Partnership (PSP) action agenda through its local integrating organization (Snohomish-Stillaguamish; Local Integrating Organization [LIO]), and as part of this shoreline cleanup and restoration, the Port would like to draw the connection of the importance of this work to the LIO Ecosystem Recovery Plan (LIO, 2017). This proposed work addresses several of the priority ecosystem components identified in the recovery plan, including removal of shoreline armoring/nearshore restoration, improving chinook salmon habitat, good governance, cultural well-being, sense of place, outdoor activity, and sound stewardship.

3.1 Goal 1 – Shoreline Cleanup

Clean up the shoreline by removing anthropogenic debris to restore the shoreline to a more natural state. See preliminary plans and sections, Sheets 2 and 3 (Appendix A).

Objective 1.1: Remove bulkheads and replace with soft shore stabilization measures.

Objective 1.2: Remove debris, including dimensional lumber and wood chips, log skids, riprap rock (quarry spalls), asphalt, concrete, and trash to the extent feasible.

3.2 Goal 2 – Shoreline Restoration

Restore the degraded shoreline habitat to improve habitat for fish and wildlife species, specifically aquatic habitat to support juvenile salmonids using the Snohomish River estuary. See preliminary plans (Appendix A).

Objective 2.1: Restore shoreline grades to a gradual slope that can support native intertidal and riparian vegetation on the west- and south-facing shorelines. The north-facing shoreline will not be graded.

Objective 2.2: Install LWD to stabilize the slope and provide habitat.

Objective 2.2: Restore and expand estuarine wetlands along the shoreline to create saltmarsh habitat.

3.3 Goal 3 – Buffer Enhancement

Establish native riparian vegetation community along the shoreline that includes long-term sources of LWD to support productive shoreline habitat. See preliminary plans and sections, Sheets 2 through 4 (Appendix A).

Objective 3.1: Reestablish native riparian plant communities along the shoreline.

Objective 3.2: Reintroduce LWD through plantings and wood placement.

3.4 Goal 4 – Public Access

Create public access/use opportunities consistent with the City of Everett's Shoreline Master Plan Public Access Plan (2016).

Objective 4.1: Integrate trails and amenities for public access into shoreline restoration actions, as appropriate considering development requirements, safety considerations, availability of space, restoration goals, existing easements, etc.

4 PROPOSED RESTORATION ACTIONS

The Port proposes to enhance and restore the western and southern shorelines and enhance the upland buffer of the entire site to meet cleanup requirements and to support the buffer reduction request. The following sections describe the design criteria for each proposed action. All restoration actions proposed will be performed by land-based equipment.

4.1 Shoreline Cleanup

p-,Anthropomorphic debris within the restoration area will be removed to the extent feasible. Debris includes such things as asphalt, concrete, steel pipe log skids, wire cables, and trash. The bulkhead at the end of the inlet channel will be removed and soft shore stabilization measures implemented. To the extent feasible, and as agreed upon by the Port and Ecology during final design, debris such as dimensional lumber and wood chips, log skids, riprap rock (quarry spalls), asphalt, concrete, and trash will be removed from the western and southern shorelines.

A portion of the southern shoreline adjacent to the Jeld-Wen property will be part of the future cleanup implemented by Jeld-Wen. This area is defined by Ecology and will be delineated as part of the design process. While the intent of the shoreline restoration is to restore the Port-owned property that is only within the Bay Wood cleanup site, not within the Jeld-Wen cleanup site, the Port and Ecology are currently evaluating the possible removal of quarry spalls and dimensional lumber that are located on the Bay Wood shoreline but are within the Jeld-Wen cleanup site. The extent of and methods for removal

of this debris as part of the Bay Wood restoration is under consideration and will be determined in close coordination with Ecology during the engineering design process.

These actions will support Goal 1, Shoreline Cleanup, and Objectives 1.1 and 1.2.

4.2 Shoreline Restoration

The existing western and southern shorelines will be graded back to a more natural slope as much as possible, while also ensuring shoreline stabilization, and planted with native vegetation to create fish and wildlife habitat. This section describes the grading along the shoreline in addition to the net wetland effects anticipated in the restoration efforts.

4.2.1 Shoreline Grading

The northern shoreline within the Corps' easement area will not be graded. The western shoreline immediately adjacent to the Corps' training wall within the easement may have restrictions on what restoration actions can be undertaken. Further coordination with the Corps is underway. Restoration in the easement area will be limited to buffer enhancement, described below. The remaining portion of the western shoreline and the entire southern shoreline will be graded to lay the shore back to an approximate 7:1 slope, with some areas steeper and some flatter. LWD will be installed at the high-tide elevation to provide erosion control, slope stability, and habitat. The slopes will be planted with native vegetation to support intertidal and riparian habitat, described below (Appendix A, Preliminary Plans).

The shoreline restoration design will follow, as feasible and applicable, Washington State Aquatic Habitat Guidelines Program's Marine Shoreline Design Guidelines (Johannessen and others, 2014), the City's Shoreline Master Program (City, 2016), and the SEWIP (City, 1997). Criteria used for the shoreline restoration design may include (but not be limited to):

- Confirmation of the shoreline restoration boundary assumed 50 feet from top of existing bank
- Tidal, storm surge flood, wind, and boat wave conditions
- Stable shore slopes and grades
- Contaminated soils and sediment avoidance boundaries
- Avoidance and minimization of shoreline restoration actions having potential wetland impacts
- Slope excavation backfill material types and specifications

- Debris removal criteria (e.g., types, methods, depths, and best management practices [BMPs] to remove old log skids, concrete, asphalt, wood piles, piers, and bulkheads)
- Placing natural erosion control/stabilization structures (e.g., LWD, buried revetment)
- Vegetation establishment (saltmarsh, backshore, and riparian/upland) at appropriate elevations (this is interconnected with wetland and buffer section, below)
- Erosion protection landward of the southeast bulkhead removal and existing channel

4.2.2 These actions will support Goal 2, Shoreline Restoration, and Objectives 2.1 and 2.2. Net Wetland Effects

The shoreline restoration may temporarily impact existing estuarine wetlands but will , restore existing wetlands after grading the shoreline to a natural slope, and expand wetlands along the shoreline to create intertidal saltmarsh habitat Wetlands A-1 through A-4 will be preserved where feasible but may be temporarily impacted in order to tie the new slope grade into existing topography at wetland locations. Wetland B will be removed during bulkhead removal and slope grading and replaced during slope restoration through native planting. Replaced and enhanced areas of Wetlands A and B will be expanded along the shoreline with native wetland plantings in areas not currently functioning as estuarine wetlands, thus creating a larger area of intertidal saltmarsh habitat (Appendix A, Preliminary Plans).

Impacts to wetlands will be avoided and minimized in accordance with EMC 19.33D.460. For example, where debris is located with wetlands on appropriate slopes, hand removal will be recommended instead of using machines. Where wetlands will be impacted to adjust the shoreline slope, soils will be stockpiled and replaced on the restored shoreline to maintain the native seed bank. In areas with contaminated soils or invasive species, the soil will not be reused.

Impacts to emergent wetlands will be mitigated at a ratio of 1.25:1 (restored areas to impact area) per EMC 19.33D.460. Native wetland vegetation appropriate for tidal elevations will be installed to expand and connect wetlands along the shoreline, creating larger areas of intertidal saltmarsh habitat to support fish and wildlife species. At places along the southern shoreline, the restoration will mirror the existing pocket wetland landscape position and vegetation structure of Wetland A-5. Wetland D will serve as a reference site for the planting pallet of native species to be installed within the shoreline restoration area.

Through implementation of avoidance and minimization measures and mitigation for wetland impacts, the shoreline restoration will be designed such there is no net loss of

wetlands or wetland functions, with an overall functional lift to wetland habitat. The wetland areas will be maintained and monitored in accordance with EMC 19.33D.460 and any other permit conditions from local, state, and federal authorities authorizing the restoration activities.

These actions will support Goal 2, Shoreline Restoration, and Objective 2.3.

4.3 Buffer Enhancement

A 50-foot critical area buffer will be measured from the top of bank of the current shoreline along the entire Bay Wood site from the Jeld-Wen property in the south, along the inlet channel to the west and the Corps training wall to the north, and to the Kimberly-Clark property to the east to establish the shoreline restoration boundary. A portion of this buffer will be excavated as part of the shoreline restoration (described above) and planted with wetland or riparian vegetation. The remaining buffer area uplands will be enhanced by removing the existing invasive species (e.g., Himalayan blackberry and scotch broom), and native species will be installed to create a shrub and forest riparian community. The riparian zone within the restoration area is anticipated to be between 15 to 20 feet in width. Existing native trees will be retained on site to the greatest extent feasible. If the trees must be removed for shoreline restoration, then the trees shall be removed and placed on site as LWD to create habitat features for wildlife species to the extent feasible. Additional LWD will be placed at the upper tidal limits on the edge of the riparian zone to provide shoreline stability and habitat.

Within the Corps' easement on the northern shore, there may be a limited restricted planting zone. The Corps has indicated that appropriate native plants, excluding trees, may be planted for enhancing the buffer within the easement. will be planted with riparian vegetation, including trees, shrubs, and groundcover.

Once established, the riparian vegetation along the entire shoreline will provide shade, litter, and woody debris recruitment and a continuous native riparian corridor along the water for wildlife foraging, refuge, and nesting. While this riparian buffer is narrow, it is a significant ecological functional lift from the current disturbed, degraded, non-native buffer condition. The proposed upland development will manage stormwater on site and will not discharge stormwater to the shoreline buffer.

In accordance with EMC 19.33D.450.C and 19.33D.500.F, the City may require fencing or other structural protection at the edge of the buffer to minimize encroachment into and disturbance of the wetland and/or stream and buffer area. The City may also require

information signs in conspicuous locations on the fence or edge of the buffer to identify the area as an environmentally sensitive area and the importance of maintaining it in a clean and undisturbed condition.

In accordance with EMC 19.33D, maintenance and monitoring shall be required for all projects where wetland mitigation and buffer enhancement is required. Monitoring requirements will be based upon the performance standards defined by the project. Monitoring of the shoreline restoration and buffer enhancement will occur over a 10-year period to protect and support the restored ecological integrity of the site. Monitoring reports will be submitted at the end of years 1, 3, 5, 7, and 10 following installation, or for a duration and frequency as required by state and federal permits issued for the project. Maintenance will occur annually and as specified in annual monitoring reports to address site conditions (i.e., removal of invasive species). Long-term stewardship will be considered to address environmental stressors and urban site impacts.

These actions will support Goal 3, Buffer Enhancement, and Objectives 3.1 and 3.2.

4.4 Public Access

At a minimum, a spur trail will be constructed along the north shore within the Corps' easement to create public access and use opportunities, as proposed in the Shoreline Master Plan Public Access Plan (City, 2016). The trail will be located away from the water edge of the buffer to protect the aquatic habitat from human intrusion and potential degradation. Native vegetation will be installed in the buffer along the trail so as to minimize future trail maintenance (e.g., species will be selected that will not quickly grow into the trail and require trimming). The trail specifications will meet City and Corps (where located within the easement) requirements. A viewpoint will be included at the end of the spur trail. At this viewpoint, native vegetation will be installed within the enhanced buffer to facilitate views of the river (i.e., low-growing vegetation that will not block views).

These actions will support Goal 4, Public Access, and Objective 4.1.

4.5 Contamination Contingency Plan

A Contamination Contingency Plan will be developed prior to implementing the restoration project. This plan will describe what will be done if previously unknown contamination is encountered (e.g., petroleum staining, chemical odors, discolored soil, sheen, etc.). The plan will define the boundaries of known contamination to be avoided, in addition to the known debris planned for removal as part of the restoration so that expectations and boundaries

are clearly established. The plan will provide an assurance that although the restoration schedule may be altered in order to address any unknown contamination issue, the restoration will be completed. The plan will be developed with Ecology and will complement the Interim Action Work Plan and the elements contained within that plan.

4.6 Materials Management Plan

The design will include a materials handling, management, and disposal plan. The plan will include characterization of the types of materials, estimated quantities, site handling, disposal, and reuse recommendations. The project team assumes that shoreline excavations may encounter wood waste and other wood debris, concrete, steel cable, riprap, coarse aggregate fill surface material, topsoil, and vegetation. The materials handling plan will identify which materials may be salvaged and reused on the upland development area (e.g., coarse backfill aggregate) or within the shoreline restoration (e.g., riprap buried as backshore protection or trees placed as LWD).

5 CONCEPTUAL RESTORATION OPTIONS

This section includes descriptions of the conceptual design for various portions of the shoreline restoration project. Typical sections that may be included in the shoreline restoration plan are included in Appendix A, Preliminary Plans. Existing conditions are shown on Sheet 1; an overview of shoreline restoration activities and removal of debris is shown on Sheet 2 (debris locations will be revised following additional survey at the site). Typical sections are shown on Sheet 3 and profiles at various cross sections are shown on Sheets 4 through 8. The 50-foot buffer depicted on the plan sets will be revised after additional survey is processed to more clearly delineate the top of bank. Design criteria outlined in Section 4 would be applied as the conceptual design progresses into final.

5.1 Typical Sections AA through EE – Southern Shoreline

The southern shoreline typical design includes removal and grading of the upper portions of the bank to a stable slope configuration based on other natural and stable shorelines in the area. The shoreline grading will include overexcavation and backfill with clean sands and gravel and native wetland and riparian plantings above the mean tide level. Placement of LWD will occur at either the high or extreme tide debris line elevation or both. The southern shoreline has less exposure to wind fetch, wind, and boat waves; therefore, buried riprap for shoreline stabilization is not included in this area. Opportunities exist along this shoreline to incorporate existing wetland benches into the design (e.g., Wetland A-5). The

wetland benches will be expanded where the shoreline restoration boundary allows, as described in Section 4. Quarry spalls, pilings, concrete, riprap, marine industrial debris, and other anthropogenic debris will be removed from the shoreline areas where accessible by land-based equipment. Excavations will occur primarily outside of the contaminated sediment zones as defined by the approximate restoration boundary between Bay Wood and Jeld-Wen properties, and potentially below that boundary as agreed upon by the Port and Ecology during the design phase. The means, methods, and BMPs will be expanded during the next design phase of the project.

In the southernmost area of the project, Wetland B and a drainage channel lie behind an existing, failing bulkhead. The bulkhead will be removed with grading and erosion protection measures (to be identified during later design phase) installed in the south drainage channel. The channel does not have a typical section design at this time. The design configuration, bulkhead removal, and BMPs of this area will be developed during the next design phase of the project.

5.2 Typical Sections FF and GG – Western Shoreline

The western shoreline typical design includes removal and grading of the upper portions of the bank to a stable slope configuration based on other natural and stable shorelines in the area. The shoreline grading will include overexcavation and backfill with clean sands and gravel and native wetland and riparian plantings above the mean tide level. Placement of LWD will occur at either the high or extreme tide debris line elevations or both. The west shoreline aspect has increased exposure to wind fetch, wind waves, and boat waves. A buried riprap erosion protection trench will be included as a contingency feature to limit and stop shoreline erosion in the higher-energy area, if it were to occur. Quarry spalls, pilings, concrete, riprap, marine industrial debris (e.g., metal log skids), and other anthropogenic debris will be removed from the shoreline areas. Excavations will occur primarily outside of the contaminated sediment zones as defined by the approximate restoration boundary between Bay Wood and Jeld-Wen properties, and potentially below that boundary as agreed upon by the Port and Ecology during the design phase.

6 ASSUMPTIONS AND LIMITATIONS

This technical memorandum is meant to describe the general proposed approach and criteria to be considered and incorporated in the shoreline restoration at the Property. The design may change and evolve based on regulatory agency and tribal input, additional

survey results, soil profile examination and laboratory testing, geotechnical investigations, contaminated soils remediation designs, hydrodynamic modeling, or other constraints yet to be determined.

7 REFERENCES

Brinson, Mark M., 1993, A hydrogeomorphic classification for wetlands: U.S. Army Corps of Engineers Waterways Experiment Station Wetlands Research Program Technical Report WRP-DE-4, NTIS Report no. AD-A270053, 101 p.

City of Everett (City) Department of Planning and Community Development, 1997, Snohomish Estuary Wetlands Integration Plan (SEWIP). April. Available: https://everettwa.gov/DocumentCenter/View/1096/Snohomish-Estuary-Wetland-Integration-Plan-PDF?bidId=

City of Everett (City), 2016, Shoreline Master Program. Effective July 11, 2016. Available: https://everettwa.gov/DocumentCenter/View/11456/City-of-Everett-Shoreline-Master-Program---July-11-2016?bidId=

Federal Geographic Data Committee, 2013, Classification of Wetlands and Deepwater Habitats of the United States, Adapted from Cowardin, Carter, Golet and LaRoe (1979), available: https://www.fgdc.gov/standards/projects/wetlands/nwcs-2013

GeoEngineers, 2018, Draft Remedial Investigation and Feasibility Study Addendum. Prepared for Washington State Department of Ecology on behalf of Port of Everett, September 26, 2018.

Hruby, Thomas, 2014, Washington State wetland rating system for eastern Washington: 2014 update (effective January 2015): Olympia, Wash., Washington State Department of Ecology, Publication no. 14-06-030, 160 p., available: https://fortress.wa.gov/ecy/publications/summarypages/1406030.html.

Johannessen, J.; MacLennan, A.; Blue, A.; Waggoner, J.; Williams, S.; Gerstel, W.; Barnard, R.; Carman, R.; and Shipman, H., 2014, Marine Shoreline Design Guidelines. Washington Department of Fish and Wildlife. Olympia, Washington.

Kallus, Andrew S., 2016, Letter to Dwayne Arino, JELD-WEN, Inc., Re: JELD-WEN Cleanup Site (FS 2757) – Site Boundary. Department of Ecology Toxics Cleanup Program. June 22.

Shannon & Wilson, 2019, Draft Habitat Assessment for the Bay Wood Redevelopment and Shoreline Interim Cleanup and Restoration, Everett, Washington. Prepared by Shannon & Wilson for the Port of Everett. June.

SLR International Corporation (SLR), 2018, Proposed Soil Sampling – Port of Everett Property, North Truck Dock Stormwater Sump Investigation – Source Control Evaluation Work Plan, Former E.A. Nord Facility, Everett, Washington. Letter from R. Scott Miller and Chris Kramer, SLR, to Mahbub Alam, Department of Ecology, and Elise Gronewald, Port of Everett, June 26, 2018.

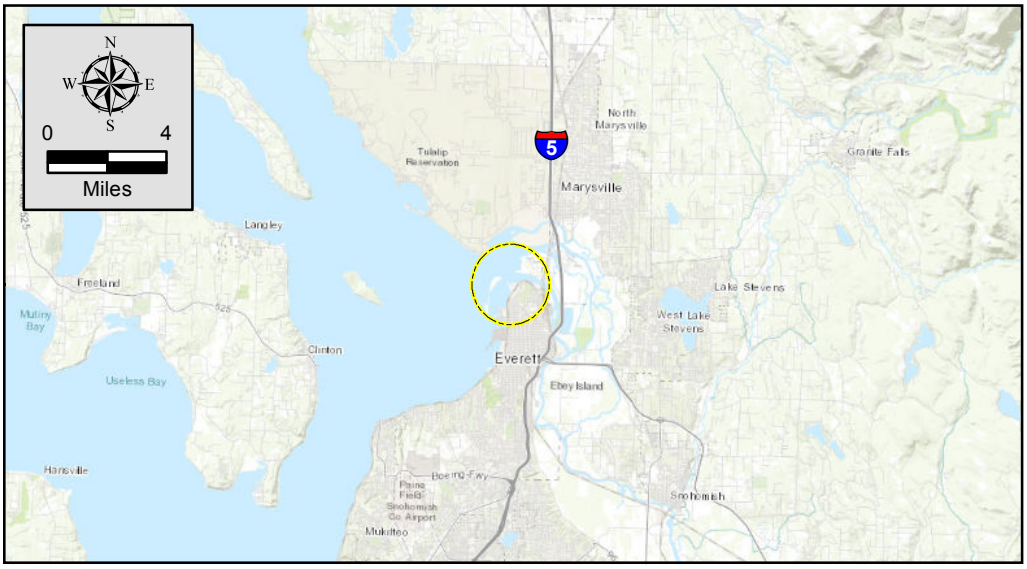
Snohomish Basin Salmon Recovery Forum, 2005, Snohomish River Basin Salmon Conservation Plan. Snohomish County Department of Public Works, Surface Water Management Division. Everett, WA. June. Available: https://www.govlink.org/watersheds/7/pdf/WRIA%207_Plan/Final_Compiled_Plan.pdf

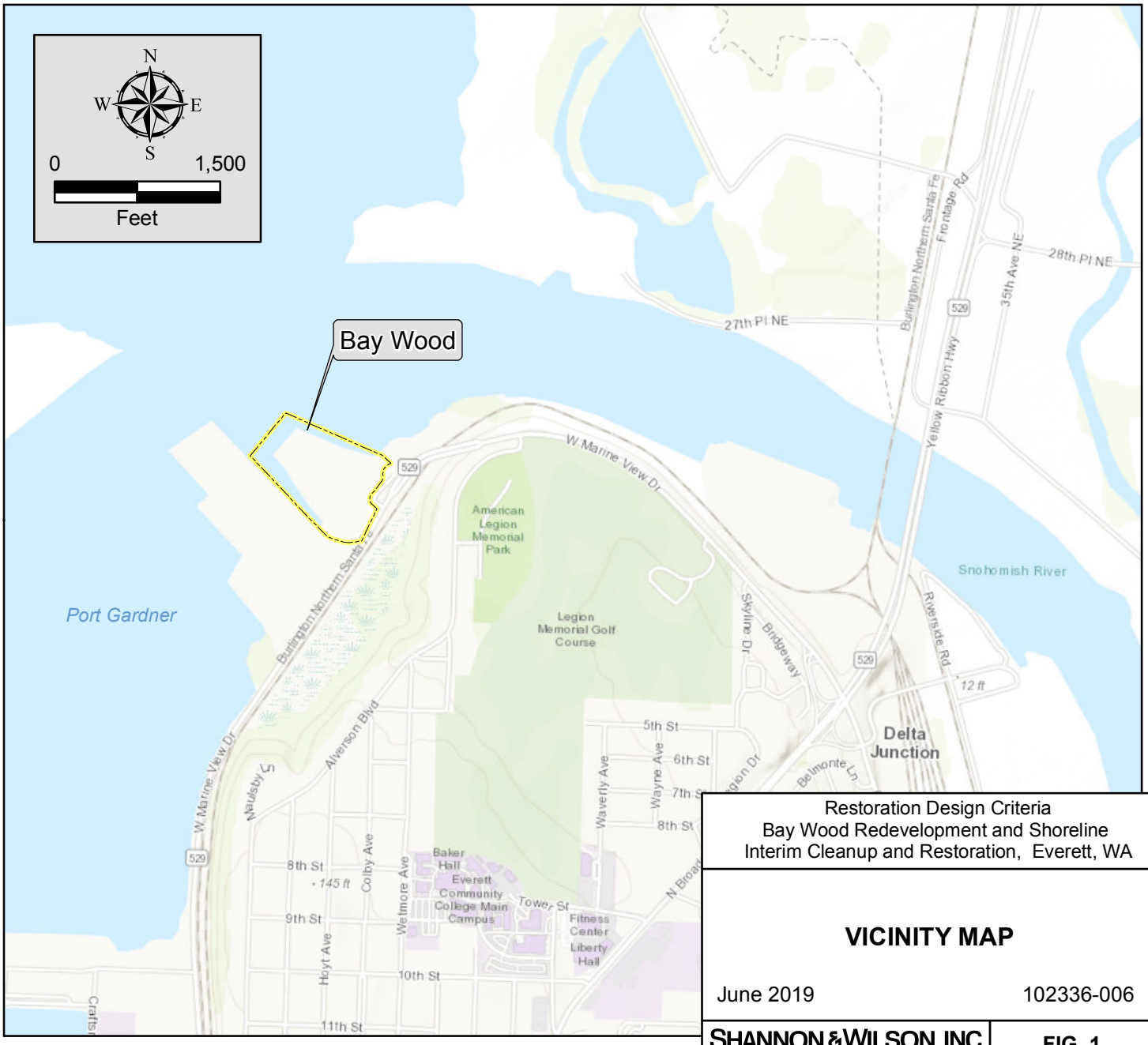
Snohomish-Stillaguamish Local Integrating Organization (LIO), 2017, Final Ecosystem Recovery Plan. May. Available: https://snohomishcountywa.gov/DocumentCenter/View/44939/Sno-Stilly-LIO_Ecosystem-Recovery-Plan_Final_Rev-06-2017?bidId=

SDP:KLW:DRC/sdp

Enc. Figure 1 – Vicinity Map
Figure 2 – Site Map
Figure 3 – Existing Conditions
Appendix A – Preliminary Plans

Document Path: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig1_Vicinity.mxd





Restoration Design Criteria
Bay Wood Redevelopment and Shoreline
Interim Cleanup and Restoration, Everett, WA

VICINITY MAP

June 2019 102336-006

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

Document Path: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig2_SiteMap.mxd

LEGEND

- Project Area
- Corps Wall
- Tax Parcels

Restoration Design Criteria
Bay Wood Redevelopment and Shoreline
Interim Cleanup and Restoration, Everett, WA

SITE MAP

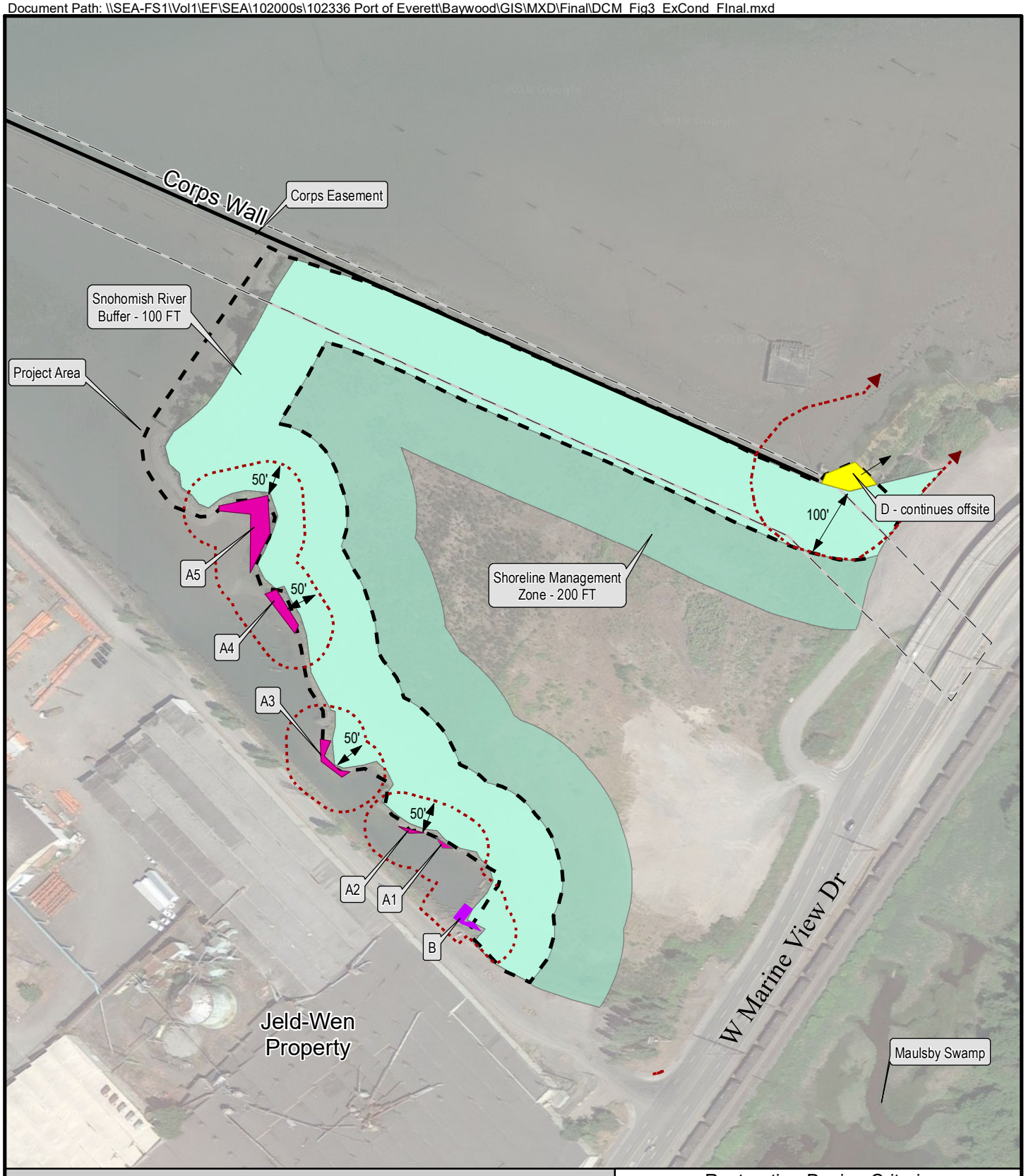
June 2019 102336-006

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig2_SiteMap.mxd Date: 6/13/2019 MAC

Document Path: \\SEA-FS1\Vol1\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Final\DCM_Fig3_ExCond_FInal.mxd



LEGEND

- Wetland A
- Wetland B
- Wetland D
- Snohomish River Buffer (100ft)
- Shoreline Management Zone (200ft)
- Wetland Buffer
- Project Area
- Parcel

N W E S

0 100 200 Feet

Restoration Design Criteria
Bay Wood Redevelopment and Shoreline
Interim Cleanup and Restoration, Everett, WA

EXISTING CONDITIONS

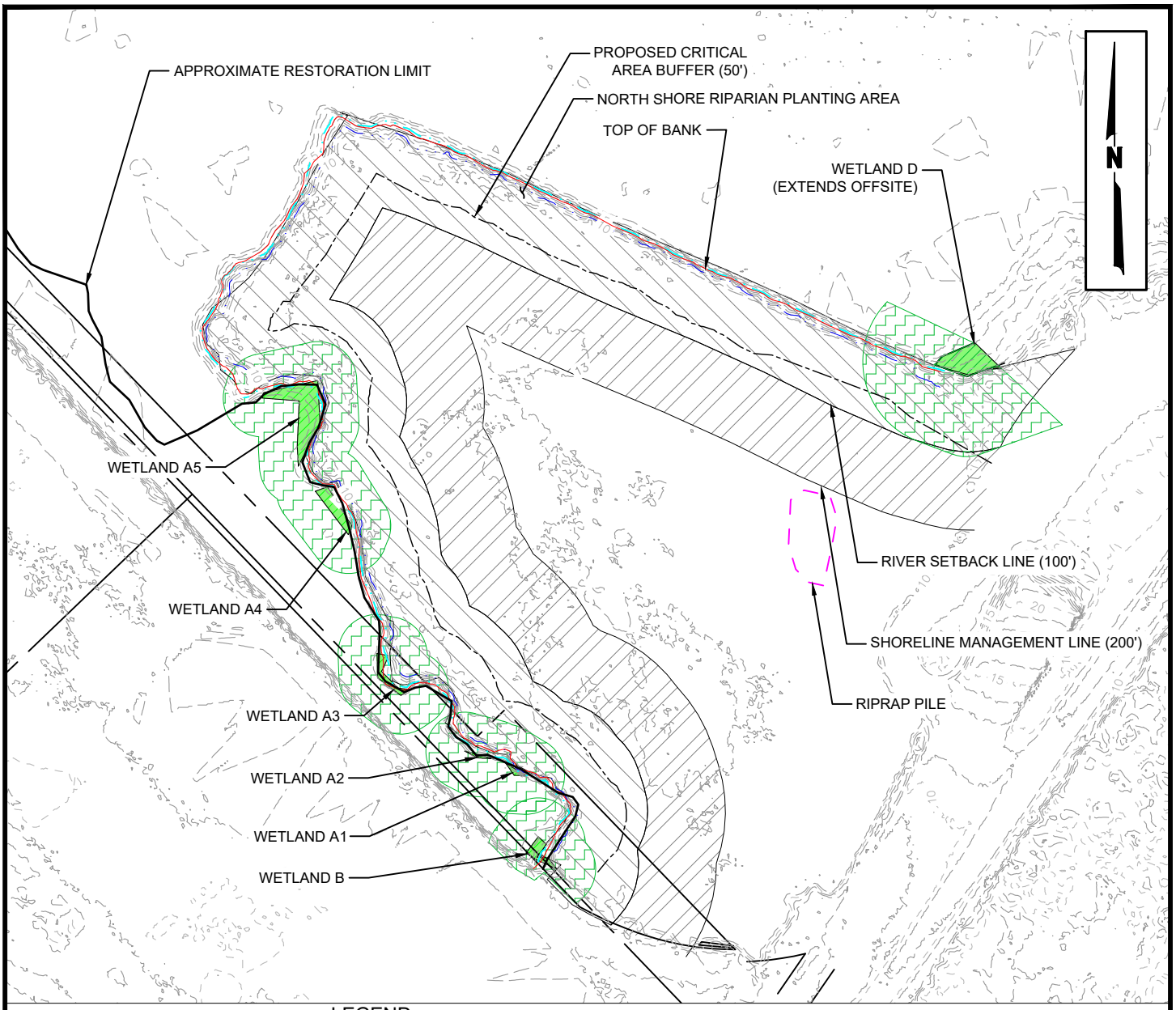
June 2019 102336-006

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 3

Appendix A

Preliminary Plans



LEGEND

- EXISTING MINOR CONTOUR (1')
- EXISTING MAJOR CONTOUR (5')
- PROPOSED CRITICAL AREA BUFFER (50')
- EXISTING EXTREME TIDE (9')
- EXISTING MHHL (5.2')
- TOP OF BANK
- APPROXIMATE RESTORATION LIMIT
- PARCEL LINES
- WETLANDS
- WETLAND BUFFER
- RIVER SETBACK (100')
- SHORELINE MANAGEMENT ZONE (200')

0 200 400

Scale in Feet

NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.
3. PROPOSED CRITICAL AREA APPROXIMATED FROM TOP OF EXISTING BANK.
4. PUGET SOUND LiDAR CONSORTIUM (PSLC) CEDAR RIVER WATERSHED & FLOODPLAIN LiDAR, 2014.
5. LiDAR CONVERTED FROM NAVD88 TO NGVD29.

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

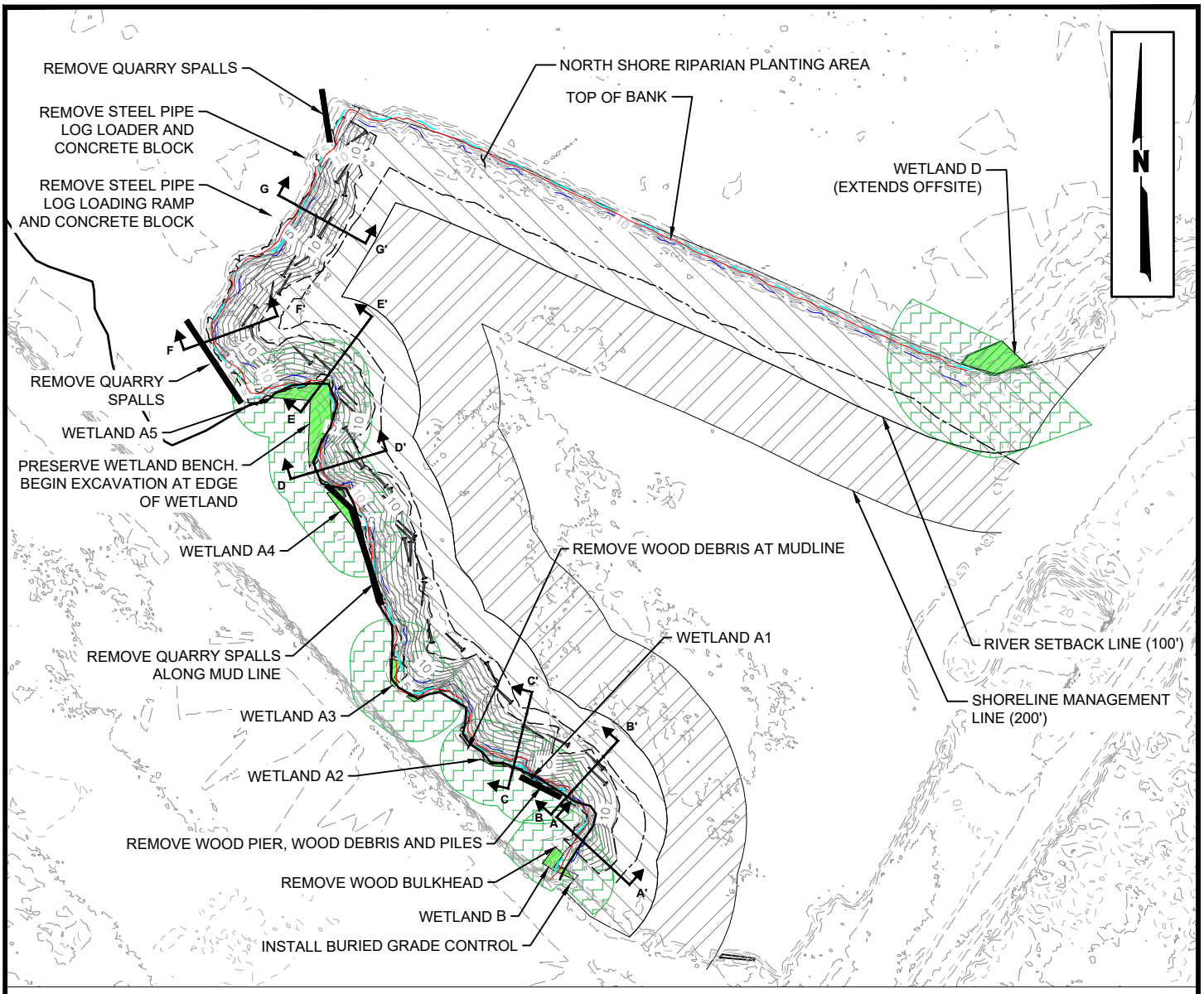
LOCATION: EVERETT, WA

TITLE: PRELIMINARY EXISTING CONDITIONS

DATE: JUNE 2019

SHEET 1 OF 9

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\102336_Design Grade - 8.5X11.dwg Layout: 102336_01_EXISTING CONDITIONS Date: 06-20-2019 Login: AWP



LEGEND

- EXISTING MINOR CONTOUR (1')
- EXISTING MAJOR CONTOUR (5')
- PROPOSED MAJOR CONTOUR (5')
- PROPOSED MINOR CONTOUR (1')
- PROPOSED CRITICAL AREA BUFFER (50')
- EXISTING EXTREME TIDE (9')
- EXISTING MHHL (5.2')
- TOP OF BANK
- APPROXIMATE RESTORATION LIMIT
- PARCEL LINES
- WETLANDS
- WETLAND BUFFER
- RIVER SETBACK (100')
- SHORELINE MANAGEMENT ZONE (200')
- LARGE WOODY DEBRIS (LWD)

0 200 400

Scale in Feet

NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.
3. PROPOSED CRITICAL AREA APPROXIMATED FROM TOP OF EXISTING BANK.
4. PUGET SOUND LiDAR CONSORTIUM (PSLC) CEDAR RIVER WATERSHED & FLOODPLAIN LiDAR, 2014.
5. LiDAR CONVERTED FROM NAVD88 TO NGVD29.

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

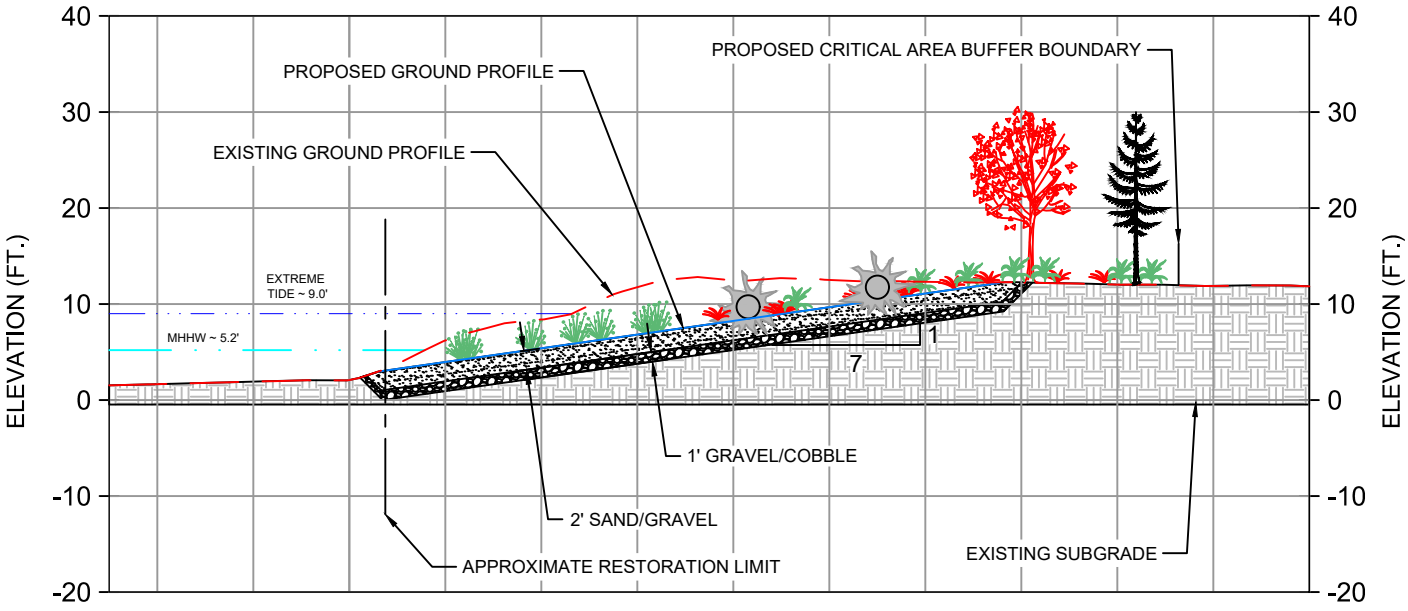
PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

LOCATION: EVERETT, WA

TITLE: PRELIMINARY GRADING PLAN

DATE: JUNE 2019
SHEET 2 OF 9

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\102336_Design Grade - 8.5X11.dwg Layout: 102336_02_GRADING PLAN Date: 06-20-2019 Login: AWP



TYPICAL SECTION A-A' - E-E'

LEGEND

- EXISTING GROUND (LiDAR)
- DESIGN GRADE (7:1 SLOPE)
- EXTREME TIDE (9..0')
- MHHW (5.2')
- MTL (0.6')
- APPROXIMATED RESTORATION LIMIT
- SEDGE/RUSH
- TREES
- SHRUBS
- DUNE GRASS/GROUND COVER
- LWD
- SAND & GRAVEL
- GRAVEL & COBBLE
- EXISTING SUBGRADE

0 20 40

Scale in Feet

NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.
3. PROPOSED CRITICAL AREA APPROXIMATED FROM TOP OF EXISTING BANK.
4. PUGET SOUND LiDAR CONSORTIUM (PSLC) CEDAR RIVER WATERSHED & FLOODPLAIN LiDAR, 2014.
5. LiDAR CONVERTED FROM NAVD88 TO NGVD29.

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

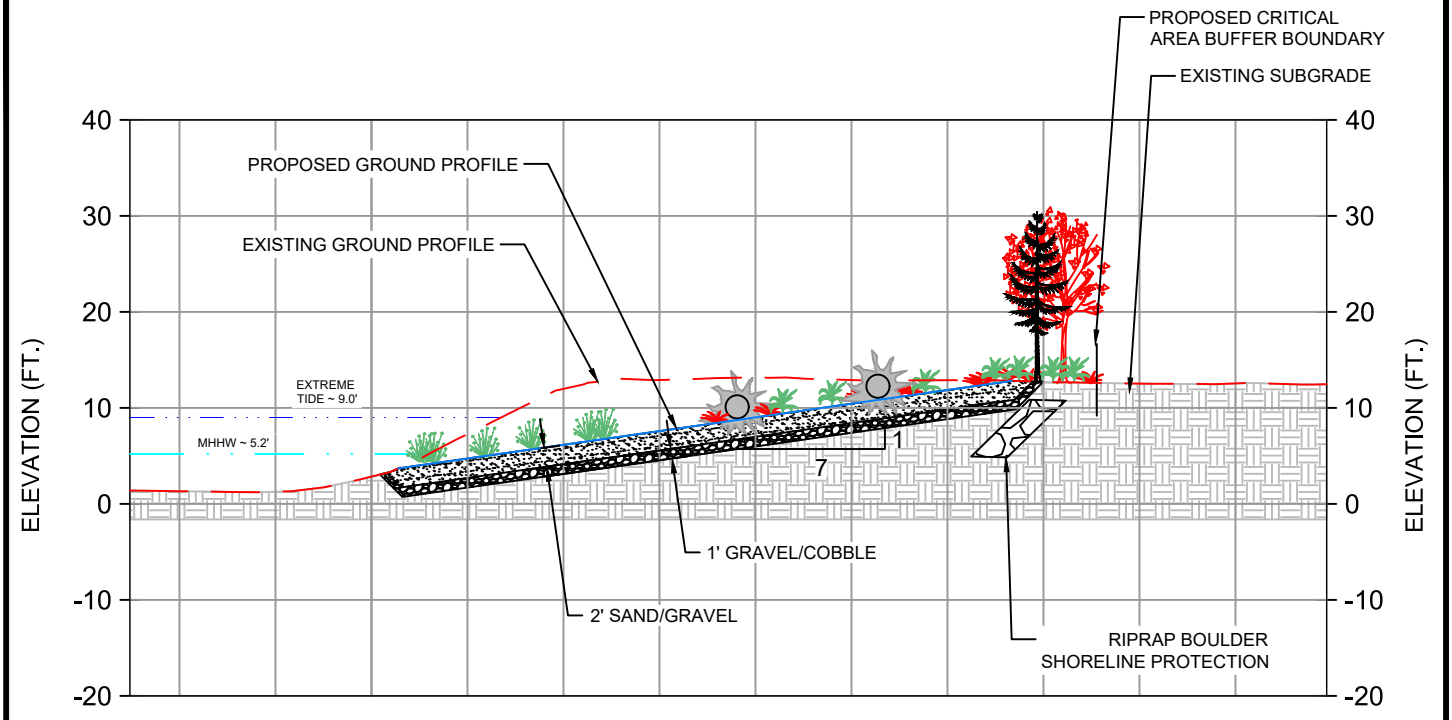
LOCATION: EVERETT, WA

TITLE: PRELIMINARY TYPICAL SECTION A-A' - E-E'

DATE: JUNE 2019

SHEET 3 OF 9

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\102336_Design Grade - 8.5X11.dwg Layout: 102336_03_TYPICAL SECTIONS Date: 06-20-2019 Login: AWP



TYPICAL SECTION F-F' - G-G'

LEGEND

- EXISTING GROUND (LiDAR)
- DESIGN GRADE (7:1 SLOPE)
- EXTREME TIDE (9..0')
- MHHW (5.2')
- MTL (0.6')
- APPROXIMATED RESTORATION LIMIT
- SEDGE/RUSH
- TREES
- SHRUBS
- DUNE GRASS/GROUND COVER
- LWD
- SAND & GRAVEL
- GRAVEL & COBBLE
- EXISTING SUBGRADE
- RIPRAP

0 20 40

Scale in Feet

NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.
3. PROPOSED CRITICAL AREA APPROXIMATED FROM TOP OF EXISTING BANK.
4. PUGET SOUND LiDAR CONSORTIUM (PSLC) CEDAR RIVER WATERSHED & FLOODPLAIN LiDAR, 2014.
5. LiDAR CONVERTED FROM NAVD88 TO NGVD29.

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

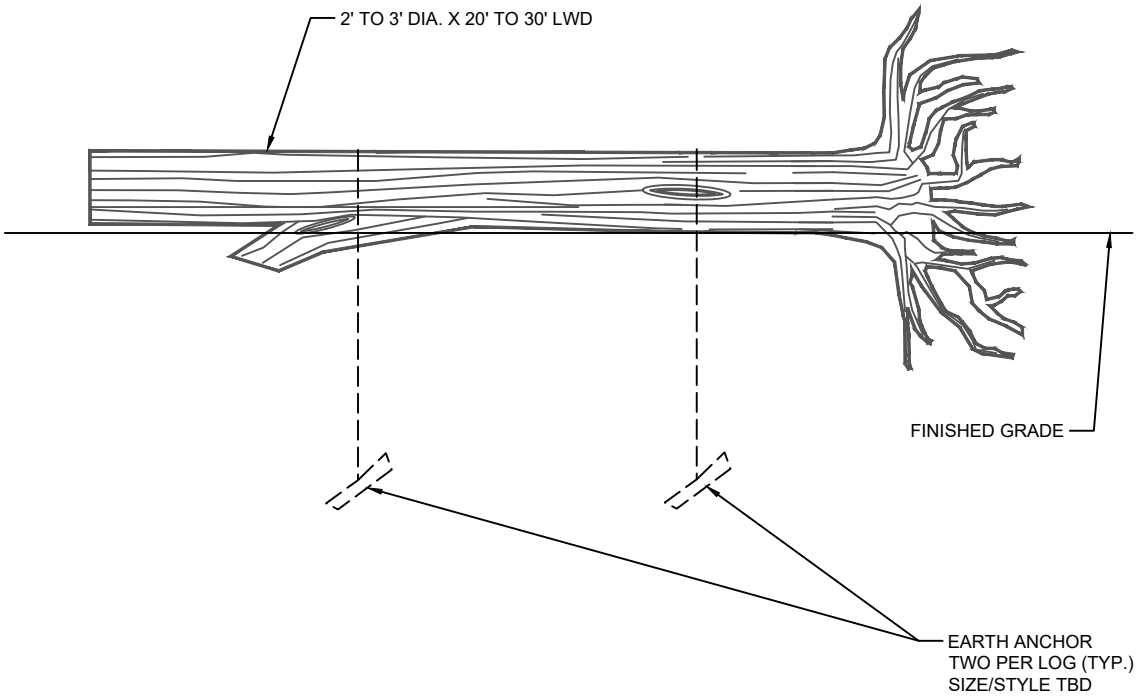
PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

LOCATION: EVERETT, WA

TITLE: PRELIMINARY TYPICAL SECTION F-F' - G-G'

DATE: JUNE 2019

SHEET 4 OF 9



S&W JOB NO: 102336-006

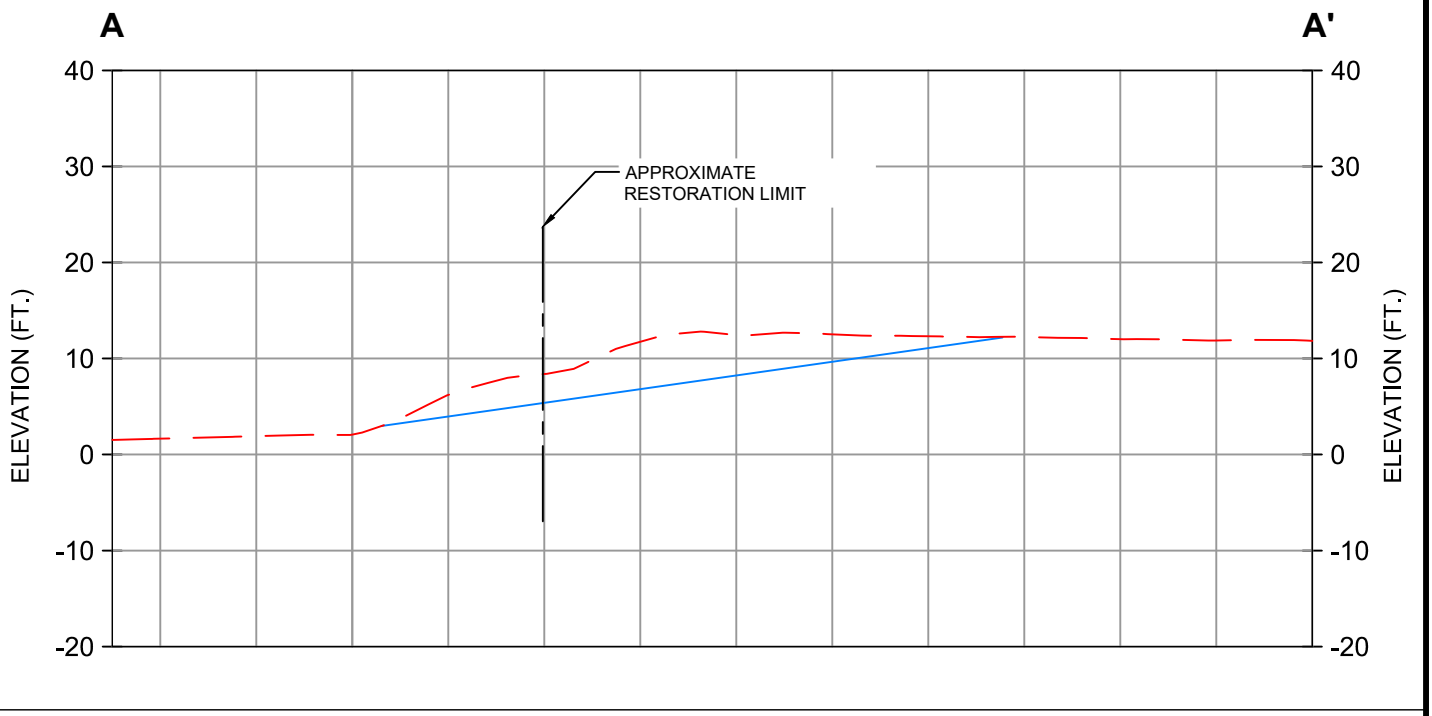
CLIENT: PORT OF EVERETT

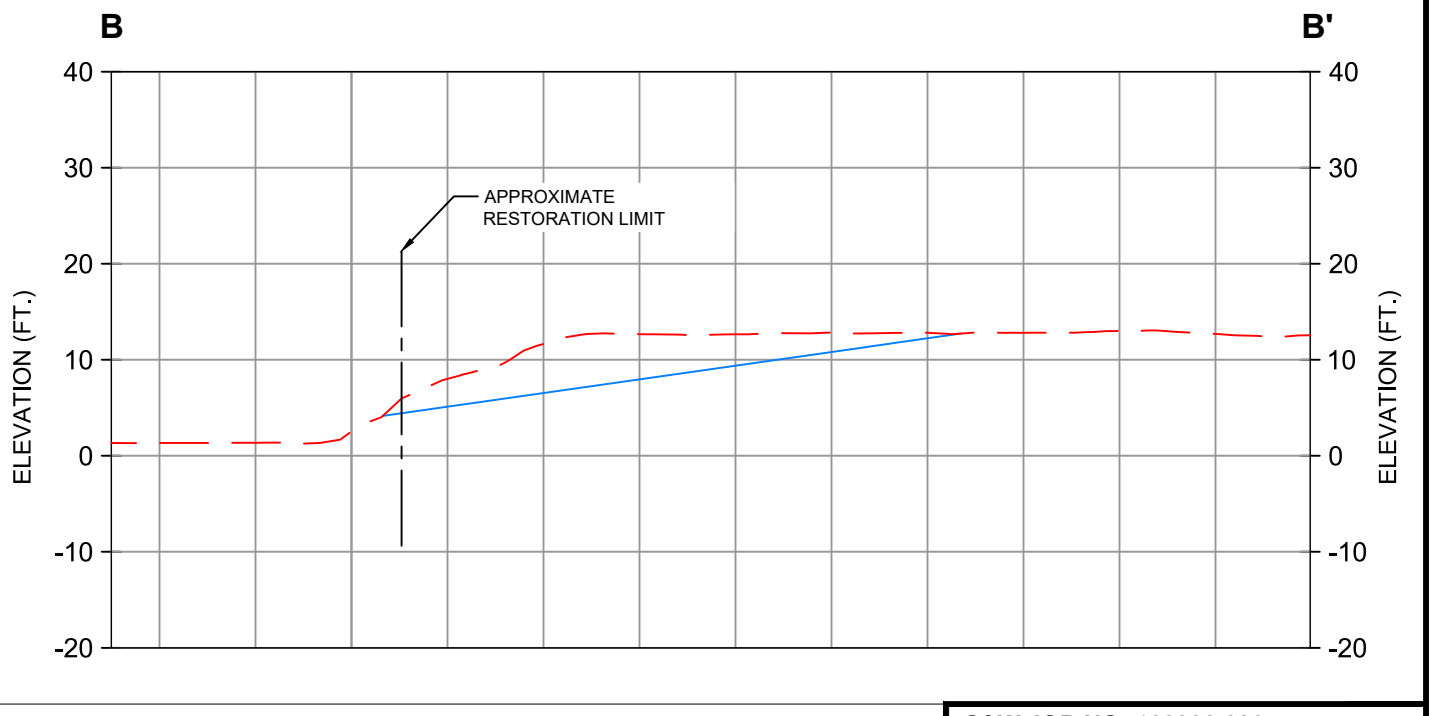
PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT &
SHORELINE INTERIM CLEANUP &
RESTORATION - DESIGN CRITERIA

LOCATION: EVERETT, WA

TITLE: PRELIMINARY LWD DETAIL

DATE: JUNE 2019
SHEET 5 OF 9





LEGEND

- EXISTING GROUND (LiDAR)
- DESIGN GRADE (7:1 SLOPE)
- APPROXIMATE RESTORATION LIMIT

NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.

0 20 40

Scale in Feet

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

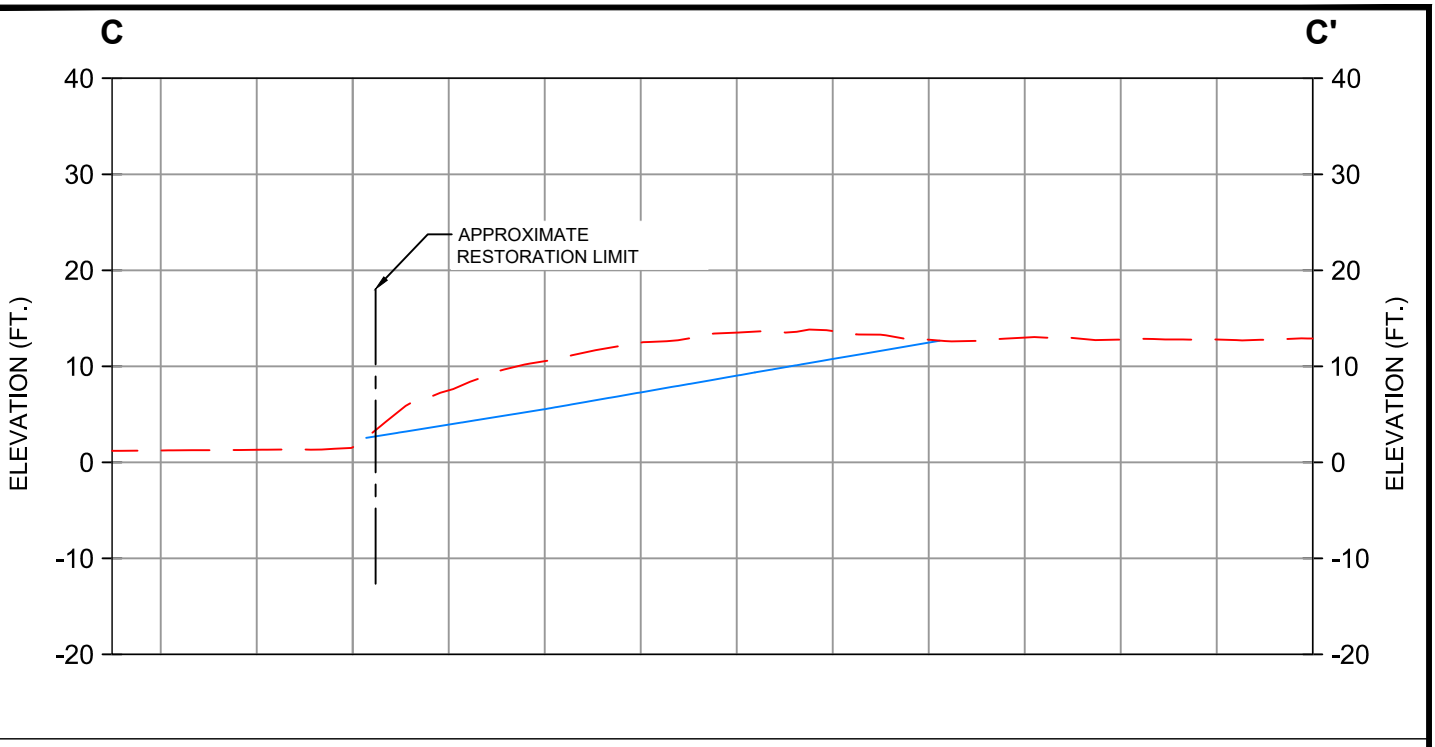
LOCATION: EVERETT, WA

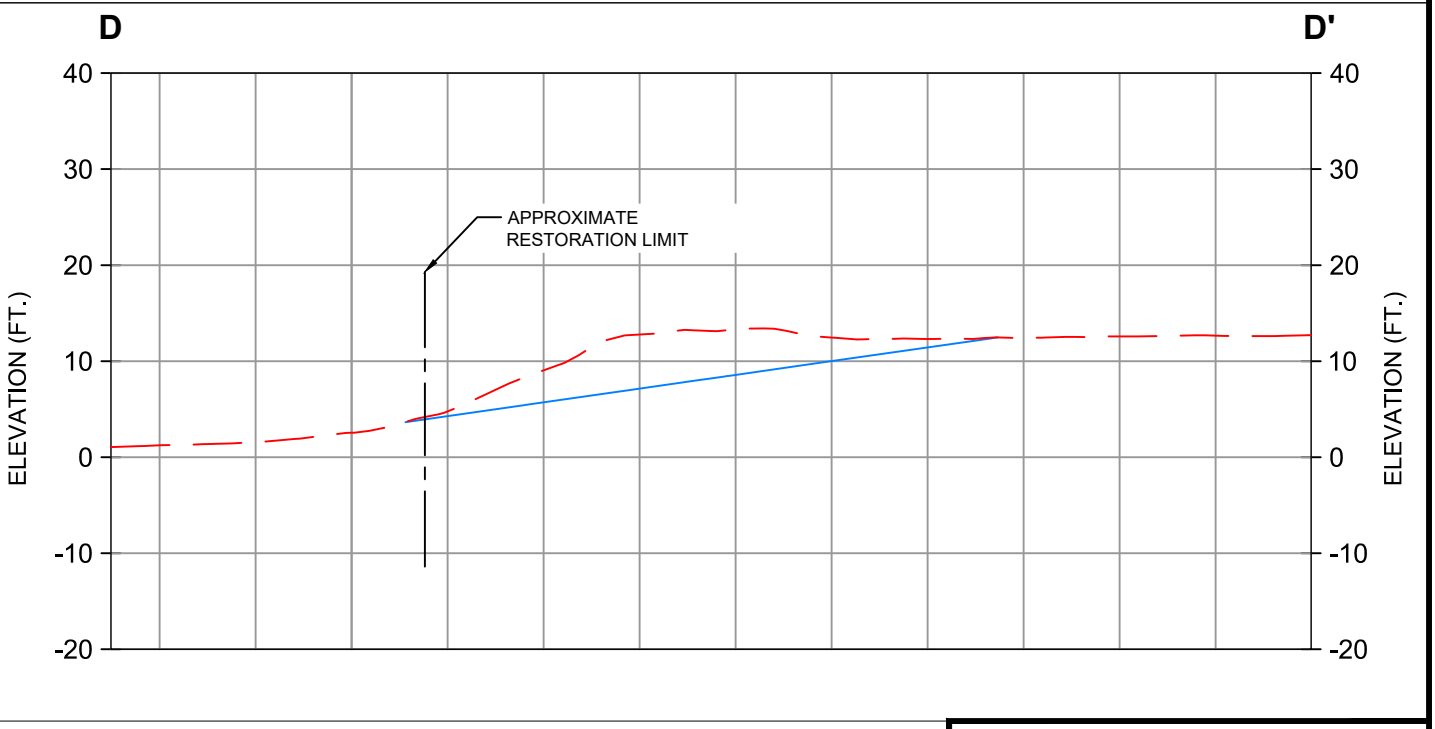
TITLE: PRELIMINARY SECTION VIEW A-A' - B-B'

DATE: JUNE 2019

SHEET 6 OF 9

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\102336_Design Grade - 8.5X11.dwg Layout: 102336_05_SECTIONS A & B Date: 06-20-2019 Login: AWP





LEGEND

- EXISTING GROUND (LiDAR)
- DESIGN GRADE (7:1 SLOPE)
- APPROXIMATE RESTORATION LIMIT

NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.

0 20 40

Scale in Feet

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

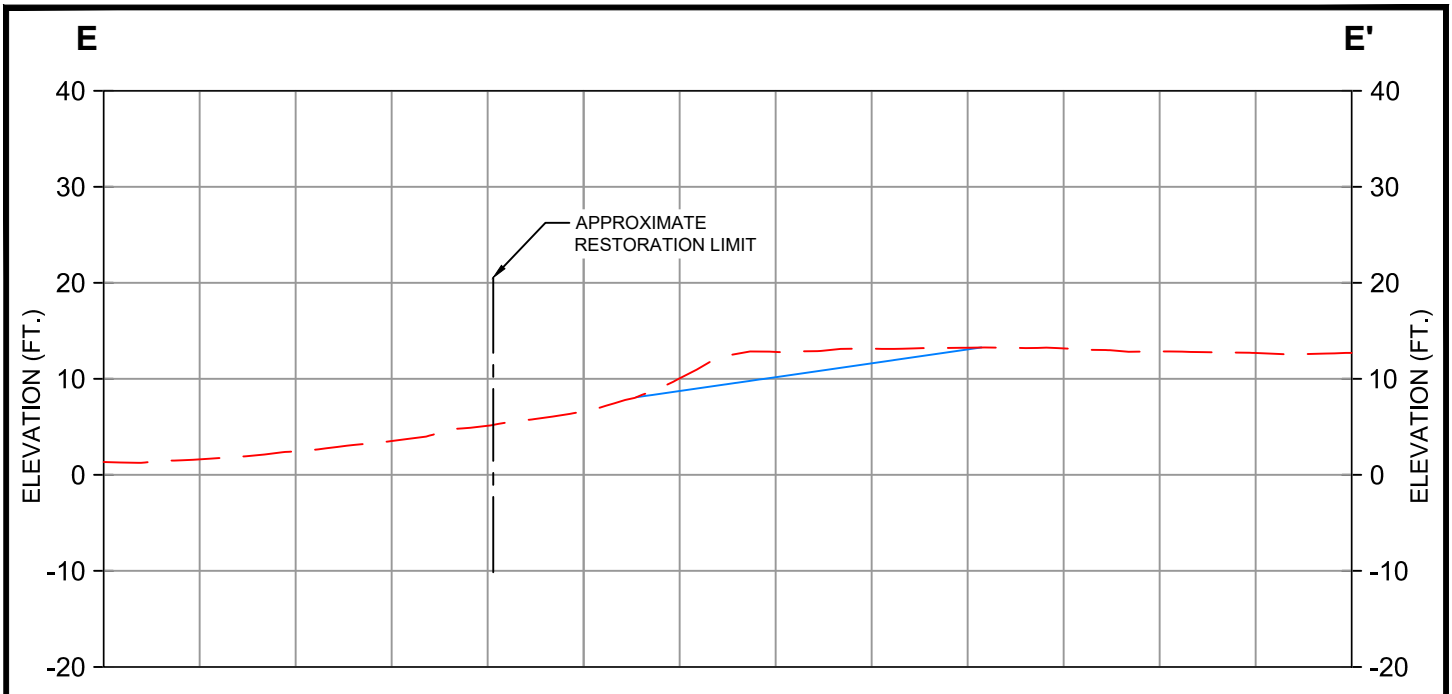
LOCATION: EVERETT, WA

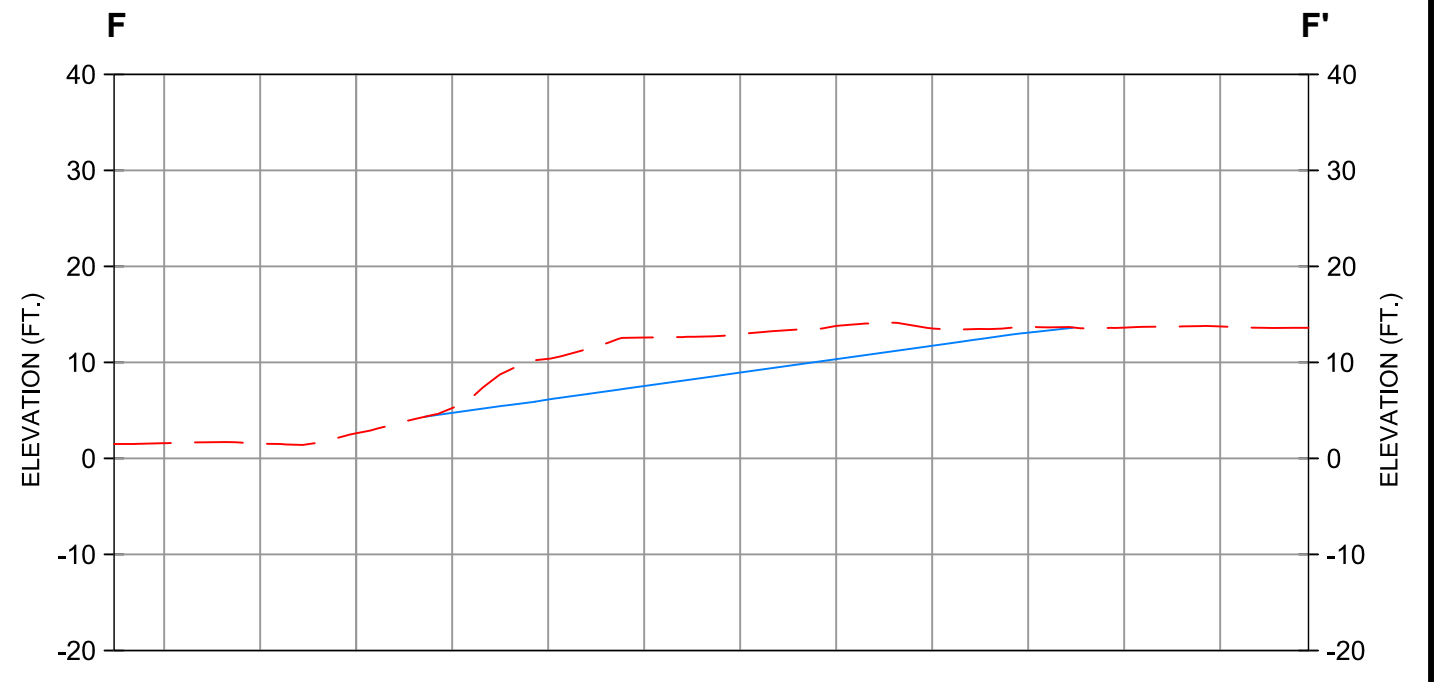
TITLE: PRELIMINARY SECTION VIEW C-C' - D-D'

DATE: JUNE 2019

SHEET 7 OF 9

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\102336_Design Grade - 8.5X11.dwg Layout: 102336_06_SECTIONS C & D Date: 06-20-2019 Login: AWP





LEGEND

- EXISTING GROUND (LiDAR)
- DESIGN GRADE (7:1 SLOPE)
- APPROXIMATE RESTORATION LIMIT

NOTES

1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.

0 20 40

Scale in Feet

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

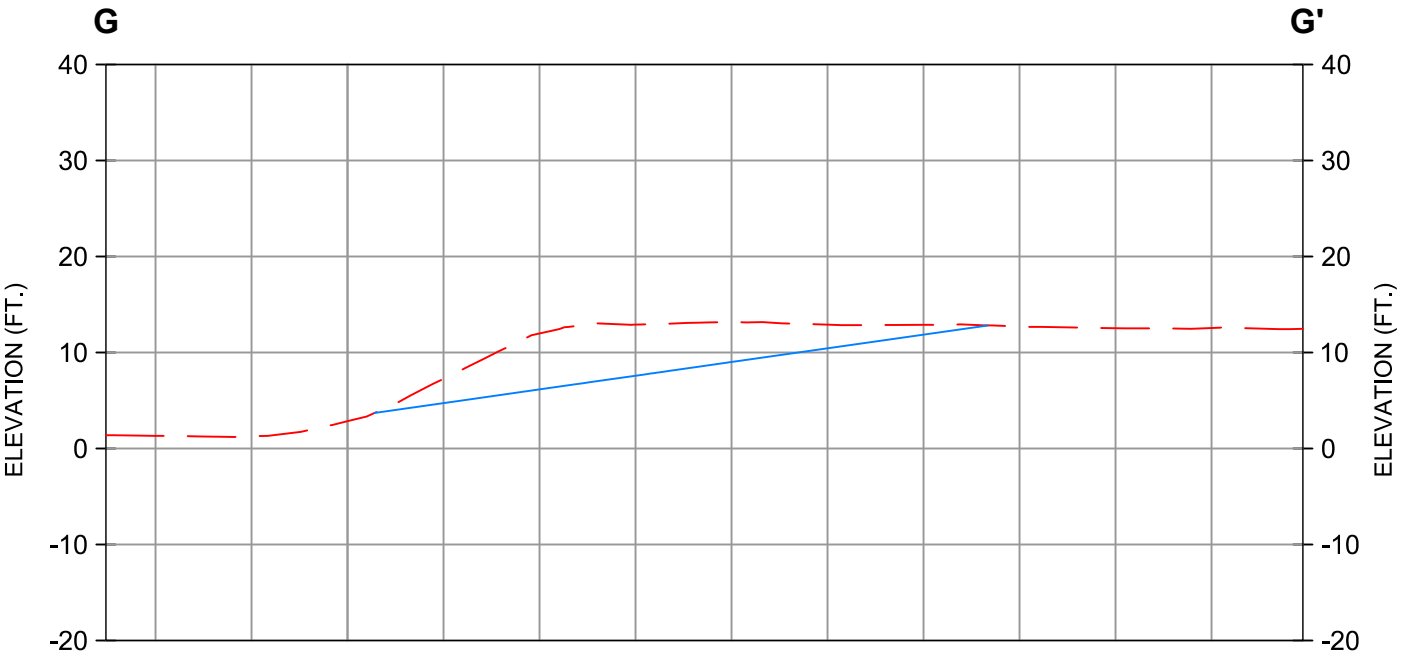
PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

LOCATION: EVERETT, WA

TITLE: PRELIMINARY SECTION VIEW E-E' - F-F'

DATE: JUNE 2019

SHEET 8 OF 9



LEGEND

EXISTING GROUND (LiDAR)

DESIGN GRADE (7:1 SLOPE)

NOTES
1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.

0 20 40

Scale in Feet

S&W JOB NO: 102336-006

CLIENT: PORT OF EVERETT

PROPOSED PROJECT:
BAYWOOD REDEVELOPMENT & SHORELINE INTERIM CLEANUP & RESTORATION - DESIGN CRITERIA

LOCATION: EVERETT, WA

TITLE: PRELIMINARY SECTION VIEW G-G'

DATE: JUNE 2019

SHEET 9 OF 9

APPENDIX F

Health and Safety Plan

Health and Safety Dashcard

Bay Wood Products Site

~ 159 W Marine View Dr.
Everett, WA 98201

PROJECT INFORMATION

- **Project Name and Number**: Bay Wood Products Site; 0147053.010
- **Anticipated Activities:** Soil excavation and disposal
- **Property Size**: ~ 43 acres
- **Topography**: Primarily flat with buildup and filled in dike, steep slope to low area
- **Anticipated Weather**: Partly sunny to rainy
- **Site History and Unusual Features**: Previous industrial wood processing uses. Wood debris and rocks comingled with soils.
- **Physical Hazards:** Working around heavy equipment, slips/trips/falls, pinch points, and crushed by.
- **Chemical Hazards**: Contaminated soil – dioxins/furans, metals, cPAHs
- **PPE**: Level D
- **Decontamination:** Sampling activities will use disposal equipment or triple rinse with Alconox, and a rinsate blank will accompany samples.

BEFORE STARTING WORK, HAVE YOU?

1. Reviewed this Health and Safety Dashcard with all workers prior to performing work? Reviewing this Dashcard is your "Tail Gate Meeting".
2. Have all onsite workers signed this form?
3. Reviewed scope of work documents, permits, and other related items prior to performing work?
4. Provisioned or been provided the correct PPE for the work to be performed?
5. Discussed specific work tasks to be completed and the related safety protocols?

IF YOU ARE UNSURE OF SAFETY PRACTICES FOR THE PARTICULAR WORK INVOLVED – GET CLARIFICATION PRIOR TO STARTING WORK

EMERGENCY PHONE NUMBER:

911 Fire, Ambulance, Police

INCIDENT REPORTING:

- Respond to the incident and get it under control. Contact the following by e-mail and brief phone message (**MUST DO BOTH**):

Name	Email Address	Phone Number	Position
Dylan Frazer	**dfrazer@landauinc.com**	**509-240-2018 Cell**	**Landau Associates Project Manager**
Chris Kimmel	**ckimmel@landauinc.com**	**206-786-3801 Cell**	**Landau Associates H&S Manager**

DAILY TAIL GATE SAFETY MEETING PARTICIPANTS

Printed Name	Signature
Site Safety Coordinator	
Site Health and Safety Manager	

Physical Hazards of Concern

Hazard	Description	Procedures Used to Monitor Hazard
Falls/slips/trips	Working near shallow excavations, wet, and uneven ground.	Use caution. Carefully evaluate each sampling location for appropriate in place safety mechanisms. Working near highs greater than 4 ft require fall protection. Keep work area clean and clear of debris (trip hazards).
Heavy Equipment	Working near moving construction equipment, backhoes, drill rigs.	Alert observation of surroundings; make eye contact with equipment operator prior to advancing near equipment; minimize time near equipment; identify possible pinch points, struck by, and crushed by areas.
Weather Stress	Exposure to hot or cold temperatures, wind, rain.	Have drinking water and snacks accessible, wear appropriate clothing (light for heat, warm for cold), wear sunscreen protection, avoid caffeine, and take short breaks as needed.
Sampling Activities	Collecting samples of potentially contaminated soil	Wear appropriate PPE (nitrile gloves), wash hands and face prior to eating or drinking. Do not have food and drink items with the sampling area. Change clothes before entering home with other family members. Wash clothes separately from family laundry.
Travel to and from site	Operating motor vehicle in traffic on highways and rural roads.	Operate motor vehicle while well rested and physically able to drive safely. Conduct pre-trip vehicle inspection, all vehicles to be maintained and in good working order. Obey all traffic laws including no cell phone use while driving. Secure all cargo properly to avoid shifting. Allow sufficient time for travel to site at safe speeds. Engage emergency brake when parking vehicles. Establish a planned route prior to departure. Be observant of unsafe road conditions and erratic/dangerous drivers.

Directions to the Closest Hospital:

Name and Address of Hospital: Providence Regional Medical Center; 1700 13th St, Everett, WA 98201

Directions:

Turn left onto W Marine View Dr.	0.4 mi
Turn right onto Alverson Blvd.	0.6 mi
Turn left onto Colby Ave	0.7 mi
Turn left onto 13th St.	423 ft
Turn right	36 ft
Destination will be on right; Providence Regional Medical Center, 1700 13th St, Everett, WA 98201	1.8 mi, 7 min

Bay Wood Site to Providence Regional Medical Center
Hospital Route Map: