FINAL
REMOVAL ACTION WORK PLAN
TERMINAL 4 PHASE I REMOVAL ACTION,
WHEELER BAY SHORELINE STABILIZATION SLOPE REPAIR
PORT OF PORTLAND, PORTLAND, OREGON

Prepared for

Port of Portland

Portland, Oregon

Prepared by

Anchor QEA, LLC

and

Northwest Earthmovers, Inc.

September 2010

FINAL
REMOVAL ACTION WORK PLAN
TERMINAL 4 PHASE I REMOVAL ACTION, WHEELER BAY SHORELINE STABILIZATION SLOPE REPAIR
PORT OF PORTLAND, PORTLAND, OREGON

Prepared for
Port of Portland
Portland, Oregon

Prepared by
Anchor QEA, LLC
and
Northwest Earthmovers, Inc.

September 2010

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Background 1
1.2 Phase I Removal Action Area 2
1.3 Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair Objectives and Activities 3
1.4 Performance Standards 3
1.5 Phase I Wheeler Bay Shoreline Stabilization Slope Repair Contractors 4
1.6 Work Plan Organization and Approach 4
2 WHEELER BAY SHORELINE STABILIZATION SLOPE REPAIR 5
2.1 Shoreline Stabilization Slope Repair Performance Standards 5
2.2 Wheeler Bay Shoreline Stabilization Summary 5
2.3 Equipment 6
2.4 Materials 6
2.5 Earthwork and Landscaping Methods and Procedures 8
2.6 Quality Assurance/Quality Control 9
2.6.1 Survey Control/Settlement Monitoring 9
2.6.2 Progress Surveys 9
2.6.3 Daily QA/QC Checks/Verification 9
2.6.4 Import Material Characterization 10
2.7 Health and Safety 11
2.8 Environmental Protection 12
2.9 Scheduling/Reporting 12
3 REPORTING/PROJECT COORDINATION 14
3.1 Project Team Roles and Responsibilities 14
3.2 Project Coordination 18
3.2.1 Scheduling 21
3.2.2 Quality Assurance/Quality Control 21
3.2.3 Environmental Protection 22
3.2.4 Health and Safety 22
3.3 Project Reporting/Recordkeeping 23

3.3.1 Daily Report 23
3.3.2 Resource Tracking/Allocation 23
3.3.3 Submittals and Design Changes 24
3.4 Files and Records Management 24
3.5 Closeout 25
4 REFERENCES 27

List of Tables

Table 1 Import Material Chemical Goals

List of Figures

Figure 1 Site Plan and Vicinity Map
Figure 2 Wheeler Bay – Shoreline Stabilization Slope Repair Plan
Figure 3 Wheeler Bay – Typical Slope Repair Section
Figure 4 Contractor's Proposed Construction Schedule—Wheeler Bay Stabilization
Figure 5 Organization Chart

List of Appendices

Appendix A NEI Health and Safety Plan (HASP)
Appendix B NEI Construction Quality Control Plan (CQCP)
Appendix C NEI Environmental Protection Plan (EPP)
Appendix D Construction Drawings and Specifications
Appendix E Water Quality Monitoring Plan (WQMP) (Appendix H from Anchor 2008b)
Appendix F Quality Assurance Project Plan (QAPP) (Appendix I from Anchor 2008a)

LIST OF ACRONYMS AND ABBREVIATIONS

Anchor QEA	Anchor QEA, LLC
AOC	Administrative Order on Consent
BMP	best management practice
CCM	Contract Construction Manager
CDF	Confined Disposal Facility
CHASP	Contractor Health and Safety Plan
City	City of Portland
CQA	Construction Quality Assurance
CQAO	Construction Quality Assurance Officer
CQAP	Construction Quality Assurance Plan
CQAR	Construction Quality Assurance Representative
CQC	Construction Quality Control
CQCP	Construction Quality Control Plan
cy	cubic yard
DAR	Design Analysis Report
DDT	dichloro-diphenyl-trichloroethane
DEQ	Oregon Department of Environmental Quality
DSL	Department of State Lands
EPP	Environmental Protection Plan
HASP	Health and Safety Plan
HSS	Health and Safety Supervisor
MNR	monitored natural recovery
NEI	Northwest Earthmovers, Inc.
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NTCRA	Non Time Critical Removal Action
O&M	operations and maintenance
ODOT	Oregon Department of Transportation
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon

PCB	polychlorinated biphenyl
PE	Project Engineer
PM	Project Manager
Port	Port of Portland
Port Engineering PM	Port of Portland Engineering Project Manager
Port PM	Port of Portland Project Manager
PS	Project Superintendent
QAPP	quality assurance project plan
QA/QC	quality assurance/quality control
RAA	Removal Action Area
RACR	Removal Action Closure Report
RAO	Removal Action Objective
RAWP	Removal Action Work Plan
RFIs	Requests for Information
RI/FS	Remedial Investigation/Feasibility Study
RM	river mile
sy	square yard
T4	Terminal 4
TEC	Threshold Effects Concentration
USEPA	U.S. Environmental Protection Agency
WQMCCP	Water Quality Monitoring and Compliance Conditions Plan
WQMP	Water Quality Monitoring Plan

1 INTRODUCTION

This Removal Action Work Plan (RAWP) presents the details for the implementation, quality assurance, and quality control of the Terminal 4 (T4) Phase I Removal Action Wheeler Bay Stabilization Slope Repair.

1.1 Background

The Port of Portland (Port) entered into an Administrative Order on Consent (AOC) with the U.S. Environmental Protection Agency (USEPA) in October 2003 to perform a Non-Time-Critical Removal Action (NTCRA) at the T4 site on the Willamette River in Portland, Oregon (Figure 1) (USEPA 2003). The AOC requires the Port to perform an Early Action to address known contamination found in T4 sediment samples during a remedial investigation directed by the Oregon Department of Environmental Quality (DEQ). USEPA, in consultation with its federal, state, and tribal partners, evaluated and selected a Removal Action for T4 that included a combination of monitored natural recovery (MNR), capping, and dredging with placement of contaminated sediment in a Confined Disposal Facility (CDF) to be built on site. The USEPA-selected Removal Action was detailed in an Action Memorandum prepared by USEPA in 2006 (Action Memo; USEPA 2006).

Implementation of the Action Memo (USEPA 2006) is occurring in phases because many of the design issues required for full implementation are linked to the overall Portland Harbor-wide Remedial Investigation/Feasibility Study (RI/FS) process, which is taking more time than what was anticipated when the Action Memo was issued. For this reason, in a letter to USEPA dated August 22, 2007, the Port requested that USEPA revise the schedule for implementation of the T4 Removal Action to realign the Early Action project with the Harbor-wide RI/FS schedule. The Port also prepared an Abatement Measures Proposal in October 2007 (Anchor 2007) to detail specific components of the Removal Action that could be implemented as Phase I to address conditions at T4 that posed an imminent threat to human health and the environment. In November 2007, USEPA approved the schedule realignment request on condition that the Port implement the abatement measures in the Abatement Measures Proposal, which split the project into two phases (USEPA 2007). A Phase I final design was completed and implemented in 2008.

Phase I of the Removal Action included the following components:

- Dredging and off-site disposal of sediment exhibiting the highest chemical concentration, providing a permanent solution of contaminant mass removal
- Construction of a nearshore cap to isolate petroleum-contaminated sediments from aquatic receptors and control a potential ongoing source to nearby areas
- Stabilization of the Wheeler Bay bank to minimize contaminant migration to the river
- Dredging and off-site disposal of contaminated sediments in Slip 3 at Berth 410 to support water-dependent maritime use in a manner consistent with the Action Memo (USEPA 2006) and in support of overall risk reduction in the Removal Action Area (RAA)

In June 2010, the water level of the Willamette River rose to roughly elevation 15.5 feet National Geodetic Vertical Datum (NGVD). This higher water level, coupled with higher than anticipated vessel-induced waves, caused erosion of the western 275 feet of the Wheeler Bay shoreline stabilization area just above elevation 15 feet NGVD. Per the Interim Monitoring and Reporting Plan for the Phase I work (Appendix C of the T4 Phase I Removal Action Design Analysis Report [DAR]; Anchor 2008a), the Port updated the Phase I design for this area of Wheeler Bay to repair the slope and prevent this level of erosion from happening in the future, and is on track to implement the repair work during the 2010 in-water work window.

1.2 Phase I Removal Action Area

The Port is a port district of the State of Oregon, which owns the T4 uplands between River Miles (RMs) 4.1 and 4.5 on the Lower Willamette River. The Port acquired T4 from the City of Portland (City) Commission of Public Docks in 1971. The Port also currently owns a portion of the submersible and submerged lands in Slip 1 and Slip 3 located within the RAA (defined below). The remainder of the submersible or submerged land is owned by the State of Oregon and managed by the State of Oregon Department of State Lands (DSL).

The T4 facility itself is within or adjacent to the Portland Harbor Superfund Site. The RAA is defined in the AOC as "that portion of the site adjacent to and within the Port of

Portland's Terminal 4 at 11040 North Lombard, Portland, Multnomah County, Oregon, extending west from the ordinary high water line on the northeast bank of the Lower Willamette River to the edge of the navigation channel, and extending south from the downstream end of Berth 414 to the downstream end of Berth 401, including Slip 1, Slip 3, and Wheeler Bay."

A vicinity map and site plan locating T4 is provided on Figure 1.

1.3 Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair Objectives and Activities

The repair work includes placing additional armor on top of the existing armor, anchoring large woody debris parallel to the shoreline, and placing additional plantings above the armor protection between 0 and 275 feet from the mouth of the bay. This design modification is intended to better protect the shoreline based on the causes of the current erosion. As a preventative measure, additional plantings and anchored large woody debris will be placed along the remainder of the shoreline between 275 and 700 feet from the mouth of the bay.

This design modification is consistent with the T4 Phase I Removal Action final design, which was approved by USEPA. The modified design will occur within the original footprint of the Phase I Wheeler Bay work and will consist of similar activities. The work will follow the construction Health and Safety Plan, Construction Quality Assurance Plan, and environmental requirements approved by USEPA as part of the June 30, 2008 T4 Phase I Removal Action DAR (Anchor 2008a), including the Water Quality Monitoring Plan (WQMP; Appendix H of Anchor 2008b), the USEPA-issued WQMCCP (USEPA 2008), and the July 22, 2008 Biological Opinion prepared by the National Marine Fisheries Service (NMFS; 2008).

1.4 Performance Standards

To achieve the objectives of the Phase I Removal Action Wheeler Bay Stabilization Slope Repair, performance standards were established and are included in the area-specific section pertaining to shoreline stabilization (see Section 2.1).

1.5 Phase I Wheeler Bay Shoreline Stabilization Slope Repair Contractors

Northwest Earthmovers Inc. (NEI) has been hired by the Port to complete the Wheeler Bay shoreline stabilization work. The Port has also hired Anchor QEA, LLC (Anchor QEA) to perform environmental monitoring and to support the Port's construction management and oversight activities throughout the Phase I Wheeler Bay Shoreline Stabilization Slope Repair project.

1.6 Work Plan Organization and Approach

The remainder of this document provides detailed information as follows:

- **Section 2 – Wheeler Bay Shoreline Stabilization Slope Repair.** This section details how the earthwork required to stabilize the Wheeler Bay shoreline will be completed for the Phase I Removal Action, including discussion of the performance standards, summary of the work, equipment, and materials to be used, construction methods, quality assurance/quality control (QA/QC) measures, health and safety, environmental protection, and scheduling/reporting.
- **Section 3 – Reporting/Project Coordination.** This section discusses project team roles and responsibilities, project coordination, project reporting and recordkeeping, design changes, files and records management, and how closeout will be completed for the project.
- **Section 4 – References.**

2 WHEELER BAY SHORELINE STABILIZATION SLOPE REPAIR

2.1 Shoreline Stabilization Slope Repair Performance Standards

The intent of the original Wheeler Bay shoreline stabilization work was to stabilize targeted shoreline areas to address long-term erosive mechanisms. The same standards will be followed for the slope repair work. Specific performance standards include:

- To the extent feasible, regrade banks to slopes that will be stable under long-term conditions.
- For areas where armoring is necessary, design the armor layer to resist bed shear velocities induced by the largest of 100-year flood flow, 100-year waves, vessel-induced waves from typical passing vessels, and anticipated propeller wash from vessels that operate in the area.
- Use import material for fill and grading that meets defined chemical goals (presented in the Anchor 2008 DAR Appendix E Site Clearing, Earthwork and Shoreline Stabilization specification; Section 312000; Anchor 2008a).
- Eliminate direct contact with contaminated river bank soils.
- Conduct the work consistent with the Biological Opinion developed by NMFS.

2.2 Wheeler Bay Shoreline Stabilization Summary

Figures 2 and 3 detail the design and construction of the Wheeler Bay shoreline stabilization. Each of the different components of the shoreline work has a different total thickness. Figure 3 presents a detail showing how the different components will tie together. The sequencing of the work will be as follows:

- Install erosion control measures per the Environmental Protection Plan (EPP).
- Construct access road down the slope using select fill. The access road will utilize the existing gate above the work site.
- Mobilize a track hoe excavator to the bottom of the slope staying above the water line at all times.
- Move existing large woody debris with the track hoe excavator up to a stockpile at the top of the slope.
- Using the track hoe excavator, remove the habitat rock and prepare the riprap surface to receive the new riprap layer. This work will be from the west limit to the east.

- Install the new demarcation layer where necessary.
- Install the geotextile where necessary.
- Using a second track hoe excavator at the top of the slope and the track hoe excavator at the base of the slope, place the riprap and select fill to grade.
- Upon completion of the riprap repairs, install the stabilization woody debris, anchoring it to the slope using a hydraulic drive system to install the Manta Ray anchors. New woody debris will be brought to the site via truck and placed using the track hoe excavators on the top and bottom of the slope.
- Demobilize the bottom track hoe excavator up the slope.
- Clean up (including removal of access road down the slope) and place the top soil as required.
- Complete the landscaping work.

2.3 Equipment

The shoreline stabilization work in Wheeler Bay will be completed with land-based construction equipment. The equipment to be utilized for grading, filling and compacting, and landscape work includes:

- John Deere 160 excavator (or equivalent) to excavate subgrade
- Conveyor truck to transport and place imported materials
- Backhoe for various activities on site, including offloading and hauling of erosion-control materials, large woody debris, and anchor blocks
- Hydraulic drive system to install the Manta Ray anchors
- Water truck for dust control and equipment decontamination

Equipment will be late-model and well maintained. All safety guards, power cutoffs, and alarms shall be verified to be in working order when the equipment first arrives at the site. Diesel equipment will be fueled with ultra low-sulfur diesel.

2.4 Materials

Project materials generally consist of earthwork and landscaping materials. The relevant information about materials to be used is summarized below. The Construction

Specifications (Appendix D) present both physical and chemical parameters for the imported materials.

Material	Description	DAR Specification Section or Drawing*	Installed Location (Station 0+00 to 7+40 unless otherwise stated)	Quantity	Source
Demarcation Layer	New Plastic grid fencing	312000-2.7	To be determined	250 sf	Construction supplier; TBD
Filter Layer	4-inch minus sandy gravel	312000-2.3	See Drawing C-2	90 tons	Cemex, 8705 NE 117th Ave., Vancouver, WA
Armor	ODOT 700 rock	312000-2.6	See Drawings C-1 and C-2	420 tons	Cemex, 8705 NE 117th Ave., Vancouver, WA
Large Woody Debris	Natural wood materials salvaged from existing beach above elevation 10 feet	353200-2.1.A	See Drawing L-1	Whatever present at time of construction	Existing beach
Habitat Logs	Natural conifer logs minimum 12-inch diameter by 21 feet long with root wads; anchored	353200-2.1.B	See Drawing L-1	34 logs	TBD
Coir Fabric	Heavy erosion control fabric	329119-2.2	See Drawing L-2	1,000 sy	Construction supplier; TBD
Jute Mat	Natural fiber erosion control fabric	329119-2.1	See Drawing L-3	3,000 sy	Construction supplier; TBD
Topsoil	Sandy-loam/ compost mix	329119-2.4	See L-1; to be determined	300 cy	Site One, LLC
Plantings	Miscellaneous plants	Drawing L-2	See L-1	1,860 plants	Commercial nursery; TBD

Notes:
* See Appendix D
sy = square yards, cy = cubic yards

Table 1 presents chemical goals for import materials. The table includes the Threshold Effects Concentration (TEC) criteria where they exist. The import material should meet TEC

criteria or regional background concentrations as appropriate. In addition, concentrations of key bioaccumulative constituents, including polychlorinated biphenyls (PCBs), dichloro-diphenyl-trichloroethanes (DDTs), and other chlorinated pesticides, should be undetectable using standard laboratory methods.

The Construction Quality Control Plan (CQCP) for the Wheeler Bay shoreline stabilization slope repair in Appendix B outlines the test requirements, inspections, identification and documentation, and test frequencies to be conducted for the materials used for filling and landscape work.

2.5 Earthwork and Landscaping Methods and Procedures

The methods and procedures for the Wheeler Bay shoreline stabilization earthwork and landscaping are summarized below. Best management practices (BMPs) for earthwork activities are discussed in the EPP in Appendix C.

- **Erosion Control.** Erosion control will be installed prior to beginning any site earthwork. At a minimum, a silt fence will be installed on the sides and downslope of the project area. Construction fencing will delineate the project area along the railroad.
- **Dust Control.** Dust control will be provided at all times during on-site activities. Primary dust control will be by water truck and fire hose. Operational procedures will be adjusted during periods of high wind to maintain optimal dust control.
- **Grade Control.** Prior to the start of excavation, the area will be surveyed and staked by a surveyor. Surveying and grade control performed during the excavation and fill process will be performed by NEI's in-house surveyor with oversight from the Port. See also Section 2.6.
- **Subgrade Cut and Fill.** Subgrade grading will be performed with the excavators at the slope bottom.
- **Installation of Surface Materials.** The installation of the fill materials will commence following verification that the subgrade is at the appropriate elevation. The demarcation layer, select fill, armor stone, habitat cover, and large woody debris will be placed as depicted on the Drawings and described in the Construction Specifications (Appendix D).

- **Planting and Seeding.** The installation of plant materials will begin at the end of the construction. Planting will occur following the topsoil placement and will be performed under the supervision of a qualified landscaping professional. Hydroseeding, jute matting, and plantings will be placed per the Drawings and Construction Specifications (Appendix D).

2.6 Quality Assurance/Quality Control

The Wheeler Bay shoreline stabilization's Quality Control System will be implemented by NEI's management team who are responsible for the project quality. The CQCP in Appendix B defines the tasks and responsibilities of the management team, including policies, procedures, inspections, and documentation.

2.6.1 Survey Control/Settlement Monitoring

NEI's Survey Control Plan begins with the coordination efforts of establishing project site reference points provided by the Port's Engineering Project Surveyor.

2.6.2 Progress Surveys

Once pre-existing site conditions have been established and documented and the first set of construction reference stakes are set, NEI's construction surveyor will then lead construction staking as needed for each phase of work. When the work is completed, the Port's Engineering Project Surveyor will resurvey for finish lines and grades. Final drawings will be submitted upon completion of work.

Material placement will be visually verified as areas are completed to confirm that the desired coverage meets the specified requirements. Intermediate grades and layer thicknesses will be verified by the NEI construction surveyor prior to replacement of overlying layers.

2.6.3 Daily QA/QC Checks/Verification

The CQCP in Appendix B includes a description of the methods to manage the review, approval, and revision of documents and submittals. QA/QC reports on the work quality will

be managed, protected, maintained, and submitted according to the Construction Specifications (Appendix D). The NEI Project Superintendent will prepare daily construction reports that will include, but are not limited to:

- Number of personnel working
- Site weather conditions
- Description of trades working on the project
- Work performed each day stating location, description, and by whom
- Currently active subcontractor(s) and the task/area of responsibility
- Type of equipment used each day stating location and description
- Off-site quarry inspections, including any actions taken or communications with the Quarry Operator
- Materials received at the site and their condition
- Test and/or control activities performed with results, specification requirements, and identification of deficiencies noted along with relevant corrective action(s)
- Instructions received from the Port representative
- Conflicts in drawings and/or specifications
- Delays, if any
- Deviations from or modifications to approved design, work plans, or BMPs

The records will document contract compliance of workmanship, equipment, and materials. The records will include attached copies of reports and tests performed. The daily report will be reviewed and countersigned by the NEI Project Manager (PM). Copies of the daily report will be given to the Port's representative on the following day.

2.6.4 Import Material Characterization

Prior to any on-site placement, the Port will complete a characterization of import soil materials. The characterization will include analysis of a source sample, site inspection, and site characterization. NEI will also provide the Port with a 5-gallon sample of material from each borrow source—the Port may elect to do additional testing on this sample. Analysis will be for analytes required in the specifications. In addition, each load of imported material will be visually inspected by NEI upon delivery for the presence of foreign, recycled, or reprocessed material. NEI will collect certified tickets from the borrow source

for each load of material brought to the site. USEPA agreed due to the low volume of imported material, to couple the initial chemistry sample with visual observations of imported material in lieu of sampling every 20 percent of imported material.

2.7 Health and Safety

NEI will be responsible for managing site health and safety for the Wheeler Bay shoreline stabilization project. The NEI Contractor Health and Safety Plan (CHASP) was prepared by a certified industrial hygienist, and a copy of the plan can be found in Appendix A.

The plan assesses the risks associated with the stabilization work and details the safety plans to address them. The risks assessed are summarized under the following types, and the primary project-specific risk issues are listed below:

- Toxicity of chemicals of concern – Site-related chemicals are polycyclic aromatic hydrocarbon (PAHs) and metals. The primary concern is related to inhalation of dust or incidental exposure related to direct contact with soil. These risks are addressed through dust control, good hygiene, and decontamination.
- Physical hazards – There are no unusual physical hazards associated with the project. Construction physical hazards are discussed and addressed in the CHASP.
- Biological hazards – There are no unusual biological hazards associated with the project. Construction biological hazards are discussed and addressed in the CHASP.
- Environmental hazards – There are no unusual environmental hazards associated with the project. Given the construction schedule, heat/sun-related hazards are of greatest concern. Construction environmental hazards are discussed and addressed in the CHASP.

The Site Safety Program will be set up by a Site Health and Safety Officer, who will perform on-site monitoring periodically during the project. Other qualified management personnel may assume the duties of the Site Health and Safety Officer during periods of minimal activities on site.

Copies of the CHASP will be made available to all NEI personnel involved in field work on this project and all subcontractors and other non-employees who may need to work on the site.

2.8 Environmental Protection

The EPP for the Wheeler Bay shoreline stabilization project (Appendix C) elaborates on the control measures to prevent environmental pollution and minimize environmental degradation during, and as a result of, construction operations. This plan includes NEI's BMPs for construction work in the proximity of surface water and during transportation of materials on roadways. The plan details the following control measures:

- Erosion and turbidity control BMPs
- Spill prevention
- Dust control
- Noise control
- Diesel smoke reduction
- Idle reduction – Equipment, haul trucks, and vehicles will not be idled unless there is no alternative practical method

As stated in the EPP, if a spill occurs during the work at Wheeler Bay, the following people will be notified immediately: Jeff Hargens, NEI (503-849-8562); Tim Stone, Port Inspector (Anchor QEA; 503-475-9150); and Marine Security (503-240-2230). Marine Security will notify the on-duty Port Marine Environmental Manager. The on-duty Port Marine Environmental Manager will make further notifications to the following agencies in addition to USEPA depending upon the type and scope of spill:

- National Response Center: 800-424-8802
- U.S. Coast Guard: 503-240-9370/503-240-9379
- Oregon Emergency Response Center (OERS): 800-452-0311

2.9 Scheduling/Reporting

Schedule. The Wheeler Bay shoreline stabilization slope repair work is expected to require approximately 4 weeks, depending on the rail schedule impacts. A proposed schedule for the

Wheeler Bay shoreline stabilization slope repair is provided in Figure 4. The schedule for the Wheeler Bay shoreline stabilization slope repair is summarized as follows:

- Mobilization beginning September 22, 2010 (1 day)
- Site preparation beginning September 23, 2010 (2 days)
- Shoreline stabilization slope repair beginning September 24, 2010 (11 days)
- Installation of vegetation beginning October 11, 2010 (10 days)
- Demobilization on October 15, 2010 (1 day)

The Wheeler Bay stabilization slope repair crew is anticipated to work one shift, 5 days per week. The site hours of operation will be from 7:00 am until 5:30 pm.

Reporting. The NEI PM is responsible for the reporting and has the sole authority for report review and approval. Standard reports include:

- Construction Reports (daily)
- Test Reports (daily)
- Calibration Records (weekly)
- Construction Photographs (weekly)
- Survey Records (bi-weekly)
- Corrective Action Reports (as generated)

All Wheeler Bay project documents, including QA/QC reports, will be controlled by the NEI PM and secured in the job-site office under his or her direct control. Current records of operations, activities, and tests performed will be maintained.

3 REPORTING/PROJECT COORDINATION

3.1 Project Team Roles and Responsibilities

Figure 5 presents the project team organization chart for construction. Each role is briefly described below:

<u>USEPA and Port Roles</u>

- **USEPA Project Manager** – Sean Sheldrake
  - USEPA is the regulatory authority and is the responsible agency for overseeing and authorizing the T4 Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair described herein. In this capacity, USEPA will review information described in the RAWP for consistency with the Phase I Removal Action Objectives (RAOs), the AOC, and applicable state and federal laws and regulations. The USEPA Project Manager, or a designee, will exercise project oversight for USEPA, coordinate comments developed by USEPA and other agencies, and communicate agency observations with the Port Project Manager (Kelly Madalinski) and the Design Project Engineer (Anchor QEA's John Verduin). The USEPA Project Manager shall notify the Port if any concerns regarding the implementation of the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair are identified. The Port will propose response measures or recommendations to USEPA as appropriate. USEPA, as appropriate, will make final decisions to resolve such issues or problems that may change the project scope.
  - USEPA is working cooperatively with other government agencies, including DEQ, other federal agencies, and tribal governments. The other agencies will continue to review documents and participate in decision making related to the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair. As applicable, other agencies will provide their comments to the USEPA Project Manager for communication to the Port.
  - USEPA will utilize their oversight consultant, Parametrix, to assist with construction assessment. Ken Fellows will be the lead for Parametrix.

- **Port Project Manager** – Kelly Madalinski
  - The Port of Portland Project Manager (Port PM) is responsible for administrating all actions required by the AOC with USEPA, including the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair. The Port PM will review contractor work products, and be the point of contact with USEPA.
- **Port Engineering Project Manager** – Marcel Hermans
  - The Port Engineering Project Manager (Port Engineering PM) is responsible for implementing the construction of the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair. The Port Engineering PM will also review contractor work products and interface with the Port project staff, the Port's consultant staff, and the contractor project staff to collaboratively work towards solutions in the field during construction.
- **Port Project Engineer** – Roger Anderson
  - The Port Project Engineer is responsible for facilitating Requests for Information (RFIs) and providing technical/engineering support on the project. The Port Project Engineer interfaces with the project staff on engineering issues and provides change management documents related to construction. The Port Project Engineer is vital in getting record drawings finalized.
- **Port Contract Construction Manager** – John Durst
  - The Port Contract Construction Manager (CCM) is responsible for managing the construction contracts between the Port and its construction contractors to ensure that the contractors are in compliance with the contract documents. The Port CCM negotiates change orders with the contractors. It is recognized for this project that USEPA may have final authority on these matters and, therefore, any project scope changes will be handled as discussed above. The Port CCM manages the Port Construction Staff.
- **Construction Quality Assurance Officer (CQAO)** – John Verduin
  - The CQAO will be responsible for overseeing the implementation of the Construction Quality Assurance Plan (CQAP). In overseeing implementation of the CQAP, the CQAO is responsible for monitoring construction performance for

compliance with construction performance standards and design requirements during implementation of the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair, and is responsible for overseeing the required inspection and verification activities. The CQAO will review documentation submitted by and work completed by the contractors for adherence to performance standards and design requirements. The CQAO will be sufficiently familiar with the final design and the construction operations to recognize deviations from that design. This activity will be completed in coordination with the Field Construction Quality Assurance Representative (CQAR)/Inspector.

- The CQAO will also be responsible for identifying those field conditions that may warrant deviation from the final design. In such circumstances, the CQAO will coordinate with the Port PM and the USEPA Project Manager to identify and agree upon any necessary deviations to meet the overall objectives of the design. Any agreed-upon deviations will be documented in the weekly progress reports to USEPA.
- The CQAO will use Field Construction Quality Assurance (CQA) Representatives with the requisite expertise and experience to help perform the duties described above. This activity will be coordinated with the Field CQAR/Inspector.

- **Field Construction Quality Assurance Representative (CQAR)/Inspector** – Tim Stone
  - The Field CQAR/Inspector will conduct daily construction field inspections consistent with the construction documents, including the RAWP. The Field CQAR/Inspector will be in the field daily during construction activities and will document all associated activities as they occur.

- **Design Project Engineer** – John Verduin
  - The Design Project Engineer is responsible for two main tasks. First, the Design Project Engineer is responsible for preparing the design of the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair such that successful implementation of the design will result in achieving the RAOs and construction activity-specific objectives.
  - Additionally, the Design Project Engineer will provide consultation and observations during construction to assist with implementation of the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair in

conformance with the USEPA-approved design documents. During implementation of the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair, potentially non-compliant construction activities will be referred to the Design Project Engineer. The Design Project Engineer is responsible for determining whether the allegedly non-compliant construction is acceptable within the design, unacceptable, or acceptable with a design modification. This activity will be completed through coordination with the Port Project Engineer. USEPA will have final authority to approve design modifications proposed by the Design Project Engineer.

Wheeler Bay Shoreline Stabilization Slope Repair Project

- **NEI PM/Construction Quality Control (CQC) Manager** – Jeff Hargens
  - The NEI PM/CQC Supervisor is responsible for all project activities. The NEI PM/CQC Supervisor provides overall direction and support for field and technical activities. This person represents NEI in technical and administrative issues and is authorized to negotiate change orders and make decisions on all aspects of the Wheeler Bay shoreline stabilization project.
- **NEI Health and Safety Supervisor (HSS)** – Carl Johnson
  - The NEI HSS is responsible for compliance with the site specific Health and Safety requirements, including Occupational Safety and Health Administration (OSHA) 1910.120 – Hazardous Waste Site Operations; OSHA 1926 – Construction Safety; and other requirements intended to assure the health and safety of site workers and the public.
- **NEI Project Superintendent (PS)** – Carl Johnson
  - The NEI PS is responsible for supervising all construction field activities, including NEI employees, subcontractors, and off-site material suppliers. The NEI PS operates at the discretion of the NEI PM/CQC Supervisor, and authority is delegated by the NEI PM/CQC Supervisor.

- **NEI Project Engineer (PE)** – Philip Hansen
  - The NEI PE is responsible for tracking submittals and overseeing task plans and operating procedures, in coordination with the NEI PS, that involve quality control procedures, tracking, testing, and other documentation necessary to meet specifications and requirements of the CQC Plan. The NEI PE operates at the discretion of the NEI PM/CQC Supervisor, and authority is delegated by the NEI PM/CQC Supervisor.

3.2 Project Coordination

The following coordination will be met before, during, and immediately after construction:

- Notification to USEPA of anticipated start of construction
- Preconstruction meetings/initial safety meetings
- Weekly construction meetings
- Weekly progress reports to USEPA during construction
- Verbal and written notification to USEPA of completion of construction
- Prompt notification of any emergencies or deviations from the approved design, work plans, or BMPs
- Prompt submittal of water quality monitoring data (preliminary and final)
- Removal Action Closure Report (RACR)

USEPA will be present for the preconstruction meeting and will inspect the progress of construction activities throughout the course of the project. A designated person from USEPA will receive weekly progress reports and be available for any design modification questions and approvals as construction progresses.

USEPA has legal authority over the project work and the contractors will allow unrestricted access to USEPA employees and its contractor staff (collectively referred to in the remainder of this paragraph as USEPA) to observe the work. The contractors will coordinate and cooperate with USEPA to the maximum extent possible. The contractors will neither temporarily nor permanently withhold any relevant data, observations, or information from USEPA. USEPA will not provide, nor will the contractors accept, verbal direction regarding the means and methods of the work, except that the contractors will immediately heed

USEPA upon USEPA's direction to the contractors to shut down the work and standby until further notice. Other than shutting down the work, USEPA will communicate all direction regarding means and methods and other contractual issues relevant to the contractors through the Port.

Preconstruction Meeting. A preconstruction meeting will take place and will include:

- Review methods for documenting and reporting data, and compliance with specifications and drawings, including methods for processing design changes and securing USEPA review and approval of such changes as necessary
- Review methods for distributing and storing documents and reports
- Review work area security and safety protocols, as appropriate
- Discuss formal implementation of project HASPs/CHASPs
- Demonstrate that construction management is in place, and discuss any appropriate modifications of the CQAP to ensure that project-specific considerations are addressed
- Discuss methods for direct measurement, including confirmation sampling of construction work to be used to ensure that performance standards are met
- If requested, conduct a RAA tour with USEPA in the project area to verify that the design criteria, drawings, and specifications are understood, and to review material and equipment storage locations, as appropriate

The roles and responsibilities of all of the personnel involved in the Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair will also be reviewed at the preconstruction meeting. The lines of communication between USEPA, the Port, and the various contractors will be confirmed to facilitate successful implementation of the design. The requirements of the design documents, including the CHASPs, will be reviewed.

Weekly Construction Meetings. During implementation, weekly construction meetings will occur. Topics to be covered at the meeting include, but are not limited to, the following:

- Review and approved minutes from last meeting
- Old Business –Action Items
  - Discuss status of each action item

- Discussion points:
  - Schedule
    - Overall project schedule update
    - 3-week look-ahead schedule
    - Upcoming meetings
  - Resource allocation
  - Submittals
  - Safety issues
    - Monitoring and enforcement of CHASPs
  - Technical concerns (e.g., structural, mechanical, or civil)
  - As-built updates
  - RFIs
  - Environmental protection procedures

Prompt Data to USEPA. During implementation, certain information will be promptly given to USEPA, including the following:

- Notice of any emergencies, including accidents or spills
- Deviations from the approved design, work plans, or BMPs

Progress Reports. During implementation, all activities will be monitored for compliance with the design documents and RAWP, and the Port will provide weekly progress reports to USEPA. The weekly progress reports will identify:

- Activities performed during the reporting period
- Problems encountered and proposed corrective actions
- Water quality monitoring results (if applicable)
- Anticipated work to be performed during the following week

Construction Completion Notification. Within 7 days of completing construction, the Port will verbally notify USEPA that the action is complete and schedule a final inspection and meeting, if requested. At the close of the meeting, the Port and USEPA will agree to a list of outstanding items, if applicable. Within 14 days of the final inspection, the Port will notify

USEPA in writing that the action is complete, including identifying how each of the action items from the final inspection was addressed, if applicable.

Removal Action Closure Report (RACR). The RACR will be prepared after completion of construction and will document the successful completion of the removal action. The RACR will be completed in general conformance with "Closeout Procedures for National Priorities List Sites" (EPA 540-R-98-016). The RACR will provide the appropriate sections identified in this guidance document. The following items will be included in the RACR:

- Summary of changes made to the approved plans and specifications and the rationale for each change
- Design modifications as applicable
- Any problems encountered in implementing the stabilization slope repair, as well as corrective actions implemented
- As-built drawings of the stabilization slope repair dimensions
- The volume of materials removed and final disposition of those materials will be documented in a table, and trip tickets or manifests will be maintained to support the tabular summary
- The results of all testing performed to monitor the construction will be summarized in tables as well, and original laboratory reports will be maintained to support the summaries
- The individual as-built drawings and the RACR will be sealed by a professional engineer registered in Oregon

3.2.1 Scheduling

The contractors will supply weekly updates to the project construction schedule at each weekly construction meeting.

3.2.2 Quality Assurance/Quality Control

The CQAO, as administered by the Field CQA Representative, will maintain a daily field log to record observations, measurements, inspections completed, data received, communications with other members of the project team or USEPA, additional environmental controls that were implemented, problems encountered, and resolutions. The

daily field log will be supported by submittals received from the contractors, such as survey results and weigh tickets, chain of custody forms for water quality monitoring samples collected, laboratory data received, inspection reports, and written communication from members of the project team or USEPA.

The CQAO, in cooperation with the contractors, will prepare weekly summaries of progress. These summaries will facilitate the preparation of the RACR. Each Weekly Summary Report will identify progress organized by activity:

- Shoreline Stabilization Slope Repair
  - Area worked (supported by contractor's log)
  - Weight/volume of material removed (supported by contractor's log)
  - Weight/volume of material placed (supported by contractor's log)
  - Problems encountered
  - Corrective actions
- Environmental Controls
  - Samples collected (if appropriate)
  - Summary of analytical results (if appropriate)
  - Problems encountered
  - Corrective actions

3.2.3 Environmental Protection

Environmental protection measures are outlined in the EPP of Appendix C. The WQMP is presented in Appendix E. In the unlikely event that site activities trigger water quality monitoring, the Water Quality Compliance Manager will prepare weekly summaries of water quality results. The weekly summaries will be based on the daily water quality monitoring reports and will facilitate the preparation of the RACR. The weekly summary report will identify monitoring results by construction activities.

3.2.4 Health and Safety

Appendix A details the health and safety activities to be completed for the project. Tailgate health and safety meetings will be completed daily.

3.3 Project Reporting/Recordkeeping

3.3.1 Daily Report

During construction activities, the contractor will prepare a Daily Quality Control Report and submit it to the CQAO. The contractor's daily report will record at a minimum:

- Identification of personnel on site
- Activities completed
- Any changes to BMPs or environmental controls
- Materials delivered or used
- Equipment used
- Construction progress
- Surveys completed
- Results of any quality control inspections, tests, or other monitoring activities
- Problems encountered and resolution of problems
- Any USEPA-authorized deviations from the final design
- Weather
- Tides/river levels
- Accidents

Daily Quality Control Reports will be sent to USEPA on a weekly basis as part of the Weekly Summary Report as discussed in Section 3.2.

3.3.2 Resource Tracking/Allocation

The contractors and Field CQA representatives will note in their daily reports the following information:

- Personnel on site
- Equipment used
- Materials imported and exported
- Project progress and any potential work progress issues that need to be addressed/resolved

The Contractors will provide construction schedule resource updates at the weekly construction meeting (see Section 3.2).

3.3.3 Submittals and Design Changes

The contractors will utilize the Port's submittal tracking process for all submittals. The progression of the process can be followed on Figure 5 as follows:

- All submittals will be generated or approved by the contractor's PM (NEI).
- The submittals will be given to the Port PM by the contractor's PM (NEI).
- The CQAO, Design Project Engineer, and Port Project Engineer will review all submittals for compliance to the project design documents and the RAWP.
- If the submittal is felt to be in compliance, the Port PM will provide the submittal to the USEPA Project Oversight PM for their approval.
- The contractor's PM (NEI) will be notified of the approval, denial, or requested modification after USEPA's review is completed.

Design changes that come about due to changed conditions or value engineering in the field will follow the Port's web-based RFI process. This process is as follows:

- All RFIs will be generated by the contractor's PM (NEI).
- The RFIs will be given to the Port PM by the contractor's PM (NEI).
- The CQAO, Design Project Engineer, and Port Project Engineer will review RFIs for compliance to the project objectives and the RAWP.
- For responses that change the project design, the Port PM will provide a response to the USEPA Project Oversight PM for their approval.
- The contractor's PM (NEI) will be notified of the response to the RFI after USEPA's review is completed.

All documentation for submittals and design changes will be included in the RACR.

3.4 Files and Records Management

The contractor (NEI) will maintain on-site files. A record copy of the drawings and specifications will be maintained during the life of the project, including any addenda,

change orders, and other modifications. All project correspondence, Requests for Clarification, RFIs, shop drawings, contractor submittals, product data, samples, submittals, purchases, weigh tickets, applicable handbooks, operations and maintenance (O&M) manuals, related documents, and revisions will be maintained in the project files located on site.

All submittals are submitted to the Port in accordance with the process described in Section 3.3.4. Originals are filed in the Port's Construction File. Each submittal is uniquely numbered and a log of submittals is maintained for ready access.

3.5 Closeout

The Contractor will notify the Port in writing when they consider the project ready for intended use. Within 5 days thereafter, the Contractor, the Port, and USEPA will make an inspection of the work to determine the status of completion. If the Port and USEPA consider the work Substantially Complete, the Port will, within 15 days of the date of inspection, execute and deliver to the Contractor a letter confirming Substantial Completion with a list of items to be completed or corrected. If the Port or USEPA does not consider the work Substantially Complete, the Port will notify the Contractor in writing giving reasons therefore. The Contractor will address any deficiencies and the process will be repeated if necessary.

Upon Substantial Completion, the Contractor will remove stakes and painted markings used in construction layout, remove debris from the staging and work areas, and thoroughly sweep paved areas prior to final acceptance.

When the Contractor considers the work to be complete, the Contractor shall certify, in writing, that the work is complete and request a letter granting Final Acceptance. Within 15 days after receipt of the Contractor's certification, the Port will inspect the work and will notify the Contractor, in writing, of Final Acceptance or of all particulars in which the inspection revealed that the work is incomplete. The Contractor will immediately address such deficiencies.

The Contractor's certification of completion will be accompanied by two drawing sets showing all as-constructed changes and information. One set will be given to USEPA from the Port for their review.

4 REFERENCES

Anchor Environmental, L.L.C. (Anchor), 2007. Abatement Measures Proposal: Terminal 4 Removal Action Project. Prepared for the Port of Portland, by Anchor Environmental. October 25, 2007.

Anchor, 2008a. Final Design Analysis Report: Terminal 4 Phase I Removal Action. Prepared for the Port of Portland by Anchor Environmental. June 2008.

Anchor, 2008b. Removal Action Work Plan – Terminal 4 Phase I Removal Action. Port of Portland, Portland, Oregon. August 2008.

National Marine Fisheries Service (NMFS). 2008. Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the U.S. Environmental Protection Agency and Port of Portland Terminal 4 Superfund Phase I of the Removal Action, Willamette River (HUC 17090012), Multnomah County, Oregon. NMFS Number 2007/08174, July 22, 2008.

U.S. Environmental Protection Agency (USEPA), 2003. Administrative Order on Consent for Removal Action in the Matter of Portland Harbor Superfund Site, Terminal 4, Removal Action Area, Portland, Oregon.

USEPA, 2006. Action Memorandum for Removal Action at the Port of Portland Terminal 4 site within the Portland Harbor Superfund Site, Portland, Multnomah County, Oregon. May 11, 2006.

USEPA, 2007. August 22, 2007 Request for Realignment of T4 Removal Schedule; Resolution of 60% Design Disputed Comments; Administrative Order on Consent for Removal Action (AOC), Docket No. 10-2004-0009. Letter from Deborah Yamamoto of USEPA Region 10 to Tom Imeson of the Port of Portland. November 15, 2007.

USEPA, 2008. Water Quality Monitoring and Compliance Conditions Plan for Port of Portland Terminal 4 Non-Time Critical Removal Action Abatement Measures, Phase I. Prepared by Parametrix for the U.S. Environmental Protection Agency. July 2.

TABLES

Table 1
Import Material Chemical Goals

Chemical Name	Proposed Borrow Source Criteria	Rational for Criteria
Metals (mg/kg)		
Arsenic[3]	9.79	1
Cadmium	0.99	1
Chromium	43.4	1
Cobalt	NC	4
Copper	31.6	1
Iron	NC	4
Lead	35.8	1
Mercury	0.18	1
Nickel	22.7	1
Selenium	NC	4
Silver	0.5	2
Zinc	121	1
PCBs (µg/kg)		
Total PCBs	10	2
Pesticides (µg/kg)		
Sum DDD	2	2
Sum DDE	2	2
Sum DDT	2	2
Aldrin	2	2
alpha-BHC	2	2
alpha-Chlordane	2	2
beta-BHC	2	2
beta-Chlordane	2	2
Camphechlor	200	2
cis-Nonachlor	4	2
delta-BHC	2	2
Dieldrin	1.9	1
Endosulfan I	2	2
Endosulfan II	4	2
Endosulfan Sulfate	4	2
Endrin	2.22	1
Endrin aldehyde	4	2
Endrin ketone	4	2
gamma-BHC (Lindane)	2.37	1
Heptachlor	2	2
Heptachlor Epoxide	2.47	1
Hexachlorobenzene	10	2
Hexachlorobutadiene	10	2
Methoxychlor	20	2
Oxychlordane	4	2
trans-Nonachlor	4	2
SVOC (µg/kg)		
1-Methylnaphthalene	20	2
2-Methylnaphthalene	20	2
Acenaphthene	20	2
Acenaphthylene	20	2
Anthracene	57.2	1
Benzo(a)anthracene	108	1
Benzo(a)pyrene	150	1
Benzo(b)fluoranthene	20	2
Benzo(g,h,i)perylene	20	2
Benzo(k)fluoranthene	20	2
bis(2-Ethylhexyl)phthalate	100	2
Butylbenzylphthalate	20	2
Chrysene	166	1
Dibenzo(a,h)anthracene	33	1
Dibenzofuran	20	2
Diethylphthalate	20	2
Dimethylphthalate	20	2
Di-n-butylphthalate	20	2
Di-n-octylphthalate	20	2
Fluoranthene	423	1
Fluorene	77.4	1
Indeno(1,2,3-cd)pyrene	20	2
Phenanthrene	204	1
Pyrene	195	1
Total PAHs	1610	1
TPH (mg/kg)		
TPH - Residual Range	50	3
TPH - Diesel Range	50	3
VOC (µg/kg)		
1,1,1,2-Tetrachloroethane	20	2
1,1,1-Trichloroethane	20	2
1,1,2,2-Tetrachloroethane	20	2
1,1,2-Trichloroethane	20	2

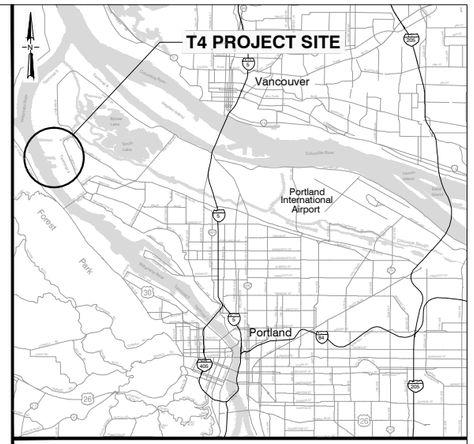
Table 1
Import Material Chemical Goals

Chemical Name	Proposed Borrow Source Criteria	Rational for Criteria
1,1,2-Trichlorotrifluoroethane	20	2
1,1-Dichloroethane	20	2
1,1-Dichloroethene	20	2
1,1-Dichloropropene	20	2
1,2,3-Trichlorobenzene	20	2
1,2,3-Trichloropropane	20	2
1,2,4-Trichlorobenzene	20	2
1,2,4-Trimethylbenzene	20	2
1,2-Dibromo-3-chloropropane	20	2
1,2-Dibromoethane	20	2
1,2-Dichlorobenzene	20	2
1,2-Dichloroethane	20	2
1,2-Dichloropropane	20	2
1,3,5-Trimethylbenzene	20	2
1,3-Dichlorobenzene	20	2
1,3-Dichloropropane	20	2
1,4-Dichlorobenzene	20	2
2,2-Dichloropropane	20	2
2-Butanone (MEK)	20	2
2-Chloroethylvinylether	20	2
2-Chlorotoluene	20	2
2-Hexanone	20	2
4-Chlorotoluene	20	2
4-Isopropyltoluene	20	2
4-Methyl-2-pentanone (MIBK)	20	2
Acetone	20	2
Acrolein	20	2
Acrylonitrile	20	2
Benzene	20	2
Bromobenzene	20	2
Bromodichloromethane	20	2
Bromoethane	20	2
Bromoform	20	2
Bromomethane	20	2
Carbon disulfide	20	2
Carbon tetrachloride	20	2
Chlorobenzene	20	2
Chloroethane	20	2
Chloroform	20	2
Chloromethane	20	2
cis-1,2-Dichloroethene	20	2
cis-1,3-Dichloropropene	20	2
Dibromochloromethane	20	2
Dibromomethane	20	2
Dichloromethane	20	2
Dichlorodifluoromethane	20	2
Ethylbenzene	20	2
Hexachlorobutadiene	10	2
Iodomethane	20	2
m,p-Xylenes	20	2
Naphthalene	176	1
n-Butylbenzene	20	2
n-Propylbenzene	20	2
o-Xylene	20	2
sec-Butylbenzene	20	2
Styrene	20	2
tert-Butylbenzene	20	2
Tetrachloroethene	20	2
Toluene	20	2
trans-1,2-Dichloroethene	20	2
trans-1,3-Dichloropropene	20	2
trans-1,4-Dichloro-2-butene	20	2
Trichloroethene	20	2
Trichlorofluoromethane	20	2
Vinyl Acetate	20	2
Vinyl chloride	20	2

Notes:

1. The proposed criteria are Threshold Effects Concentrations (TECs), if available.
2. If TECs are not available, then the criteria for the remaining parameters are based on NW Regional SEF Sample Quantitation Limits (SQLs) from Table 7-2, REST 2006 if available, with consideration of chemical-specific analytical response within the same analytical group.
3. If TECs and SQLs are not available, then the criteria for the remaining parameters are based on the Portland Harbor Proposed Effects Level 2 SQV's (PHL2 SQVs).
4. NC = No criteria proposed. If TECs, SQLs, and PHL2 SQVs are not available, no criteria are proposed.

FIGURES



VICINITY MAP
SCALE: N.T.S.

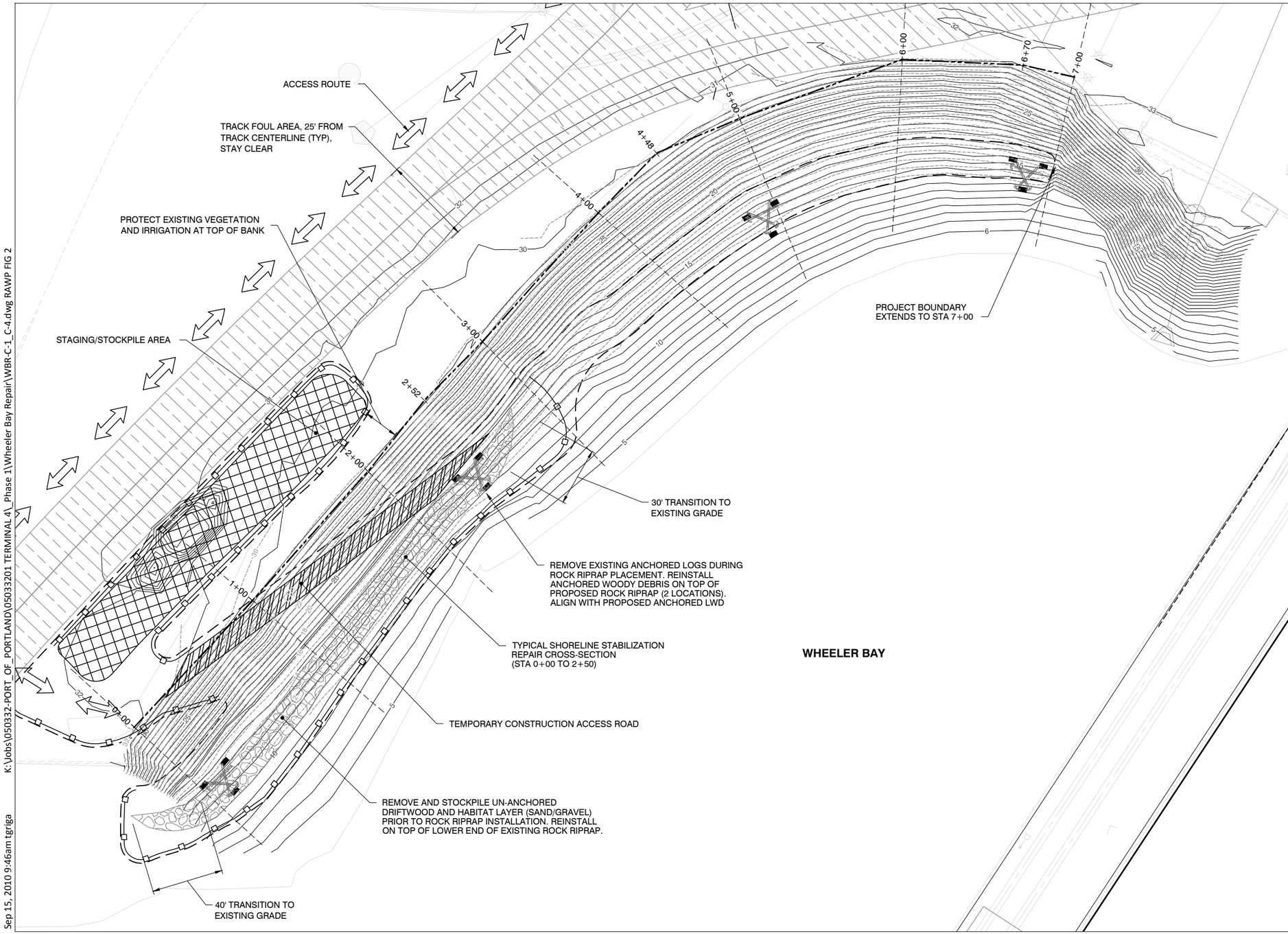
0 300
Scale in Feet

K:\Jobs\...\50332-PORT_OF_PORTLAND\05033201 TERMINAL 4_Phase 1\Wheeler Bay Repair\WBR-RAWP-FIG 1.dwg RAWP FIG 1

Sep 14, 2010 3:50pm tgriga

ANCHOR QEA

Figure 1
Site Plan and Vicinity Map
Terminal 4 Phase I Removal Action - Wheeler Bay Stabilization Slope Repair - Removal Action Work Plan
Portland, Oregon



LEGEND:

- PROJECT BOUNDARY
- LIMIT OF ROCK RIPRAP AND SELECT FILL
- TEMPORARY CONSTRUCTION ACCESS ROAD
- EXISTING LWD
- EXISTING ECOLOGY BLOCK LWD ANCHORS
- 25 — POST 2008 CONSTRUCTION CONTOURS (DATE: 10/13/08)
- 30 — CURRENT CONDITION CONTOURS (DATE: 07/29/10)
- 1+00 — STATION LINE
- TRACK FOUL AREA

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47 CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINISTER-GLAESER DATED OCTOBER 13, 2008 AND PROVIDED BY ASH CREEK.
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.

0 60
Scale in Feet

K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4_Phase 1\Wheeler Bay Repair\WBR-C-1_C-4.dwg RAWP FIG 2

Sep 15, 2010 9:46am tgriga

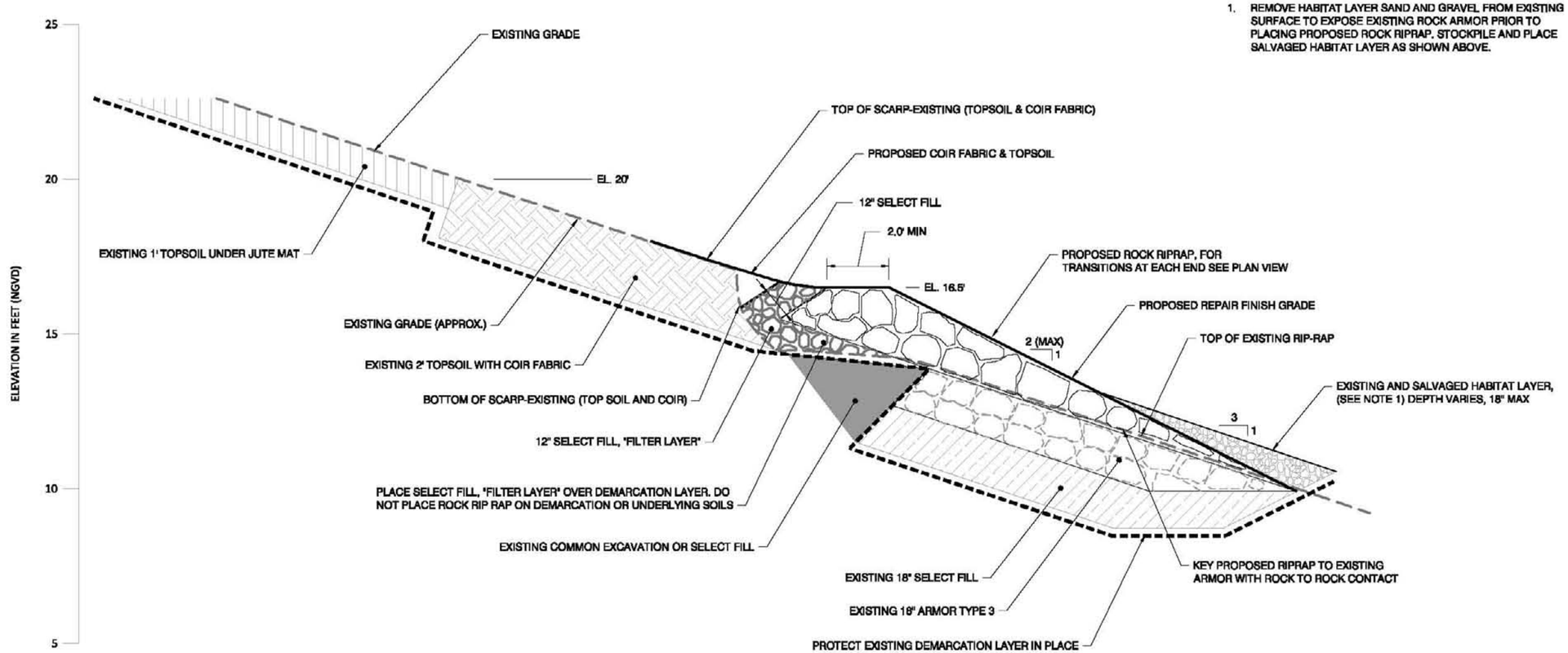
ANCHOR QEA

Figure 2
Shoreline Stabilization Slope Repair Plan
Terminal 4 Phase I Removal Action - Wheeler Bay Stabilization Slope Repair - Removal Action Work Plan
Portland, Oregon

Sep 14, 2010 4:16pm tgriga K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4_Phase 1\Wheeler Bay Repair\WBR-C-1_C-4.dwg RAWP FIG 3

CROSS-SECTION NOTES:

1. REMOVE HABITAT LAYER SAND AND GRAVEL FROM EXISTING SURFACE TO EXPOSE EXISTING ROCK ARMOR PRIOR TO PLACING PROPOSED ROCK RIPRAP. STOCKPILE AND PLACE SALVAGED HABITAT LAYER AS SHOWN ABOVE.



TYPICAL SLOPE REPAIR SECTION

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47

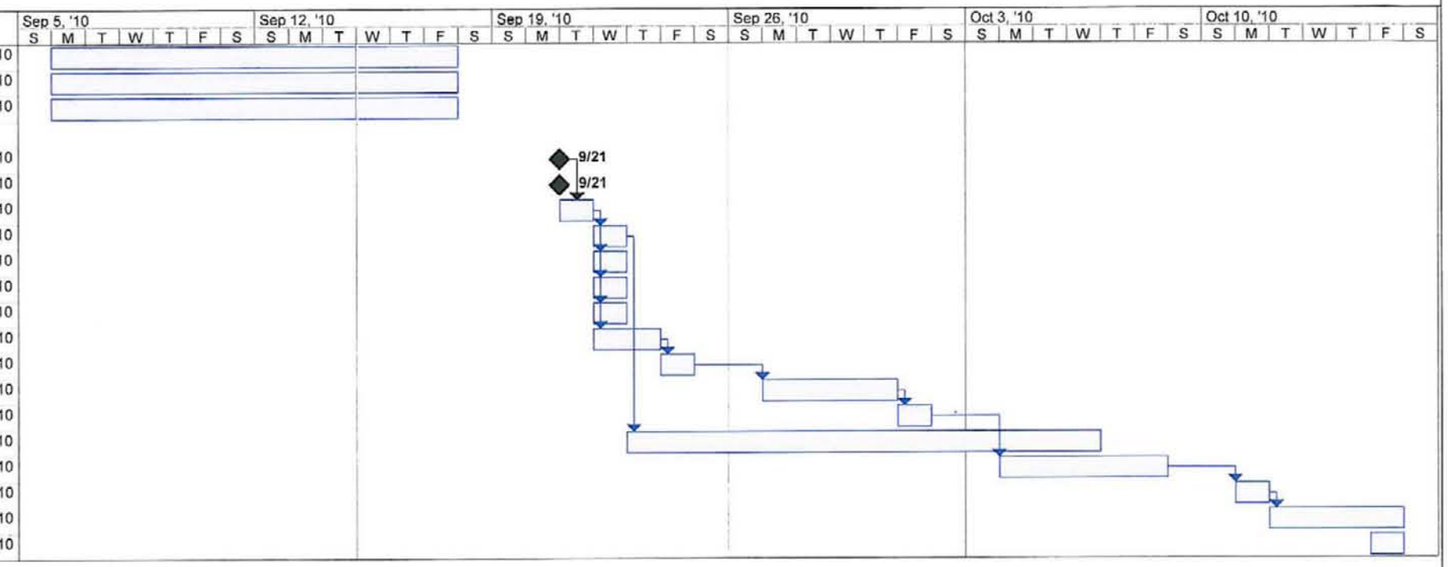
0 4
Scale in Feet

ANCHOR QEA

Figure 3
Typical Slope Repair Section
Terminal 4 Phase I Removal Action - Wheeler Bay Stabilization Slope Repair - Removal Action Work Plan
Portland, Oregon

NORTHWEST EARTHMOVERS INC.

ID	Task Name	Duration	Start	Finish
1	Prepare CHASP	10 days	Mon 9/6/10	Fri 9/17/10
2	Prepare CQC	10 days	Mon 9/6/10	Fri 9/17/10
3	Prepare EPP	10 days	Mon 9/6/10	Fri 9/17/10
4				
5	Notice to Proceed	0 days	Tue 9/21/10	Tue 9/21/10
6	TWIC Cards	0 days	Tue 9/21/10	Tue 9/21/10
7	Preconstruction	1 day	Tue 9/21/10	Tue 9/21/10
8	Mobilization	1 day	Wed 9/22/10	Wed 9/22/10
9	Layout	1 day	Wed 9/22/10	Wed 9/22/10
10	Install Silt Fence	1 day	Wed 9/22/10	Wed 9/22/10
11	Construct Access	1 day	Wed 9/22/10	Wed 9/22/10
12	Prepare work area to receive Rip Rap	2 days	Wed 9/22/10	Thu 9/23/10
13	Repair Demarcation & Select Fill (as needed)	1 day	Fri 9/24/10	Fri 9/24/10
14	Place New Rock Rip Rap	4 days	Mon 9/27/10	Thu 9/30/10
15	Replace Habitat Layer	1 day	Fri 10/1/10	Fri 10/1/10
16	Deliver New Woody Debris	10 days	Thu 9/23/10	Wed 10/6/10
17	Place & Anchor Woody Debris	5 days	Mon 10/4/10	Fri 10/8/10
18	Place Top Soil & Jute	1 day	Mon 10/11/10	Mon 10/11/10
19	Landscape Work	4 days	Tue 10/12/10	Fri 10/15/10
20	Demobilization	1 day	Fri 10/15/10	Fri 10/15/10



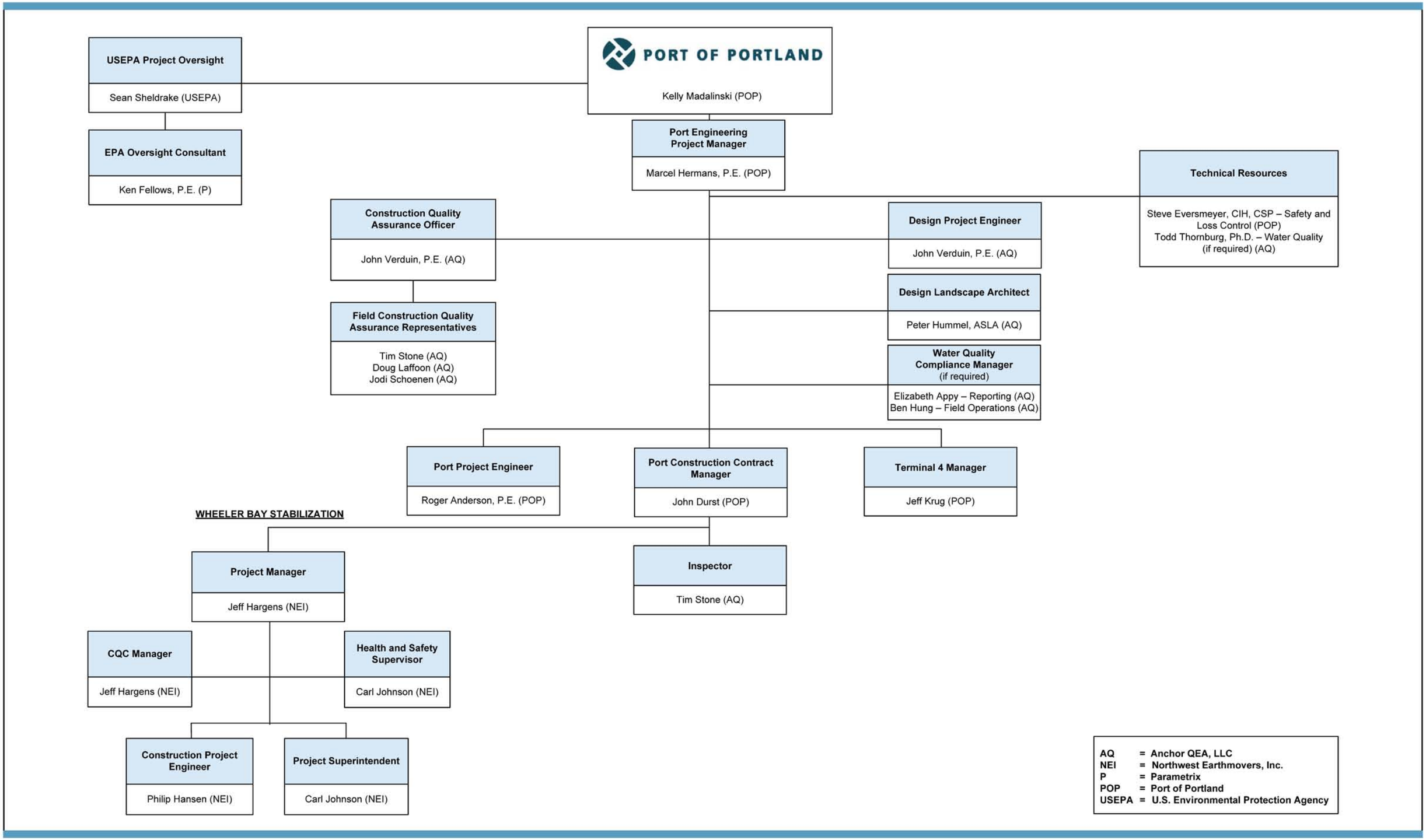
Project: T4 Wheeler Bay Bank Repair
Date: Wed 9/15/10

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

Page 1

ANCHOR QEA

Figure 4
Contractor's Proposed Construction Schedule—Wheeler Bay Stabilization
Terminal 4 Phase I Removal Action - Wheeler Bay Shoreline Stabilization Slope Repair - Removal Action Work Plan
Portland Oregon



ANCHOR QEA

Figure 5
Organization Chart
Terminal 4 Phase I Removal Action - Wheeler Bay Shoreline Stabilization Slope Repair - Removal Action Work Plan
Portland Oregon

APPENDIX A
NEI HEALTH AND SAFETY PLAN (HASP)

FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN

Terminal 4
Wheeler Bay
Bank Repairs
Port of Portland

Prepared for:

Northwest Earthmovers, Inc.
13600 SW Galbreath Drive
Sherwood, Oregon 97140

Submitted by:

AMEC Earth & Environmental, Inc.
7376 SW Durham Road
Portland, Oregon 97224

0-61M-121622

September 2010

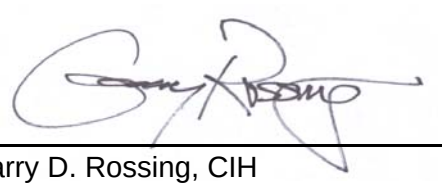
Copyright © 2010 by AMEC Earth & Environmental, Inc.
All rights reserved.

Site-Specific Health and Safety Plan
Terminal 4 Wheeler Bay Bank Repairs
Port of Portland
Portland, Oregon

This Site-Specific Health and Safety Plan (HASP) has been developed in accordance with State of Oregon OAR 437 Division 2 and Division 3 regulations (OR-OSHA) and has been streamlined to avoid duplication of existing Northwest Earthmovers Inc. (NEI) documents. It is a project manger's responsibility that the HASP is current and covers all work activities at the Site.

REVIEW AND APPROVALS

Prepared by:



September 14, 2010

Garry D. Rossing, CIH
Associate / Certified Industrial Hygienist
AMEC Earth & Environmental, Inc.

Date

Approved by:

Jeff Hargens
President/Project Manager
Northwest Earthmovers, Inc.

Date

Carl Johnson
Site Supervisor
Northwest Earthmovers, Inc.

Date

HASP EMERGENCY SUMMARY SHEET

The Site Health and Safety Coordinator (SHSC) and the Project Manager (Jeff Hargens) shall be notified immediately if worker exposure, accidents, or site conditions not anticipated in this document are encountered.

RESPONDING EMERGENCY AGENCIES

Service	Telephone Number
Ambulance	911
Fire Department	911
Police Department	911

PROJECT EMERGENCY CALL LIST

Title	Name	Telephone Number
Project Manager	Jeff Hargens	(503) 625-3100 (Office) (503) 849-8562 (Cell)
Site Supervisor	Carl Johnson	(503) 625-3100 (Office) (503) 849-8551 (Cell)
Site Health and Safety Coordinator (SHSC)	Carl Johnson	(503) 625-3100 (Office) (503) 849-8551 (Cell)
Corporate Health and Safety Director (CHSD)	Jeff Hargens	(503) 625-3100 (Office) (503) 849-8562 (Cell)
Health and Safety Representative	Garry Rossing, CIH	(503) 639-3400 (Office) (503) 816-9254 (Cell)
Port of Portland	Time Stone- (Anchor QEA) Inspector Kelly Madalinski	(503) 475-9150 (Cell) (503) 415-6676 (Office) (503) 805-6952 (Cell)
* In the event of an occupational accident or incident, for NEI employees please indicate to the medical facility that this is a Workers' Compensation case; that your employer is Northwest Earthmovers, Inc; and insurance administrator information is available from Teresa (Northwest Earthmovers, Inc.) 503-625-3100.		

EMERGENCY TELEPHONE NUMBER LIST

Organization	Telephone Number
OR-OSHA	(503) 229-5910 (Oregon)
Poison Control Center	1 (800) 222-1222
National Response Center	1 (800) 424-8802

SUBCONTRACTOR'S EMERGENCY TELEPHONE NUMBER LIST

Organization	Onsite H&S Representative/ Competent Person	Telephone Number
Casserly Landscape	John Casserly	(503) 793-6254
Fox Erosion Control	Terry Marsh	(503) 654-8816

Nearest Phone: Site Project Manager and Site Supervisor will carry cellular phone while working in the Project Area.

Nearest Water: Carry water or an eyewash station is located at the construction trailer.

POTENTIAL PHYSICAL HAZARDS: Includes but not limited to: back injuries, biological agents, cold/heat stress, discharge of static electricity, heavy equipment operation, electrocution, entanglement, ergonomic stress, falls from elevated surface, fire and explosion, heavy equipment and vehicles, inclement weather and shut-down condition, noise, oxygen deficiency, slips, trips, and falls, trench, and UV exposure.

POTENTIAL CHEMICAL HAZARDS: Includes, but not limited to: contaminated soil or groundwater, heavy metals, pencil pitch, grease, oils, fuels, and other hydrocarbons, polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs).

CHEMICAL MATERIALS HANDLED AT THE SITE: Includes, but not limited to: gasoline, diesel, hydraulic fluid, motor oil, and equipment lubricant (grease) (copies of MSDSs are attached in Appendix 6). Subcontractors are responsible for providing documentation to the Site Project Manager of all hazardous substances brought to the Project Area. Copies of all MSDSs are located inside the construction trailer.

RECOMMENDED AIR MONITORING EQUIPMENT: TSI DustTraK.

REQUIRED PERSONAL PROTECTIVE EQUIPMENT AND AIR MONITORING EQUIPMENT: Level D and specified in Job Safety Analyses (JSAs) (Appendix 4).

Task	Level of PPE Guideline*	Air Monitoring Requirement/Type
Field Activities		
Remove Select Fill	Level D	Yes**/ Dust
Install New Rock Rip-Rap	Level D	Yes**/ Dust
Reinstate Select Fill	Level D	Yes**/ Dust
Temporary Access Road	Level D	Yes**/ Dust
Top Soil Placement	Level D	Yes**/ Dust
Landscape Installation	Level D	Yes**/ Dust
Erosion Control	Level D	Yes**/ Dust

Note:
N/A - not applicable
* - task specific PPE is noted in each job safety analysis (JSA) - see Appendix 4.
** - Only if visible airborne dust levels cannot be controlled through work methods and engineering controls. See appropriate action levels below if air monitoring is needed.

UNANTICIPATED CONTACT WITH CONTAMINATED SOILS: If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will do the following:

- Stop work in the area of unanticipated contact, and isolate the area; and
- Notify Port of Portland's Project Contact or Project Inspector - Project Emergency Call List.

ACTION LEVELS AND ACTION

Equipment	Action Level	Action To Be Taken
Dust Monitor	<1.5 mg/m^3 in BZ 8-Hr. TWA < 4.5 mg/m^3 Peak	
	> 1.5 mg/m^3 in BZ 8-Hr. TWA, > 4.5 mg/m^3 Peak	Institute methods to reduce overall dust levels or cease work.

BZ - Breathing zone
TWA - time weighted average over 8-hour work shift
mg/m^3 - milligrams per cubic meter of air

SITE CONTROL:

We do not anticipate having any work zones consisting of Restricted Work Zones (RWZ) or Decontamination Zones (unless soils below the demarcation layer are intentionally disturbed to complete a required work task).

IN CASE OF LIFE THREATENING INJURIES, CALL 911
USE AMBULANCE TO CLOSEST TRAUMA CENTER

NOTE: In case of any hazard exposure during and/or prior to medical attention, the hospital and any emergency response personnel shall be notified that patient and/or the patient's clothing may be contaminated.

Nearest Medical Facility:	Legacy Good Samaritan Medical Center 1015 NW 22nd Ave Portland, OR 97210
Emergency Phone Number:	(503) 413-7260
Information Phone Number:	(503) 413-7711

Medical Route:

1.	Head north on N Terminal Rd	0.3 mi
2.	Turn right to stay on N Terminal Rd	0.2 mi
3.	Take the 1st right onto N Lombard St	1.4 mi
4.	Turn right at N Leavitt Ave	259 ft
5.	Take the 1st right onto N Ivanhoe St	282 ft
6.	Turn left at N Philadelphia Ave	0.4 mi
7.	Continue onto NW St Johns Bridge	0.4 mi
8.	Turn right to stay on NW St Johns Bridge	85 ft
9.	Slight right at NW Bridge Ave	0.4 mi
10.	Take the 1st right to stay on NW Bridge Ave	72 ft
11.	Turn right at NW St Helens Rd	3.0 mi
12.	Turn right to stay on NW St Helens Rd	1.7 mi
13.	Slight right at NW Ward Way/NW Wardway St	0.1 mi
14.	Continue onto NW Vaughn St	0.5 mi
15.	Turn right at NW 23rd Ave	0.5 mi
16.	Turn left at NW Lovejoy St, destination will be on the left	259 ft

Estimated Time: 18 minutes Estimated Distance: 9.0 miles

Hospital Route Map:

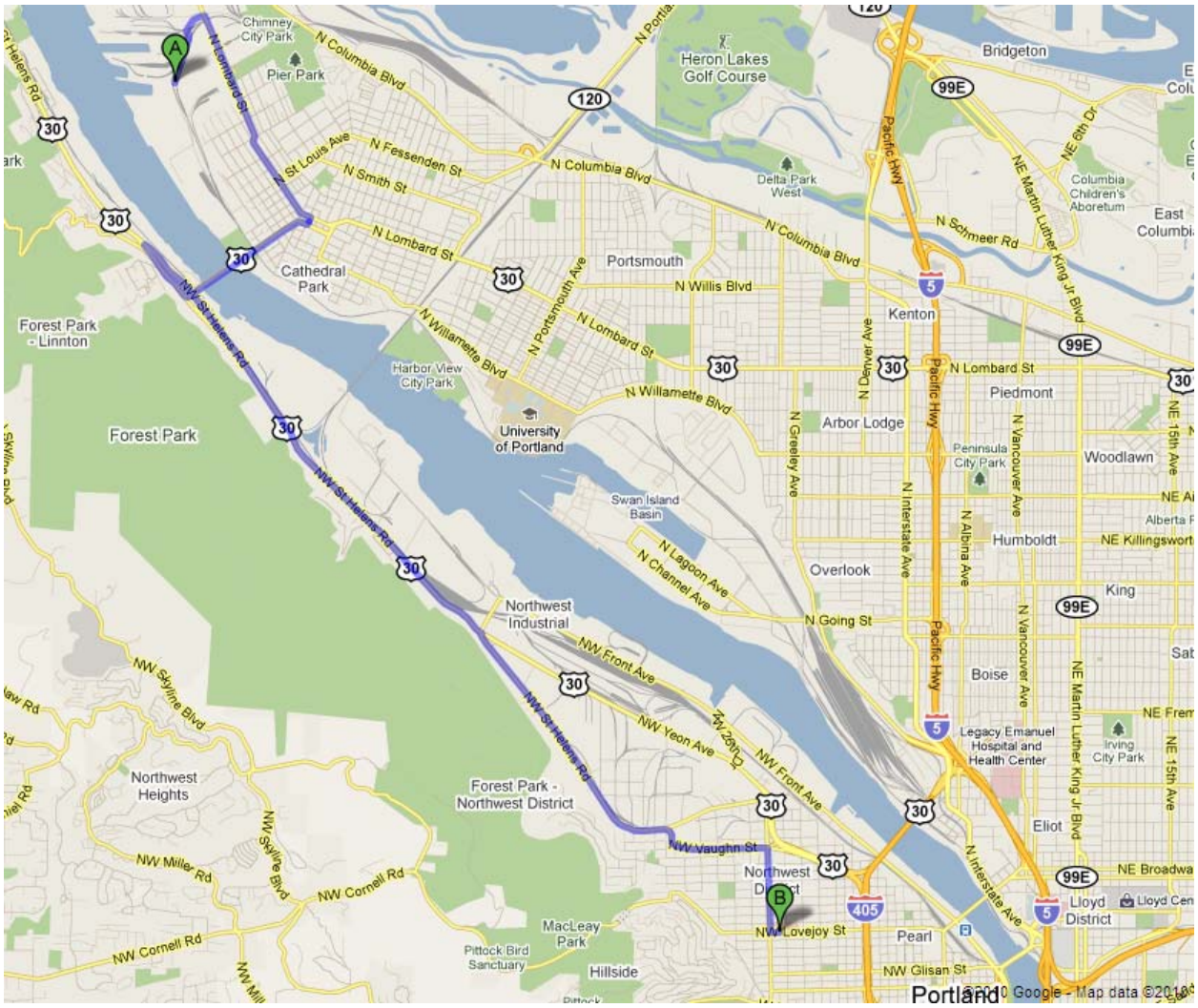


Table of Contents

Page

REVIEW AND APPROVALS i

HASP EMERGENCY SUMMARY SHEET ii

1.0 INTRODUCTION 1
- 1.1 General Information 1
- 1.2 Project Area and Site Description and Features 1
- 1.3 Background/Site History 5
- 1.4 Scope of Work/Planned Site Activities 7
- 1.5 Scheduled Project Area Personnel and Contractors 9
- 1.6 Personnel Responsibilities 9
- 1.7 Required on-Site Emergency Postings 11

2.0 HAZARD EVALUATION 11
- 2.1 Chemical Exposure 12
- 2.2 Hazard Communication 13
- 2.3 Physical or Operating Hazards and Control Measures 13
- 2.4 Hazard Analysis of Each Site Work Task 14

3.0 PERSONNEL PROTECTION 14
- 3.1 Administrative Controls 14
  - 3.1.1 Medical Surveillance 14
  - 3.1.2 Training 15
  - 3.1.3 Accident Prevention and Safe Work Practices 17
  - 3.1.4 Logs, Reports, and Record Keeping 17
- 3.2 Project Area Engineering Controls 18
  - 3.2.1 Barriers 18
  - 3.2.2 Rinsate Collection/Containment 19
  - 3.2.3 Noise Reduction 19
- 3.3 Personal Protective Equipment 19
  - 3.3.1 Levels of Protection 19
  - 3.3.2 PPE Donning/Doffing Procedure 20
  - 3.3.3 PPE Failure/Chemical Exposure 21
  - 3.3.4 PPE Inspection, Storage, and Maintenance 21

4.0 PROJECT AREA CONTROL 21
- 4.1 Project Area Security 21
- 4.2 Visitor Access 22
- 4.3 Work Areas and Zones - Contaminated Soils Only 22
- 4.4 Communications 23

5.0 AIR SURVEILLANCE 23
- 5.1 Type and Frequency of Monitoring 23
- 5.2 Monitoring Instruments 23
- 5.3 Action Levels 24
- 5.4 NIOSH/OSHA Air Sampling Methods 24

6.0 DECONTAMINATION - Contaminated Soils Only 24
- 6.1 Decontamination Staging Areas 24

6.2 Frequency of Decontamination 24
6.3 Personnel Decontamination 25
6.4 Equipment Decontamination 25
6.5 Emergency Decontamination 26
6.6 Waste Disposal Procedures 26

7.0 SANITATION AND ILLUMINATION 26
7.1 Sanitation and Personal Hygiene 26
7.2 Illumination 27

8.0 SPILL PREVENTION 27

9.0 EMERGENCY ACTIONS 27
9.1 Preplanning and General Procedures 27
9.2 Site-Specific Response Scenarios 29
9.2.1 Natural Disasters 29
9.2.2 Weather-Related Emergencies 30
9.2.3 Spill and/or Discharge of Hazardous Materials 30
9.2.4 Fire or Explosion 31
9.3 Medical Emergency Response 31
9.3.1 Hospital 31
9.3.2 Bloodborne Pathogen Exposure Control Plan 34
9.4 Accident Reporting and Record Keeping 34
9.5 Emergency Reference List 35

10.0 NEI EMPLOYEE HEALTH AND SAFETY PLAN ACCEPTANCE 37

11.0 NON-NEI EMPLOYEE HEALTH AND SAFETY PLAN ACCEPTANCE 39

LIMITATIONS 41

List of Figures

Figure 1 Site Location Map (page 2)
Figure 2 Project Area Map (page 3)
Figure 3 Details - Demarcation Layer (page 4)
Figure 4 Hospital Route Map (pages vii and 33)

List of Appendices

Appendix 1 Site Characterization
Appendix 2 Chemical Hazard Properties and Exposure Information
Appendix 3 Physical and Operating Hazards
Appendix 4 Job Safety Analysis
Appendix 5 Action Levels
Appendix 6 MSDSs and Selected Chemical Data Sheets
Appendix 7 Justification of Action Levels

1.0 INTRODUCTION

1.1 General Information

Client:
Port of Portland
7200 NE Airport Way
Portland, Oregon 97218

Client Contact:
John Durst

Site Name & Location:
Terminal 4
Wheel Bay
Bank Repairs

Client Tel. #:
503 415-6847(Office)
503 799-3525 (Cell)

Site Project Manager:
Jeff Hargens

Project Supervisor:

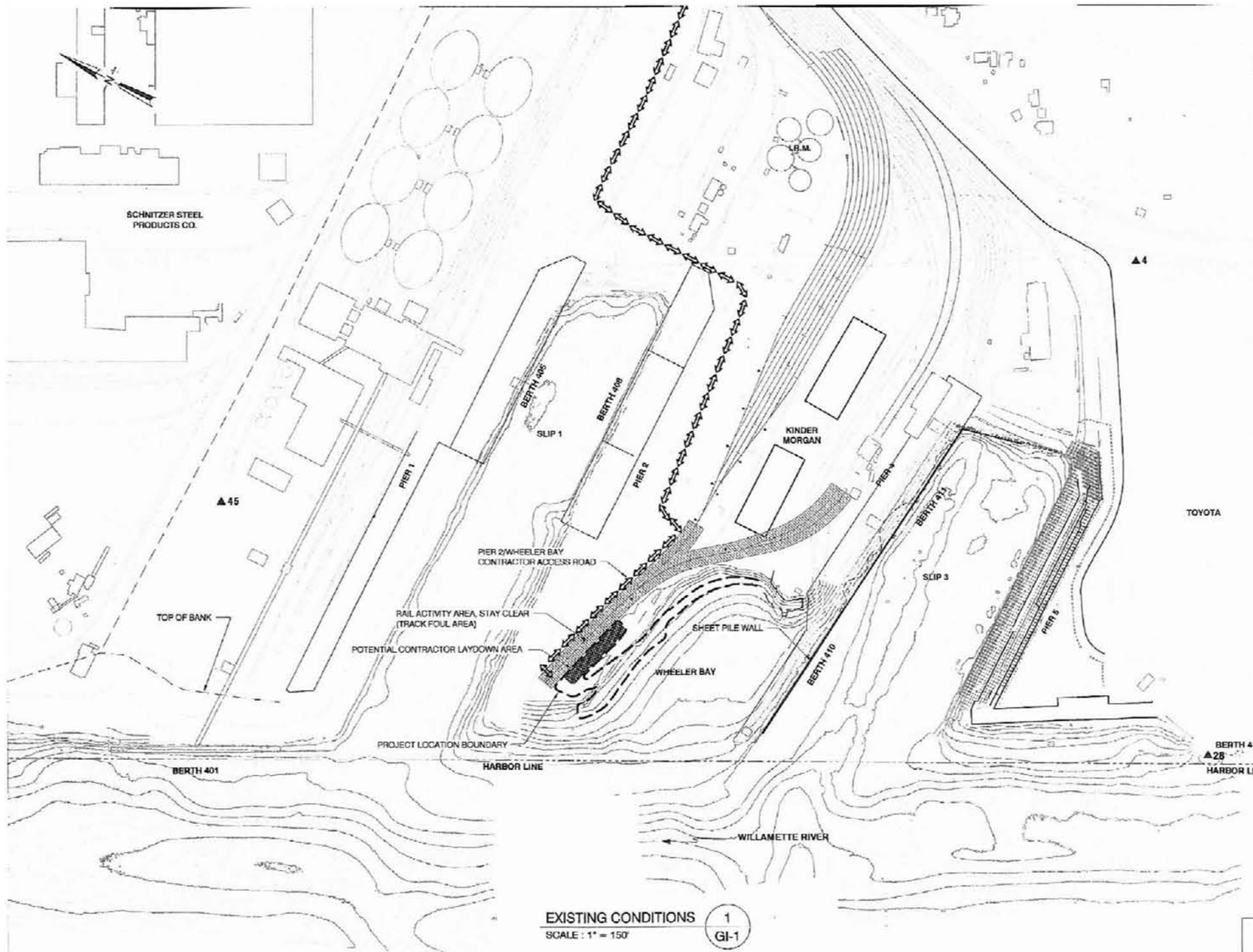
Site Health and Safety Coordinator:
Carl Johnson

1.2 Project Area and Site Description and Features

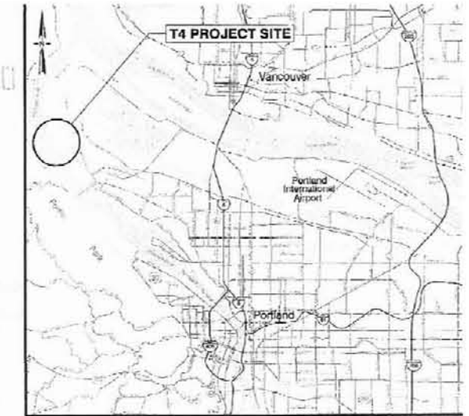
The Port of Portland Terminal 4 (T4) is located on the eastern bank of the Willamette River in northeast Portland, Oregon. The Oregon Department of Environmental Quality (DEQ) and EPA found contaminants in sediment and soil samples during a remedial investigation of the T4 site, which warranted a Removal Action.

Figure 1: Site Location Map

(See following page)



EXISTING CONDITIONS (1 / GI-1)
SCALE : 1" = 150'



VICINITY MAP
SCALE: N.T.S.

LEGEND:

TRACK FOUL AREA

4▲ SURVEY CONTROL POINT

STATION	NORTHING	EASTING	NGVD29 (47) ELEV.	DESCRIPTION
4	67011.054	71927.686	35.18	3" BRASS CAP STAMPED "4-B"
28	66167.751	70697.587	26.148	3" BRASS CAP STAMPED "T-4-28, 1999"
45	69137.200	70087.858	32.700	4" BRASS CAP SW COR. GRATTON DLC

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
   VERTICAL DATUM: NGVD 29-47
   CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO	DATE	BY	REVISIONS	CKD	APPVD	NO	DATE	BY	REVISIONS	CKD	APPVD

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

DESIGNED BY: P. HUMMEL
DRAWN BY: T. ORNA
CHECKED BY: J. VERDUIN
DATE: AUGUST 2010
GRAPHICAL SCALE BAR

TERMINAL 4

WHEELER BAY BANK REPAIRS
EXISTING CONDITIONS

SUBMITTED BY: ROGER ANDERSON
TYPE: CD | DRAWING NO.: T4 2010-500 | 1/8 | (GI-1)

NOTE: THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL HEALTH AND SAFETY PLAN DATED SEPTEMBER 2010

SOURCE: PORT OF PORTLAND FIGURES PROVIDED BY NORTHWEST EARTHMOVERS, INC.

CLIENT: NORTHWEST EARTHMOVERS, INC.
13600 SW GALBREATH DR.
SHERWOOD, OR 97140

AMEC Earth & Environmental
7376 S.W. Durham Road
Portland, OR. U.S.A. 97224

DWN BY:	PM
CHK'D BY:	MT
DATUM:	-
PROJECTION:	-
SCALE:	AS SHOWN

PROJECT: TERMINAL 4 WHEELER BAY BANK REPAIRS

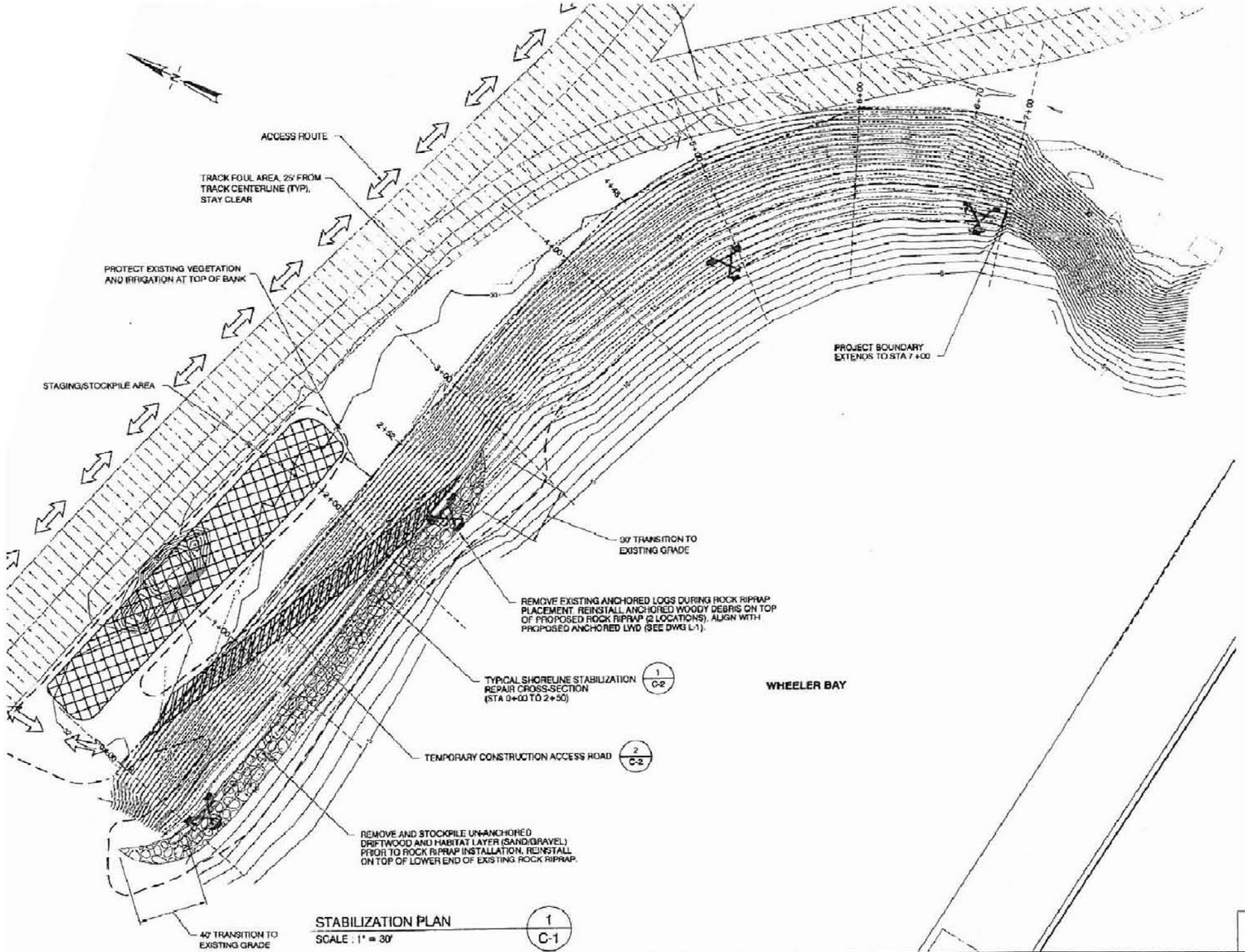
TITLE: EXISTING CONDITIONS

DATE:	SEPT 2010
PROJECT NO:	0-61M-121622
REV. NO.:	1
FIGURE No.	1

K:\12000\12100\12162\121622\dwg\Figure 1 – Existing Conditions.dwg – Layout1 – Sep. 03, 2010 3:46pm – patrick.mccarthy

Figure 2: Project Area Map

(See following page)



STABILIZATION PLAN (1 / C-1)
SCALE : 1" = 30'

LEGEND:

- PROJECT BOUNDARY
- LIMIT OF ROCK RIPRAP AND SELECT FILL (1 / C-2)
- TEMPORARY CONSTRUCTION ACCESS ROAD (2 / C-2)
- EXISTING LWD
- EXISTING ECOLOGY BLOCK LWD ANCHORS
- POST 2008 CONSTRUCTION CONTOURS (DATE: 10/13/08)
- CURRENT CONDITION CONTOURS (DATE: 07/28/10)
- STATION LINE
- TRACK FOUL AREA

CONTROL POINTS		
STATION	NORTHING	EASTING
0+00	67930	70047
1+00	67901	70143
2+00	67874	70240
2+52	67863	70291
3+00	67846	70336
4+00	67821	70432
4+48	67806	70478
5+00	67772	70517
6+00	67703	70589
6+70	67639	70617
7+00	67609	70624
7+36	67573	70624
7+38	67570	70624
8+00	67518	70593
8+09	67509	70588
8+20	67475	70606
8+73	67455	70620

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
   VERTICAL DATUM: NGVD 29-47
   CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINISTER-GLAESER DATED OCTOBER 13, 2008 AND PROVIDED BY ASH CREEK.
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.
5. NO EQUIPMENT ALLOWED TO OPERATE IN FOUL AREA. STAY BACK 25 FEET FROM CENTERLINE OF TRACK.

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CKD	APPVD	NO.	DATE	BY	REVISIONS	CKD	APPVD

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

DESIGNED BY P. HUMMEL
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR

REGISTERED PROFESSIONAL ENGINEER — JOHN RICHARD VERDUIN — OREGON — NOV. 8, 2004 — EXPIRATION DATE 6/30/12 — 8/16/10

TERMINAL 4

WHEELER BAY BANK REPAIRS
STABILIZATION REPAIR PLAN

SUBMITTED BY ROGER ANDERSON, PROJECT ENGINEER
TYPE CD | DRAWING NO. T4-2010-500 | 2/8 | (C-1)

NOTE: THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL HEALTH AND SAFETY PLAN DATED SEPTEMBER 2010

SOURCE: PORT OF PORTLAND FIGURES PROVIDED BY NORTHWEST EARTHMOVERS, INC.

CLIENT: NORTHWEST EARTHMOVERS, INC.
13600 SW GALBREATH DR.
SHERWOOD, OR 97140

AMEC Earth & Environmental
7376 S.W. Durham Road
Portland, OR. U.S.A. 97224

DWN BY:	PM
CHK'D BY:	MT
DATUM:	-
PROJECTION:	-
SCALE:	AS SHOWN

PROJECT: TERMINAL 4 WHEELER BAY BANK REPAIRS

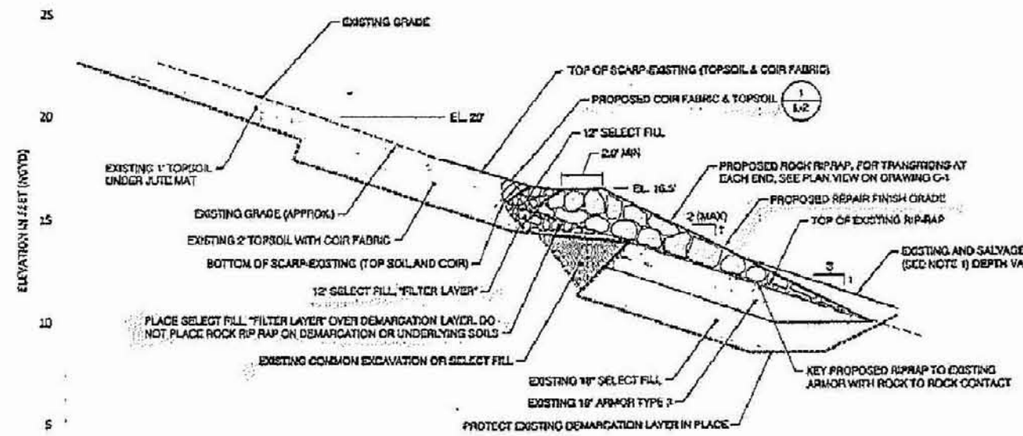
TITLE: STABILIZATION REPAIR PLAN

DATE:	SEPT 2010
PROJECT NO:	0-61M-121622
REV. NO.:	1
FIGURE No.	2

K:\12000\12100\12162\121622\dwg\Figure 2 – Repair Plan.dwg – Layout1 – Sep. 03, 2010 3:46pm – patrick.mccarthy

Figure 3: Details - Demarcation Layer

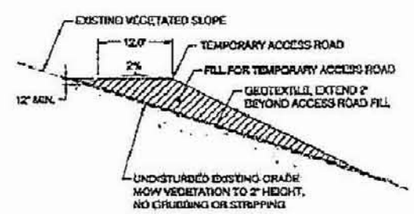
(See following page)



(STA 0+00 TO STA 2+50)
TYPICAL SHORELINE STABILIZATION REPAIR CROSS-SECTION (1 / C-2)
SCALE: 1" = 3'

CROSS-SECTION NOTES:

1. REMOVE HABITAT LAYER SAND AND GRAVEL FROM EXISTING SURFACE TO EXPOSE EXISTING ROCK ARMOR PRIOR TO PLACING PROPOSED ROCK RIPRAP. STOCKPILE AND PLACE SALVAGED HABITAT LAYER AS SHOWN ABOVE.
2. FOR SURFACE STABILIZATION AND PLANTING SEE DRAWING L-1



DETAIL NOTE:

1. FOLLOWING ROAD REMOVAL, SCARIFY SUBGRADE TO A MINIMUM 12-INCH DEPTH PRIOR TO PLACING JUTE AND HYDROSEEDING.

TEMPORARY CONSTRUCTION ACCESS ROAD (2 / C-2)
SCALE: NTS

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47 CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINETTI-HOLASER DATED OCTOBER 12, 2008 AND PROVIDED BY ASH CREEK
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010
5. SEE DRAWINGS L-1 AND L-2 FOR PLANTINGS.

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CHKD	APPROVED	NO.	DATE	BY	REVISIONS	CHKD	APPROVED

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

DESIGNED BY P. HUMMEL
DRAWN BY T. GROG
CHECKED BY J. VORSUM
DATE AUGUST 2010
GRAPHICAL SCALE

TERMINAL 4

WHEELER BAY BANK REPAIRS
DETAILS

SUBMITTED BY ROGER ANDERSON
FILE CD T4 2010-500 3/8 (C-2)

NOTE: THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL HEALTH AND SAFETY PLAN DATED SEPTEMBER 2010

SOURCE: PORT OF PORTLAND FIGURES PROVIDED BY NORTHWEST EARTHMOVERS, INC.

CLIENT: NORTHWEST EARTHMOVERS, INC.
13600 SW GALBREATH DR.
SHERWOOD, OR 97140

AMEC Earth & Environmental
7376 S.W. Durham Road
Portland, OR. U.S.A. 97224

DWN BY: PM
CHK'D BY: MT
DATUM: -
PROJECTION: -
SCALE: AS SHOWN

PROJECT: TERMINAL 4 WHEELER BAY BANK REPAIRS

TITLE: DETAILS

DATE: SEPT 2010
PROJECT NO: 0-61M-121622
REV. NO.: 1
FIGURE No. 3

K:\12000\12100\12162\121622\dwg\Figure 3 – Details.dwg – Layout1 – Sep. 03, 2010 3:45pm – patrick.mccarthy

1.3 Background/Site History

Site history for the Terminal 4 Wheeler Bay Bank Repair as recorded by Anchor Environmental, LLC for the June 30, 2008 Design Analysis Report to the Port of Portland indicates:

> In 2000, the U.S. Environmental Protection Agency (USEPA) added the Portland Harbor Superfund Site to the National Priorities List. The Port of Portland (Port) is one of 10 potentially responsible parties that entered into an Administrative Order on Consent with USEPA for a Remedial Investigation/Feasibility Study (RI/FS) of the Superfund Site in fall 2001. The Administrative Order on Consent allows Early Actions to be conducted to address known contamination at specific locations within the Superfund Site. Contaminants found in Terminal 4 (T4) sediment samples during a remedial investigation directed by the Oregon Department of Environmental Quality (DEQ) led to a determination that a Removal Action at T4 is warranted. Accordingly, the Port is conducting a Non-Time-Critical Removal Action (NTCRA) under an Administrative Order on Consent for Removal Action (the AOC) executed by the Port and USEPA in October 2003.
>
> The AOC sets forth the general legal requirements that govern the execution of the Early Action. Appendix A to the AOC is the statement of work (SOW) for the implementation of the Removal Action. The SOW provides a list of deliverables, their submittal schedule, and the technical requirements each deliverable has to meet in order to implement the Early Action.
>
> As part of the execution of the Early Action, the Port completed an engineering evaluation and cost analysis (EE/CA; BBL 2005) in which various Removal Action alternatives were identified, compared, and ranked for their relative performance at meeting specific objectives associated with the evaluation criteria of effectiveness, implementability, and cost. Based on the alternatives evaluated in the EE/CA, the USEPA issued an Action Memorandum (Action Memo) on May 11, 2006 (USEPA 2006a) that documented the selection of the Removal Action. The Removal Action documented in the Action Memo included a combination of monitored natural recovery, capping, and dredging with placement of contaminated sediments in a confined disposal facility (CDF) to be built on site.
>
> The Port proceeded down a path to implement the Removal Action, which included several steps in the Remedial Design process. The Port submitted the T4 Early Action 60 Percent Design Submittal in December 2006, and from early 2007 through November 2007, the Port and USEPA teams

(note: USEPA's team partners include the Tribes, DEQ, and National Oceanic and Atmospheric Administration [NOAA]) worked collaboratively on resolving technical questions and issues associated with the design.

As part of the collaborative resolution process, it was determined that many of the design issues are linked to the overall harbor-wide RI/FS process. For this reason, the Parties agreed to revise the schedule for implementation of the T4 Removal Action to realign the project with the harbor-wide RI/FS schedule. As a condition of the approval of the schedule realignment, USEPA is requiring the Port to implement an abatement action during the 2008 in-water work window to reduce risks present at the T4 site (USEPA 2007). Essentially, this action results in the division of the Removal Action project into two phases. Phase I (the abatement action) is planned for the 2008 in-water work window and encompasses abatement measures that could be initiated in the near term to reduce risk and address any imminent and substantial endangerment at T4 that may exist. Phase II (including construction of the CDF) will commence once the project is realigned with the harbor-wide RI/FS process. The Port submitted an Abatement Measures Proposal (Phase I remedy) in October 2007 (Anchor 2007a). USEPA provided comments on the proposal in November 2007, and based on those comments and their resolution, a final Phase I Removal Action abatement remedy was identified.

Phase I of the Removal Action included stabilization of the Wheeler Bay bank to minimize contaminant migration to the river. This involved shoreline excavation and grading, placement of sand, gravel and armor stone on contaminated sediments followed by placement of sand, gravel and armor stone on contaminated sediments, placement of topsoil and erosion control materials and installing plantings on the shoreline bank. Due to construction issues the original installation needs to be partly removed and replaced/repaired.

1.4 Scope of Work/Planned Site Activities

Restoration of shoreline aggregate, large woody debris, plantings, and landscaping, as well as construction of an access roadway to the work area. The work area is within a designated Superfund site.

This Contractor Health and Safety Plan (CHASP) is limited to infrastructure construction activities in the Project Area for 2010. Planned activities include the following tasks. If additional tasks are added for this project, a job safety analysis (JSA in Appendix 4) should be completed and added to this CHASP prior to field activity.

Task	NEI/Subcontractor Task Responsibilities
Remove Select Fill	NEI - Includes: • Excavation, stockpiling, and disposal of soil and construction debris to approved construction debris landfill • Clearing or excavation, stockpiling, and restoration of unanchored large woody debris and habitat layer material required to prepare the site for rock rip-rap placement.
Install New Rock Rip-Rap	NEI - Installation of new rock rip-rap.
Reinstate Select Fill	NEI - Installation of select fill.
Temporary Access Road	NEI - Includes: • Furnishing and placing temporary access road fill • Mowing of vegetation • Placement of geotextile required to prepare the site for quarry spall placement • Removal and off-site disposal of quarry spalls • Restoration of impacted areas by scarifying soils and installing hydroseed and jute fabric.
Top Soil Placement	NEI - Placement of topsoil and installation of coir fabric.
Landscape Installation	Casserly Landscape - planting of 1-gallon riparian plants and maintenances of vegetation until acceptance. NEI - Furnishing and installing anchored large woody debris from off-site sources.
Erosion Control	NEI - Includes all maintenance, repair, and restoration of temporary erosion, sediment, and pollution control (EPSC) measures to keep them continually functional until project acceptance. Fox Erosion - Hydroseeding

Planned infrastructure construction activities do not include clean-up operations, RCRA hazardous waste operations, or emergency response operations defined in 29 CFR 1910.120(a)(1)(i) through 1910.120(a)(1)(v).

1.5 Scheduled Project Area Personnel and Contractors

Substitutions will be made with similarly qualified personnel; the Record of Change (ROC) must reflect all personnel changes.

Scheduled Project Area Personnel*

Name	Company	Project Title
Jeff Hargens	Northwest Earthmovers, Inc.	Project Manager
Carl Johnson	Northwest Earthmovers, Inc.	Site Project Manager / Health and Safety Coordinator
Carl Johnson	Northwest Earthmovers, Inc.	Site Supervisor

* All personnel requiring access to controlled work areas must have completed all applicable training requirements.

Scheduled Project Subcontractors*

Company	Contact Information	Project Contracting Task
Casserly Landscape	John Casserly	Landscaping
Fox Erosion Control	Terry Marsh	Erosion Control

* All personnel requiring access to project work areas must have completed all applicable training requirements. The Site Project Manager or Project Supervisor should review and approve subcontractor's special training programs (confined-space entry, lockout/tagout, excavation, trenching, and shoring, and fall protection).

1.6 Personnel Responsibilities

Site Health and Safety Coordinator

The Site Health and Safety Coordinator (SHSC) reports to the Project Manager for all aspects of the project and is the primary contact for health and safety during all field activities. The SHSC has the authority to stop all work if conditions are judged to be hazardous to personnel or the public within the Project Area, and reports and investigates accidents and near misses. The SHSC or designee must carefully document the implementation of this HASP by maintaining the project health and safety files. The SHSC is responsible for the following activities:

- Establishes work zones, evacuation routes, and assembly areas.
- Makes the day-to-day decision to modify levels of protection provided in the HASP based on Project Area conditions or monitoring data.
- Provides necessary support to any emergency response personnel.

Corporate Health and Safety Director

The Corporate Health and Safety Director (CHSD) is responsible for coordinating the implementation of health and safety procedures through supervision of the SHSC, and is responsible for approval of all changes made to this HASP.

Site Project Manager

The Site Project Manager is responsible for all field activities for enforcing safe work practices and for ensuring that weekly tailgate meetings are conducted (either by the Project Supervisor or a rotation of field team members and subcontractor team members). For this project the Site Project Manager also serves as the SHSC Emergency Coordinator in emergency situations. The Site Project Manager will assign to a qualified person the SHSC duties and responsibilities when not at the Project Area.

The Site Project Manager and/or Site Supervisor is responsible for conducting accident investigations and completing the required forms in accordance with the NEI Safety Policy.

Technical Staff and Subcontractors

All NEI and subcontracting personnel are responsible for compliance with all Safety and Health Regulations of the Oregon Occupational Safety and Health Division (OR-OSHA), including all amendments and modifications thereto. In the event there is a conflict between the safety and health provisions of a state or local regulation and NEI HASP and Safety Policy, or subcontractor HASP and Safety Policy, the more stringent applicable provision shall prevail.

All NEI and subcontracting personnel are responsible for taking all reasonable precautions to prevent injury to themselves and to their fellow employees and for being alert to potentially harmful situations. Project Area workers are expected to perform only those tasks that they believe can be done safely and to immediately report any accidents, near misses, and/or unsafe conditions to the SHSC or the Site Superintendent.

The NEI subcontractors are responsible for participating in and enforcing the safety and loss prevention programs established for the project that will cover all work performed by it and its sub-subcontractors in accordance with the Safety Policy outlined in the Safety Policy Manual. Each subcontractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention and who shall have the responsibility and full authority to enforce their program. This person shall ensure that all sub-subcontractor employees understand and comply with their health and safety programs and HASPs. Subcontractor shall cooperate fully with NEI, the Port of Portland, and all insurance carriers and loss prevention engineers on loss and accident prevention. Subcontractors shall perform all parts of its contract while assuming total responsibility for complying with all applicable federal, state, and local health, safety, and environmental standards, regulations, rules or guidelines.

1.7 Required on-Site Emergency Postings

The following information is available with the SHSC and is kept inside the construction trailer at the Site. Additionally, this HASP contains these items.

- Hospital Route Map
- Emergency Call List
- Project Area Map
- Material Safety Data Sheets (MSDSs)

2.0 HAZARD EVALUATION

An evaluation of the chemical, physical, and operational safety hazards is presented in the following subsections. The appendices listed below provide further details that support the task-specific hazard analyses.

- **Appendix 1** - Contains a Project Area characterization overview of the contaminants of potential concern and other potential hazards at the Project Area.
- **Appendix 2** - Provides chemical properties and exposure assessment data.
- **Appendix 3** - Contains a summary the physical and operational safety hazards and control measures identified for this project.
- **Appendix 4** - Contains a complete job safety analysis (JSA) of each major work task and the list of protective measures.

Further details of specific control measures for these hazards are presented in Section 3.0, Personnel Protection.

2.1 Chemical Exposure

The primary routes of entry for chemicals of primary concern (COPC) and hazardous materials at Terminal 4 include inhalation of dusts, skin contact with contaminated materials, and ingestion of airborne dusts or materials from hand-to-mouth contact due to inadequate personal hygiene or decontamination. The COPCs are based on Wheeler Bay historic sample results provided to NEI by the POP and consist of individual chemicals that have exceeded the EPA Region 9 Preliminary Remediation Goal (PRG) levels for industrial soil.

The following COPCs may be present within the Project Area:

- Metals, consisting of arsenic and lead
- Polycyclic aromatic hydrocarbons, consisting of benzo(b)fluouranthene, benzo(a)anthracene, benzo(a)pyrene, indeno(1,2,3cd)pyrene, dibenz(a,h)anthracene

See Appendix 2 for more detailed chemical information.

To minimize these exposure pathways, the SHSC or designee will periodically ensure that workers are not disturbing the existing soils below the orange demarcation layer at the site (See Figure 3). The SHSC or designee will also observe for visible airborne dust in the work and perimeter areas, and dust suppression techniques will be employed by NEI, as needed. If visible dust cannot be controlled, then dust monitoring will be performed in accordance with Section 5. In addition, all required personal protective equipment (PPE) as specified in Appendix 4 will be worn.

Potential chemical exposure could occur if unanticipated contact with contaminated materials are encountered.

If workers are disturbing the existing soil below the orange demarcation layer at the site, workers will**:**

- Stop work in the area of unanticipated contact, and isolate the area; and
- Notify Port of Portland's Project Contact or Inspector.

The following common hazardous substances are anticipated to be brought onto the Project Area:

- Gasoline
- Diesel
- Hydraulic Fluid

- Motor Oil
- Equipment Lubricants (Grease)

The above list must be updated by the SHSC; and MSDSs must be obtained and filed for any additional hazardous substances brought onto the Project Area.

2.2 Hazard Communication

Hazardous materials are subject to the Hazard Communication Standard (OAR 437 Division 2 1910.1200); required MSDSs are presented in Appendix 6. The hazardous materials also must be properly labeled with the identity of the hazardous chemical(s) contained therein and the appropriate hazardous warning information. The above list must be updated by the SHSC, and MSDSs must be obtained and filed for any additional hazardous substances brought onto the Project Area.

The SHSC must give all Project Area employees a hazard communication orientation about hazardous chemicals brought onto the Project Area. This briefing will include health and physical hazards, precautionary measures to be taken during normal operations and foreseeable emergencies, labeling practices, and location of MSDSs.

The Project Supervisor shall ask the Client and/or subcontractors for copies of MSDSs for any hazardous materials in use at the Project Area. The SHSC shall orient NEI's employees/subcontractors as described above for all new hazardous materials.

2.3 Physical or Operating Hazards and Control Measures

Physical or operating hazards identified or reasonably anticipated to be associated with Project Area work tasks are provided in Appendix 3, along with a summary of specific control measures. The following physical or operation hazards potentially exist for this project:

- Back injuries
- Biological agents (including raw sewage in Willamette River)
- Cold/heat stress
- Discharge of static electricity
- Heavy equipment operation
- Electrocution

- Ergonomic stress
- Fire and explosion
- Inclement weather and shut-down condition
- Noise
- Slips, trips, and falls
- UV exposure.

2.4 Hazard Analysis of Each Site Work Task

Hazard analyses for each Project Area work task is provided as an appendix (Appendix 4) to this HASP and include the following:

Task
Remove Select Fill
Install New Rock Rip-Rap
Reinstate Select Fill
Temporary Access Road
Top Soil Placement
Landscaping
Erosion Control

3.0 PERSONNEL PROTECTION

The prescribed methods and procedures used to protect personnel (Project Area workers and adjacent community) from overexposure to hazardous materials and hazardous conditions posed by Project Area operations are grouped into three primary categories: Administrative Controls, Engineering Controls, and PPE.

3.1 Administrative Controls

3.1.1 Medical Surveillance

Periodic Comprehensive Exam:

If unanticipated contact with contaminated soils is encountered, a stop work order will be initiated by the SHSC for any Project Area tasks, therefore it is not anticipated that personal protection beyond level D will be required or that Project Area staff will require a pre-assignment or comprehensive exam.

If personnel need access to controlled work area(s) requiring respirator usage a pre-assignment medical examination (and a periodic update examination for extended assignments) is required prior to assignment, in accordance with the OAR 437 Division 2 1910.120(f). The exam must be performed by an Occupational Health Physician, who will provide written clearance for hazardous waste Project Area work and for respirator usage. Medical clearance documents will be on file at the NEI office located in Sherwood, Oregon. To ensure confidentiality, results of the medical exams or treatment records are maintained at the Medical Care Provider's clinical offices.

Emergency Medical Treatment:

Personnel who exhibit signs and symptoms of heat overexposure, or who have been injured on the job, also might seek medical services. Specific information regarding NEI's emergency medical plan, reports, and record keeping policies is in the NEI's Safety Policy Manual available from the SHSC.

3.1.2 Training

Comprehensive:

Construction workers job functions do not include cleanup operations, RCRA hazardous waste operations, or emergency spill response as defined under 29 CFR 1910.120. Since disturbance of the existing contaminated soil is not anticipated, Project Area workers are not expected to receive exposures exceeding permissible exposure limits of Project Area COPC.

Construction workers whose jobs require contact and/or generate dust and/or require handling of existing contaminated soil, shall have 24 hours of health and safety training in accordance with OR-OSHA standard OAR 437 1910.120 and 1 day of on-site training and supervision.

Workers performing work with no contact to existing Project Area contaminated soil (below demarcation layer) or serious physical hazards are required as a minimum a site-specific orientation including this site-specific HASP, pertinent NEI Safety Policies, Project Area COPC, chemicals handled at the site, physical hazards within the Project Area and task(s) being performed, task(s) appropriate PPE, and emergency procedures.

Project Area workers having the potential to receive exposures exceeding permissible exposure limits to soil contaminants will have completed the 40-hour training outlined in OR-OSHA standard OAR 437 1910.120 and three days of on-site supervised training upon initial assignment..

Annual refresher updates must be completed by all personnel who have received 24 or 40 hour training in accordance with OR-OSHA standard OAR 437 1910.120. Supervisors will have completed the above and an additional 8 hours of OR-OSHA Management and Supervisory Training.

Specialized:

Prior to initiation of Project Area activities, the SHSC and PM will conduct a health and safety "kickoff" meeting. Subcontractor representatives including Subcontractor's Safety Coordinator/Competent person are required to participate. At this meeting, pertinent NEI Safety Policies and the site-specific HASP will be discussed, with special attention given to Project Area chemical and physical hazards, PPE, and emergency procedures. Upon completion of this briefing, all routine NEI field personnel will be required to read and sign the acceptance sheet of this HASP (Section 10). Subcontractor personnel will be required to be briefed on the HASP and sign the project site health and safety orientation form in Section 11.

Project safety meetings with the subcontractor's management and H&S coordinators will be conducted weekly throughout the project.

Project Area visitors who do not attend this meeting will be required to undergo a specialized health and safety orientation, as documented in the field notebook.

Tailgate Safety Meetings

As required by OR-OSHA, "tailgate" safety meetings will be conducted by the PM, SHSC, or a rotation of NEI and subcontractor team members for **all** phases of work. The tailgate meetings will be conducted in accordance with Safety Policy Manual. Topics of discussion will include work tasks and designated PPE, emergency procedures, evacuation routes, instruction in use of safety equipment (as required), prior safety problems, recognition of signs and symptoms of overexposure, importance of proper decontamination, and personal hygiene. These meetings must be documented in a field notebook or a Tailgate Safety Meeting Checklist.

Safety Inspections

All project sites and equipment including but not limited by any type of field and construction work will be inspected DAILY by the responsible subcontractor. All deficiencies discovered will be reported to NEI immediately.

Fire Extinguisher Usage:

In accordance with OAR 437 Division 2 1910.157, all field personnel who are provided portable fire extinguishers for use should be familiar with general principles of use and the hazards of incipient (early stage) firefighting. NEI personnel who have completed fire extinguisher training are permitted to use fire extinguisher at the Site.

Equipment Operators:

In accordance with state and federal OSHA regulations, operators of all heavy equipment (e.g., forklifts, backhoe, excavator) must be trained for safe equipment operation. Proof of documentation will be requested by NEI.

Training for Subcontractors:

All personnel including subcontractors requiring access to controlled work areas must have completed the appropriate training requirements. The Project manager or appropriate Supervisor should review and approve any special training programs (confined-space entry, lockout/tagout, excavation, trenching, and shoring, and fall protection). It is not anticipated that either of the subcontractors will be contacting existing contaminated soils as part of their work activities and thus will not be required to have either 24-hour or 40-hour training as required in OR-OSHA standard OAR 437 1910.120. NEI will oversee their operations and verify that they contact only the imported soils.

3.1.3 Accident Prevention and Safe Work Practices

The SHSC as well as all Site employees will inspect the work Site and/or Project Area daily to identify and correct any unsafe conditions. NEI field personnel and subcontractors should inspect work area thoroughly before leaving the Site. Adherence to the Safe Work Practices and procedures described in the General Safety Rules of the Safety Policy Manual will assist with accident prevention.

3.1.4 Logs, Reports, and Record Keeping

Submittal of Certifications:

All NEI employees' certificates are on file with the SHSC in the NEI Sherwood, Oregon office. Work will not be allowed to take place in the absence of adequate documentation.

Site Monitoring, Reports, and Records:

The health and safety field files maintained by the SHSC, or his/her designee, will be the primary form of record keeping and documentation of site health and safety activities. These documents will be completed in sufficient detail to document the work performed; any unusual or significant circumstances under which the work was performed; any unanticipated/unplanned action taken to mitigate or to otherwise cope with unexpected field conditions; and pertinent comments about site-specific conditions that could have a bearing on the work performed. Documentation is required for all phases of work. See also the SHSC duties listed under Section 1.6, Personnel Responsibilities. Record keeping practices will follow OAR 437 Division 2 1910.20.

The health and safety records will contain the following documents:

- Signed acceptance sheet of this HASP (signed by all routine Project Area personnel) (Section 10)
- Supervisor's Accident Investigation Report

Blank forms are provided in The Safety Policy Manual and Section 10 of this HASP. Weekly tailgate meetings and additional health and safety meeting conducted at the Site for this project should be recorded in your field notebook or a Tailgate Safety Meeting Checklist.

3.2 Project Area Engineering Controls

3.2.1 Barriers

Barriers and Signs:

A perimeter fence is currently in place around the facility. Barricades, traffic cones, and/or marking or caution tape will be erected at a safe distance from excavations, pits, hazardous areas, and moving equipment to prevent unauthorized access to work areas from vehicular and pedestrian traffic. Barriers will be appropriate for the level of work activities and anticipated traffic. Signs will be conspicuously posted as the following, or equivalent:

CONSTRUCTION AREA - Authorized Personnel Only

3.2.2 Rinsate Collection/Containment

A system for collection of rinsate from decontamination operations (e.g., heavy equipment, wheel wash, spoons, and personal decontamination, etc.) may be necessary for the Project Area if contaminated soils are encountered. The system will be as complex or simple as necessary to collect and contain spent decontamination fluids, including overspray from cleaning operations. Construction of the “permanent” or “temporary” stations for heavy equipment decontamination (wheel wash), and areas where cleaning of equipment or personal decontamination (e.g., hand tools, etc.) occurs will be the responsibility of the SHSC and Project Supervisor.

3.2.3 Noise Reduction

Site activities in proximity to welding, construction, and heavy equipment often expose workers to excessive noise. It is anticipated that situations may arise when noise levels may exceed the OSHA Action Level of 85 decibels (A-weighted scale) (dBA) in an 8-hour time-weighted average (TWA). If excessive noise levels occur, the Hearing Conservation Program will be employed with a system of hand signals understood by all; followed in accordance with the Safety Policy Manual.

3.3 Personal Protective Equipment

3.3.1 Levels of Protection

Initial levels of protection for the Project Area for construction workers whose jobs require intrusive soil work is Level D. These workers will be required to wear the U.S. Environmental Protection Agency (EPA)/OSHA Level of Protection as specified in Appendix 4.

Protection may be upgraded to modified D or downgraded depending upon Project Area conditions (compared with action levels), as determined by the SHSC. The following outlines the **minimum** guidelines for each level of protection that is assigned or potentially assigned.

If site conditions warrant higher levels of personal protection (e.g. Level C,), the personnel should stop all work activities and notify the SHSC or Site Supervisor.

Level D PPE:

- Work shirt and full-length pants or coveralls
- Closed-toed leather work boots or American National Standards Institute (ANSI) safety work boots (as appropriate with task activity safety level)
- ANSI standard hard hat (when working around heavy equipment or overhead "bump" hazards)
- ANSI standard safety glasses
- EPA-approved hearing protectors (when working in high noise areas, e.g., steam cleaners and heavy equipment)

Modified Level D PPE: (Includes some or all of the following)

- Level D equipment
- Tyvek® coverall or equivalent (upgrade to polyethylene [PE] or Saranex-coated Tyvek® as needed)
- Outer chemical-resistant gloves and inner nitrile gloves
- Boot covers or chemical-resistant boots

3.3.2 PPE Donning/Doffing Procedure

The following procedures are given as a guide. Failure to adhere to these procedures may result in the PPE being ineffective against contaminants. These procedures may be altered by the SHSC if improvements can be made and these changes are warranted in the field. Also, some articles of PPE may not be necessary for all Project Area tasks.

PPE Donning Procedure (for Mod. Level D and greater):

- Inspect all protective gear before donning.
- Don Tyvek® coverall or equivalent, inner gloves and outer gloves, secure with tape, as required, leave pull tab. If coverall is loose, secure with tape to avoid capture in moving or rotating equipment.

PPE Doffing Procedure:

- Wash/rinse (if necessary) excess mud or other debris from outer boots, gloves, and clothing.
- Remove tape using pull tab and remove outer clothing in the order of boots, outer gloves, and coverall suits. Place disposable and reusable PPE in designated (separate) containers.
- Remove inner gloves.
- Wash face, neck, and hands, as needed.

3.3.3 PPE Failure/Chemical Exposure

In the event of PPE failure, worker and/or buddy will cease work, and perform personal decontamination procedures. Refer to the MSDS and Section 9.0 (Emergency Actions) if emergency medical response is needed. If chemicals contact the eyes, irrigate for 15 minutes and consult a physician.

3.3.4 PPE Inspection, Storage, and Maintenance

Reusable PPE will be decontaminated, inspected, and maintained, as necessary, after each use. Personal equipment (e.g., safety glasses, leather safety-toe boots) shall be properly stored by the employee/subcontractor.

The SHSC will periodically inventory the disposable and reusable PPE at the Project Area and will replenish stocks in a timely manner.

4.0 PROJECT AREA CONTROL

4.1 Project Area Security

There will be two levels of security for the project. Access will be limited to Terminal 4 via the Terminal's security gate and the requirement that NEI and their subcontractor's personnel have Transportation Worker Identification Credential (TWIC) cards. Individuals making deliveries or other short-term activities who do not have TWIC cards will be escorted by personnel with TWIC cards.

Access will also be limited to the bank (work) area by a gate at the access ramp, which will be closed when NEI or their subcontractors are not on site. Other controls consist of the prescribed administrative (certifications) and other engineering (barricades) controls. All Project Area staff and visitors will note arrival and departure times on a field log by SHSC. All equipment, tools, and property shall be secured at the end of each day.

4.2 Visitor Access

All Project Area visitors must receive prior approval from the Project Supervisor, PM, and Client, and may do so only for the purposes of **observing** Project Area conditions or operations. All visitors, regardless of their rank or professional level, will not be allowed into controlled work areas unless training requirements have been met and documented.

4.3 Work Areas and Zones - Contaminated Soils Only

Work zones typically are categorized into the following three zones. Support Zone (SZ), Decontamination Staging Area (DSA), and Restricted Work Zone (RWZ).

Support Zone (SZ):

The SZ will consist of the staging area at the entrance to the site. Vehicles, emergency equipment, equipment trailers, break area, and any nonessential personnel will be located in this area.

Decontamination Staging Area (DSA):

A decontamination staging area will be established for personnel and equipment at the entrance to the site to minimize the amount of soil being carried off the site.

Restricted Work Zone (RWZ):

The RWZ is defined as the area immediately around intrusive activities such as trenching, well installation and general grading activities where serious physical hazards exist. Access should be restricted to appropriately trained crews and necessary equipment operators.

4.4 Communications

A universal system of hand and horn signals will be used:

Thumbs up	=	OK; understand
Thumbs down	=	No; negative
Grasping buddy's wrist	=	Leave Project Area now
Hands on top of head	=	Need assistance
Horn - one long blast	=	Evacuate Project Area
Horn - two short blasts	=	All clear, return to Project Area

5.0 AIR SURVEILLANCE

5.1 Type and Frequency of Monitoring

Type	Minimum Recommended Monitoring Frequency
Background:	Once per day in the work area and perimeter using direct-reading instruments, when visible dust cannot be controlled through other means. Background monitoring will be performed prior to any intrusive or dust producing activities and equipment startup.
Perimeter:	At least twice per day using direct-reading instruments during intrusive activities when visible dust cannot be controlled through other means.
Personnel:	At least twice per day in the breathing zone (BZ) of those with the highest anticipated exposure during intrusive or dust producing activities when visible dust cannot be controlled through other means.
Area:	At least twice per day in each work zone and at the onset of any new intrusive or dust producing activities, or at new locations when visible dust cannot be controlled through other methods.

5.2 Monitoring Instruments

The SHSC will maintain instrument manuals that specify calibration, general use, and troubleshooting procedures. All monitoring equipment will be field calibrated on a **daily** basis according to the manufacturer's instructions and will be recorded on the field notebook.

Equipment	Contaminant	Work Activity
TSI Dust Monitor	Airborne Dusts and Particulates Potentially Contaminated with Chemical Hazards	All Tasks - When visible dust cannot be controlled through other methods, such as wetting.

5.3 Action Levels

Action levels and visual criteria have been established for work stoppages, and evacuation (see Appendix 7 for Justification of Action Levels calculations). The decision to stop work must be based upon instrument readings measured in the BZ of Project Area personnel and comparison of the results to the information contained in Appendix 5. Record readings in the field notebook. See Section 2.1 related to visual work stoppage criteria.

5.4 NIOSH/OSHA Air Sampling Methods

If needed, worker exposure monitoring may be performed to determine the exposure to specific COCP. The exposure monitoring will be performed using NIOSH or OSHA methods and compared to specific OR-OSHA permissible exposure limits (PEL) or American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Values (TLVs®).

6.0 DECONTAMINATION - Contaminated Soils Only

The procedures outlined below shall be employed where applicable during decontamination of field equipment. Note that separate areas should be established for personnel and heavy equipment decontamination; see also Section 3.2 (Engineering Controls) of this HASP.

6.1 Decontamination Staging Areas

A decontamination wheel wash staging area for heavy equipment will be established for the Project Area, at the entrance/exit. The decontamination staging area will have an additional section for small equipment and personnel decontamination.

If it is necessary to relocate or add any decontamination staging area(s), the staging area(s) shall be selected based on the ability to control access to the area, control residual material removed from equipment, store clean equipment, and access to the activity area.

6.2 Frequency of Decontamination

All equipment shall be free of dirt, mud, and debris prior to coming inside the Project Area. Additionally, all equipment including, heavy equipment, and power tools will be decontaminated prior to leaving the Project Area to prevent soil and dirt from leaving the Project Area. Personnel will decontaminate upon completion of their

work shift or after the task at hand in the case heavily soiled conditions or failure of PPE.

6.3 Personnel Decontamination

Equipment	Decontamination Solution	Procedures	
		Intermediate	Final
Long-handled, soft-bristled brushes Galvanized wash tubs or equivalent Pump-activated sprayer Garbage cans with plastic liners and drums with liners Plastic Sheeting Paper towels Duct tape	Tap water for scrubbing and rinsing	Dispose of or scrub outer boot and glove with soft bristled brush and water. Rinse outer boot and glove. Remove outer glove and store for later use. Enter SZ. Return to RWZ wearing new or cleaned outer gloves.	Segregate equipment drop (for instruments and equipment requiring special decontamination; Dispose of or scrub outer boot and glove with soft bristled brush and water. Rinse outer boot and glove. Remove and dispose of outer boots (if not cleaned to “like new” condition). Remove and dispose of outer gloves (if not cleaned to “like new” condition). Remove and dispose of coverall. Remove and dispose of inner gloves in designated receptacle. Field wash for personal hygiene. Exit to SZ.
Note: Intermediate decontamination is for periodic exits from the RWZ for short breaks. Final decontamination is performed before lunch, when taking cool down breaks, and when exiting the Project Area.			

6.4 Equipment Decontamination

Heavy equipment in direct contact with soil and/or groundwater, such as the drill rig augers and backhoe buckets, etc. shall be washed and inspected by the Site PM or Project Supervisor prior to leaving the site. Truck and heavy equipment wash station(s) will be located near the staging area(s) entry/exit.

The decontamination procedure shall consist of the following: 1) wash with potable water and if necessary scrub with a soft bristled brush, 2) rinse in a bath with potable water. If possible, equipment shall be disassembled prior to cleaning. A second wash should be added if very soiled equipment is present.

All wash water shall be contained in 55-gallon drums.

6.5 Emergency Decontamination

In the event of an accident or incident where work must cease and staff must exit the RWZ, emergency decontamination should be performed to the greatest extent feasible. In an emergency, the primary concern is to prevent the loss of life or severe injury. If immediate medical attention is required to save a life, decontamination should be delayed until the victim is stabilized. If the decontamination can be performed without interfering with essential life-saving techniques or first aid, or if a worker has been contaminated with an extremely toxic or corrosive material that could cause severe illness or loss of life, decontamination must be performed immediately. If an emergency due to a heat-related illness develops, protective equipment should be removed carefully from the victim as soon as possible.

Any time emergency decontamination methods must be used, a Supervisor's Accident Investigation Report (see Safety Policy Manual) must be completed by the SHSC and submitted to the CHSD.

6.6 Waste Disposal Procedures

All discarded materials that accumulate from Project Area activities (e.g., PPE, wash water, supplies, etc.) will be segregated by matrix and by source location and placed in labeled, DOT-approved, 55-gallon drums, and stored in a secure, designated location next to the health and safety trailer of the staging area. All IDW will be handled, labeled, stored, inventoried, and disposed of properly.

7.0 SANITATION AND ILLUMINATION

7.1 Sanitation and Personal Hygiene

Potable drinking water shall be supplied in tightly-closed containers and shall be clearly marked for its intended use. If vehicles are available for use by field crews, restrooms and a field washing area with potable water will be available within a reasonable distance from the Project Area. If such facilities are not located within a reasonable distance, portable facilities will be installed for use by field employees.

All workers are required to wash their hands and face (as necessary) immediately prior to any work or lunch break or prior to eating, drinking, smoking, or when exiting the Site.

7.2 Illumination

It is anticipated that all Project Area work will be conducted during daylight hours. If circumstances arise in which fieldwork is to be conducted before or after daylight, or sunlight is obstructed, illumination within all general Project Area locations will be maintained at or above 5 foot-candles for general Project Area locations.

8.0 SPILL PREVENTION

Fuels and other hazardous brought onto the Project Area will be limited in quantity. Stored flammable liquids will be confined to flammable storage cans. If larger quantities of fuel are required, a proper storage area with appropriate containment must be instituted. Drip pans and absorbent socks will be used to ensure that no fuels are spilled.

9.0 EMERGENCY ACTIONS

9.1 Preplanning and General Procedures

General Emergency Information:

Project Area personnel should be constantly alert to recognize potentially unsafe work practices, hazardous work environments, and conditions that are immediately dangerous to life or health (IDLH), and they should be routinely reminded of signs and symptoms of chemical and heat overexposure. Emergency action procedures are detailed in the Emergency Medical Plan of the Safety Policy Manual and should be reviewed weekly and updated, as necessary, following incidents. Prearrange access for emergency crews when necessary.

In the event of a large-scale spill, fire/explosion, or major emergency, the Project Supervisor is expected to notify the Site PM; the Site PM notifies the Client, evacuates the area, and lets appropriately-trained emergency staff respond to the situation. The safety and well-being of Project Area personnel, visitors, and the adjacent community will be of utmost importance in determining the appropriate response to a given emergency.

Emergency Coordinator:

The Site PM or Project Supervisor will serve as the Emergency Coordinator (EC) during an actual emergency response situation. The Site PM or Project Supervisor will serve as the primary EC at all times; and follow the Emergency Medical Plan outlined in the Safety Policy Manual. The EC will contact off-site emergency response agencies and will serve as the main spokesperson when the responders arrive at the Project Area.

Project Area Maps:

An updated Project Area map (Figure 2, see Sections 1.2 and 4.0, Project Area Description and Features, and Project Area Control, respectively) that is used during daily tailgate meetings will be used to inform the staff of hazardous areas, zone boundaries, Project Area terrain, evacuation routes, work crew locations, and any Project Area changes. In the unlikely event that an emergency occurs, the problem areas will be pinpointed on the Project Area Map, and pertinent information, such as weather and wind direction, temperature, and forecast, will be added as obtained. This map will be provided to the responding agencies.

Emergency Decontamination:

For first aid of non-life-threatening injuries, evacuate to decontamination line and decontaminate as much as possible or practical; contaminated clothing should be removed. For life-threatening injuries/exposures, field decontaminate as much as possible for the person's own safety, wrap in a blanket or polyethylene sheeting, and immediately transport to the designated medical facility. Also, phone ahead and bring this HASP for informational purposes and MSDS access by medical staff.

Safe Refuge Area:

To be determined; this will be discussed in the tailgate meetings by the EC, once at the Project Area. It will be set up in the SZ or at an off-site location in the event of a Project Area-wide evacuation. This area will be upwind, and the location and escape routes will be designated on Project Area control maps. In an emergency, the EC will take a "head count" against the field notebook, initiate search/account for missing persons, notify the emergency crews (as applicable), and limit access into the hazardous emergency area to necessary rescue and response personnel in order to prevent additional injuries and possible exposures.

Emergency Equipment:

Emergency equipment will be maintained in the construction trailer (CT) or field vehicle (V), in the SZ, with the exception of items marked by an asterisk that will be kept in the RWZ. All items must be checked and maintained by the SHSC at least weekly and after each use.

☒ First Aid Kit, V/CT	☒ Fire Extinguisher, V/CT
☒ Spill Equipment, V/CT	☒ Mobile Phone, V/CT
☐ Eyewash station*, CT/RWZ	☒ Hospital Route Map, V/CT

Evacuation Procedures:

Expeditious evacuation routes to the Safe Refuge Area(s) will be established daily for all work area locations, with respect to the wind direction. Evacuation notification will be a **continuous blast on a canned siren, vehicle horn, or direct verbal communication.** Emergency drills should be performed periodically. Any additions to evacuation procedures require an update to this HASP.

In the unlikely event that an evacuation is necessary, all personnel will immediately proceed to the predetermined Safe Refuge Area, decontaminating to the extent possible for personal safety, based on the emergency. The EC should then begin the Project Area security and control measures.

9.2 Site-Specific Response Scenarios

9.2.1 Natural Disasters

Earthquake

Alarm: Car Horn

Action: Cease operations and turn off equipment. Seek protection under a sturdy table or stay in the open. Inspect area and equipment prior to starting work again.

9.2.2 Weather-Related Emergencies

All work will cease should any of the following weather conditions arise:

- Poor visibility
- Precipitation severe enough to impair safe movement/travel
- Lightning in the immediate area
- Excessive winds
- Flooding
- Other conditions as determined by the SHSC, Site PM, or Project Supervisor

9.2.3 Spill and/or Discharge of Hazardous Materials

Training:

Responses to incidental releases or spills of hazardous substances that can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area are not considered to be emergency responses under 29 CFR 1910.120(l) and do not require additional specialized training.

Spill Control and Response:

There is a potential for incidental spillage/leakage of hazardous materials (fuels, grouts, detergents, etc.) that are brought onto the Project Area to implement project activities. Store these materials properly and maintain the appropriate spill response equipment in or easily accessible to the area where the materials are used/stored. In case of incidental spills or leaks, follow these steps:

1) Notify the SHSC and Site Supervisor

2) Select appropriate PPE and response equipment

3) Contain the spill to the extent possible

4) Neutralize or solidify the liquid per the MSDS

5) Transfer to an IDW container

6) Document

7) Notify the Port of Portland, Marine Security 503-240-2230

9.2.4 Fire or Explosion

Call the EC or Site Supervisor, who then will decide whether to call the Fire Department for outside assistance. Small-scale fires, less than one-half of the responder's height, should be extinguished with an accessible ABC fire extinguisher by any team member who has received training. Trained emergency crews will be summoned to control any large-scale or potentially unmanageable incident. Any off-site responding agencies will be given the Project Area Map (Figure 2) and briefed about site-specific hazards so they can be optimally helpful in an emergency situation. The EC will evacuate all non-response personnel and visitors to the Safe Refuge Area; will notify the Site PM/Project Supervisor, as applicable, the Client, and the CHSD; and will complete the appropriate reports.

9.3 Medical Emergency Response

9.3.1 Hospital

In the event of a serious injury or an accident that occurs after hours, call 911 or transport the victim to the hospital emergency room listed below.

Nearest Medical Facility:	Legacy Good Samaritan Medical Center 1015 NW 22nd Ave Portland, OR 97210
Emergency Phone Number:	(503) 413-7260
Information Phone Number:	(503) 413-7711

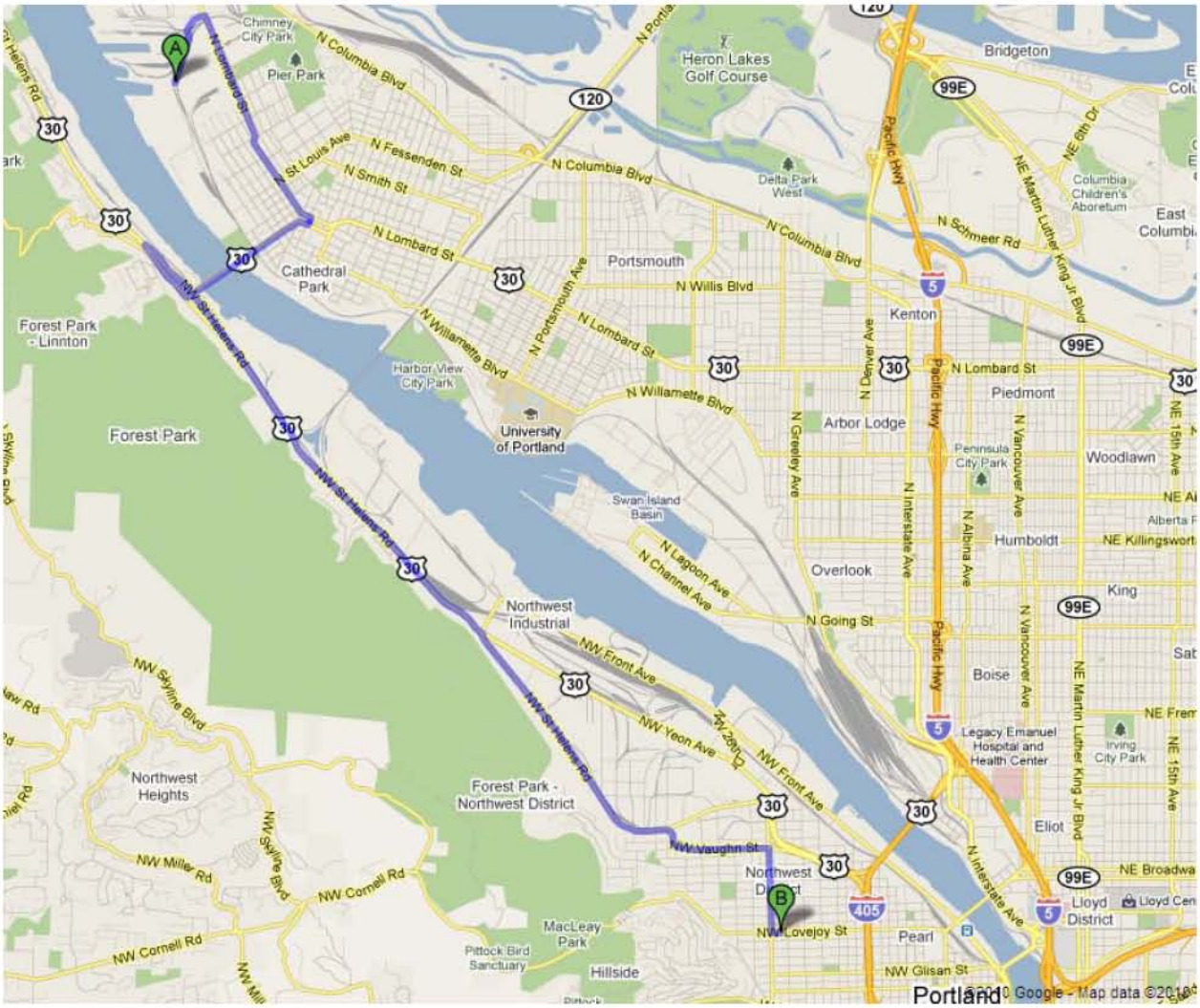
Medical Route:

1.	Head north on N Terminal Rd	0.3 mi
2.	Turn right to stay on N Terminal Rd	0.2 mi
3.	Take the 1st right onto N Lombard St	1.4 mi
4.	Turn right at N Leavitt Ave	259 ft
5.	Take the 1st right onto N Ivanhoe St	282 ft
6.	Turn left at N Philadelphia Ave	0.4 mi
7.	Continue onto NW St Johns Bridge	0.4 mi
8.	Turn right to stay on NW St Johns Bridge	85 ft
9.	Slight right at NW Bridge Ave	0.4 mi
10.	Take the 1st right to stay on NW Bridge Ave	72 ft
11.	Turn right at NW St Helens Rd	3.0 mi
12.	Turn right to stay on NW St Helens Rd	1.7 mi
13.	Slight right at NW Ward Way/NW Wardway St	0.1 mi
14.	Continue onto NW Vaughn St	0.5 mi
15.	Turn right at NW 23rd Ave	0.5 mi
16.	Turn left at NW Lovejoy St, destination will be on the left	259 ft

End at 1015 NW 22nd Ave Portland, OR 97210

Estimated Time: 18 minutes Estimated Distance: 9.0 miles

Hospital Route Map:



Site Personnel Response Actions:

Call the EC or Site Supervisor who will assess the situation, first taking necessary precautions for personal safety. The EC will follow The Emergency Medical Plan outlined in the Safety Policy Manual and determine whether to summon an ambulance by calling 911. The Project Area control measures will be implemented by the EC. Any off-site responding agencies will be given the Project Area Map and informed about the site-specific hazards so they can be optimally helpful in an emergency situation.

In emergencies, the injuries and illnesses that may arise will vary from incident to incident; check Appendices 2 and 3 and the MSDSs (Appendix 6) or contact the Poison Control Center for emergency first aid procedures. Note, in accordance with the Emergency Medical Plan, NEI does not designate a person as a first aid/CPR responder. Any first aid treatment is considered a Good Samaritan Act and be conducted within the scope of the Bloodborne Pathogen Plan. It is essential that all Project Area personnel in need of emergency care receive treatment.

9.3.2 Bloodborne Pathogen Exposure Control Plan

The Bloodborne Pathogen Exposure Control Plan for Field Operations is located in the Safety Policy Manual.

9.4 Accident Reporting and Record Keeping

At the onset of an employee work-related injury or illness the NEI employees should notify the Project Supervisor or Site Project Manager/SHSC. The employee is required to report all work-related injuries; plus all non-work related injuries that may affect his/her ability to safely perform their job.

The SHSC will conduct an investigation in accordance with the Investigation of Injuries Policy outlined in the Safety Policy Manual. Completed report(s) must be transmitted to the CHSD within 24 hours of an occurrence; a fax is acceptable. The CHSD will submit the appropriate reports to the NEI Human Resources department in Tigard, Oregon (for Workers' Compensation), and OSHA (as applicable). NEI will complete Worker's Compensation Insurance notifications, and conduct further incident investigation and develop internal communications if necessary.

Any release of information in these reports to unauthorized persons or agencies is prohibited unless it is first approved by the Client. Certain agencies or persons, such as OSHA or OSHA inspectors, can request this information and its release will

be permitted. Review the Emergency Call List for additional contact names and phone numbers.

9.5 Emergency Reference List

RESPONDING EMERGENCY AGENCIES

Service	Telephone Number
Ambulance	911
Fire Department	911
Police Department	911

PROJECT EMERGENCY CALL LIST

Title	Name	Telephone Number
Project Manager	Jeff Hargens	(503) 625-3100 (Office) (503) 849-8562 (Cell)
Site Supervisor	Carl Johnson	(503) 625-3100 (Office) (503) 849-8551 (Cell)
Site Health and Safety Coordinator (SHSC)	Carl Johnson	(503) 625-3100 (Office) (503) 849-85551 (Cell)
Corporate Health and Safety Director (CHSD)	Jeff Hargens	(503) 625-3100 (Office) (503) 849-8562 (Cell)
Health and Safety Representative	Garry Rossing, CIH	(503) 639-3400 (Office) (503) 816-9254 (Cell)
Port of Portland	Tim Stone(Anchor (QEA) Inspector Kelly Madalinski	(503) 475-9150 (Cell) (503) 415-6676(Office) (503) 805-6952 (Cell)
* In the event of an occupational accident or incident, for NEI employees please indicate to the medical facility that this is a Workers' Compensation case; that your employer is NEI; and insurance administrator information is available from Teresa (Northwest Earthmovers, Inc.) - 503-625-3100		

EMERGENCY TELEPHONE NUMBER LIST

Organization	Telephone Number
State OSHA	(503) 229-5910 (Oregon)
Poison Control Center	1 (800) 222-1222
National Response Center	1 (800) 424-8802

SUBCONTRACTOR'S EMERGENCY TELEPHONE NUMBER LIST

Organization	Contact	Telephone Number
Casserly Landscape	John Casserly	(503) 793-6254
Fox Erosion Control	Terry Marsh	(503) 654-8816

10.0 NEI EMPLOYEE HEALTH AND SAFETY PLAN ACCEPTANCE

I have had access to the HASP and opportunity to ask questions about this HASP. I have received site-specific information and orientation regarding HazCom and the identified hazards anticipated at the Project Area. My signature certifies that I understand the procedures, equipment, and restrictions of this plan and agree to abide by them.

SIGNATURE*	PRINTED NAME	COMPANY	DATE

* This acceptance form is required for all routine Project Area staff.

SIGNATURE*	PRINTED NAME	COMPANY	DATE

* This acceptance form is required for all routine Project Area staff.

11.0 NON-NEI EMPLOYEE HEALTH AND SAFETY PLAN ACCEPTANCE

I have received site-specific information and orientation regarding HazCom and the identified hazards anticipated at the Project Area during a tailgate meeting by NEI field personnel and had opportunities to ask questions about health and safety for this project. My signature certifies that I understand the procedures, equipment, and restrictions of this plan and agree to abide by them.

SIGNATURE*	PRINTED NAME	COMPANY	DATE

* This acceptance form is required for all routine subcontracting personnel.

SIGNATURE*	PRINTED NAME	COMPANY	DATE

* This acceptance form is required for all routine subcontracting personnel.

LIMITATIONS

This Site-Specific Health and Safety Plan (HASP) was prepared exclusively for Northwest Earthmovers, Inc. (NEI) by AMEC Earth & Environmental, Inc. (AMEC). The quality of information contained herein is consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this HASP. This HASP is intended to be used by NEI and its subcontractors for the Terminal 4 Wheeler Bay Bank Repairs only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this HASP by any third party is at that party's sole risk. The information contained herein are relevant to the site documents and reports produced by others prior the development of this HASP and should not be relied upon to represent conditions at later dates. In the event that changes in the nature, usage, or layout of the property or nearby properties are made, the information contained in this HASP may not be valid. If additional information becomes available, it should be provided to AMEC so the HASP can be modified as necessary.

APPENDIX 1

Site Characterization

Site Characterization Table

ANTICIPATED PHYSICAL STATE OF CONTAMINANTS		
☐ Liquid	☐ Sludge	☐ Unknown
☒ Solid	☐ Gas/Vapors	☐ Other
Note:		

MATRIX		
☐ Surface soils	☐ Surface water	☐ Free product
☒ Soils at depth	☐ Groundwater	☐ Other
Note: Contaminated soils are demarcated by an orange-colored barrier buried in the ground. All soils above the barrier are newer imported non-contaminated soils.		

POTENTIAL HAZARDOUS PROPERTIES		
☐ Corrosive	☐ Flammable/Combust	☐ Radioactive
☒ Toxic	☐ Volatile	☐ Reactive
☐ Inert	☒ Carcinogenic	☐ Unknown
☐ Asphyxiant	☐ Compressed gas	☐ Other
Note:		

CONTAINER/STORAGE SYSTEM INFORMATION		
☐ Tanks (Carbon Vessel)	☐ Landfills/Drums	☐ Subsurface
☐ Drums	☐ Impoundments	☒ Uncontainerized
☐ Pipes	☐ Size/Capacity	☐ In-service
☐ Quantity	☐ Surface	☐ Other
Note: Not Applicable		

CONDITION OF CONTAINER/STORAGE SYSTEM (S)		
☐ Sound/Undamaged	☐ Confirmed leaks	☐ Other
☐ Deteriorated/Unsound	☐ Suspected leak	☐ Unknown
Note: Not Applicable		

(Continued)
Site Characterization Table

ORIGIN OR INDUSTRIAL APPLICATION OF CHEMICALS OF CONCERN		
Industrial Process		
☐ Manufacturing	☒ Previously in use	☐ Painting/Coating
☐ Power Generation	☐ Maintenance/Repair	☒ Storage
☐ Quantity	☐ Surface	☒ Other
Note: Terminal 4 is currently used as an operating marine facility with a variety of tenants and operations, including automobile importing, exporting of soda ash, import and export of dry and liquid bulk cargo, rail intermodal facilities, and petroleum storage. Previously, the activities at the site included loading and unloading dry and liquid bulk cargo such as Bunker C, diesel, pencil pitch, and metal ores.		

Chemicals Used or Identified		
☐ Acids	☒ Metals	☐ Phenols
☐ Caustics	☐ Pesticides	☐ Paints
☐ Halogen	☐ PCBs	☐ Solvents
☒ Other		
Note: Identified contaminants of concern that exceeded preliminary screening levels include metals and polycyclic aromatic hydrocarbons.		

Oils/Fuels		
☐ Fuel oil	☐ AVGAS	☒ Gasoline
☐ Waste oil	☐ Diesel	☐ Leaded
☐ Hydraulic oil	☐ MOGAS	☐ Jet fuel
☐ Other		

Sludge		
☐ Metal sludge	☐ Oil sludge	☐ Septic sludge
☐ Other		
Note: Not Applicable		

Solids		
☐ Asbestos	☐ Sandblast grit	☐ Landfill refuse
☐ Other		
Note: Not Applicable		

APPENDIX 2

Chemical Hazard Properties and Exposure Information

TABLE 2
Chemical Hazard Properties and Exposure Information

Chemical Name/Synonym	ACGIH TLV TWA	Notations	TLV Basis	OSHA PEL	STEL (ST) or Ceiling	IDLH	IP (eV)	LEL/UEL	Route	Route/Systems** Symptoms
Hydrocarbons, Polynuclear (cyclic)										
PAHs (as coal tar pitch volatiles)*	0.2 mg/m^3	Human carcinogen	Cancer	0.2 mg/m^3	None	80 mg/m^3	Not listed	Not listed	Inh Con	Derm, brom [carc]
*Includes: Benzo(b)fluoranthene, Benzo(a)anthracene,Benzo(a)pyrene, Inderno(1,2,3-cd)pyrene, dibenz(a,h)anthracene,										
Metals										
Arsenic (inorganic compounds)	0.01 mg/m^3	Human carcinogen	Cancer (lung, skin); lung	0.01 mg/m^3	0.002 mg/m^3 [15 min]	5 mg/m^3	NA	NA/NA	Inh Abs Ing Con	Ulceration of nasal septum, derm, GI disturbances, peri neur, resp irrit, hyperpig of skin, [carc]
Lead, elemental and inorganic compounds	0.05 mg/m^3	Animal carcinogen	CNS; GI; blood; kidney; reproductive	0.05 mg/m^3	None	100 mg/m^3	NA	NA/NA	Inh Ing Con	Weak, lass, insom; facial pallor; pal eye, anor, low-wgt. malnut; constip, abdom pain, colic; anemia; gingival lead line; tremor; para wrist, ankles; encephalopathy; nephropathy; irrit eyes; hypertension

TABLE 2 (Continued)
Chemical Hazard Properties and Exposure Information

ACGIH = American Conference of Governmental Industrial Hygienists
ppm = Parts per million
NE = None established
IP = Ionization potential
TLV = ACGIH Threshold Limit Values
OSHA = Occupational Safety and Health Administration
mg/m^3 = Milligrams per cubic meter
TWA = Time weighted average
PEL = OSHA Permissible Exposure Limit

ND = None determined
IDLH = Immediately dangerous to life and health
STEL = Short-term exposure limit
NIOSH = National Institute of Occupational Safety and Health
LEL = Lower explosive limit
TPH = Total petroleum hydrocarbons
PAH = Polycyclic aromatic hydrocarbon
NA = Not applicable
UEL = Upper explosive limit

Sources: The above information was derived from NIOSH Pocket Guide to Chemical Hazards, (September 2005). ACGIH Threshold Limit Values (2006).

****ROUTE/SYSTEMS ABBREVIATIONS:**

abdom=abdominal	dysfunc=dysfunction	lac=lacrimation	pulm=pulmonary
abdom=abdominal	dysp=dyspnea	lar=laryngeal	RBC=red blood cell
abnor=abnormal/abnormalities	emphy=emphysema	Lass=lassitude (weakness, exhaustion)	Repro=repoductive
album=albuminuria	equi=equilibrium	Leth=lethargy (drowsiness or indifference)	resp=respiratory
Abs=skin absorption	eosin=eosinophilia	leucyt=leukocytosis (increased blood leukocytes)	restless=restlessness
anes=anesthesia	epilep=epileptiform	leupen=leukopenia	retster=retrosternal (occurring behind the sternum)
anor=anorexia	epis=epistaxis (nosebleed)	li-head=lightheadedness	rhin=rhinorrhea (discharge of thin nasal mucus)
anos=anosmia (loss of the sense of smell)	eryt=erythema	liq=liquid	salv=salivation
appre=apprehension	euph=euphoria	local=localized	sens=sensitization
arrhy=arrhythmias	fail=failure	low-wgt=weight loss	sez=seizure
asphy=asphyxia	fasc=fasciculation	mal=malaise (vague feeling of discomfort)	short=shortness
aspir=aspiration	FEV=forced expiratory volume	malnut=malnutrition	sneez=sneezing
asphy=asphyxia	fibrl=fibrillation	ment=mental	sol=solid
BP=blood pressure	ftg=fatigue	methemo=methemoglobinemia	soln=solution
breath=breathing	func=function	monocy-=monocytosis (increased blood monocytes)	som=somnolence (sleepiness unnatural)
bron=bronchitis	GI=gastrointestinal	Molt=molten	subs=substernal (occurring beneath the sternum)
broncopneu=bronchopneumonia	gidd=giddiness	muc memb=mucous membrane	sweat=sweating
bronspas=bronchospasm	halu=hallucinations	musc=muscle	swell=swelling
BUN=blood urea nitrogen	head=headache	narci=narcosis	sys=system
[carc]=carcinogen	hema=hematuria (blood in the urine)	nau=nausea	pulm=pulmonary
card=cardiac	hemato=hematopoietic	nec=necrosis	RBC=red blood cell
chol=cholinesterase	hemog=hemoglobinuria	neph=nephritis	Repro=repoductive
cirr=cirrhosis	hemorr=hemorrhage	nerv=nervousness	resp=respiratory
CNS=central nervous system	hyperpig=hyperpigmentation	numb=numbness	restless=restlessness
Con=contact	hypox=hypoxemia (reduced oxygen in the blood)	opac=opacity	retster=retrosternal (occurring behind the sternum)
conc=concentration	ict=icterus	palp=palpitations	rhin=rhinorrhea (discharge of thin nasal mucus)
conf=confusion	inco=incoordination	para=paralysis	salv=salivation
conj=conjunctivitis	incr=increase	pares=paresthesia	sens=sensitization
constip=constipation	inebri=inebriation	perf=perforation	sez=seizure
convuls=convulsions	inflam=inflammation	peri neur = peripheral neuropathy	short=shortness
corn=corneal	Ing=ingestion	periob=periorbital (situated around the eye)	sneez=sneezing
CVS=cardiovascular system	Inh=inhalation	phar=pharyngeal	sol=solid
cyan=cyanosis	inj=injury	photo=photophobia (abnormal visual intolerance to light)	soln=solution
decr=decrease	insom=insomnia	pig=pigmentation	som=somnolence (sleepiness unnatural)
depres=depressant	irreg=irregular	pneu=pneumonia	tacar=tachycardia
derm=dermatitis	irrit=irritant	pneuitis=pneumonitis	tend=tenderness
diarr=diarrhea	irrity=irritability	PNS=peripheral nervous system	terato=teratogenic
dist=disturbance	jaun=jaundice	polneur=polyneuropathy	throb=throbbing
dizz=dizziness	kera=keratitis (inflammation of the cornea)	prot=proteinuria	tight=tightness

TABLE 2 (Continued)
Chemical Hazard Properties and Exposure Information

trachbronc=tracheobronchitis	vap=vapor	vesic=vesiculation	weak=weakness
twitch=twitching	venfib=ventricular fibrillation	vis dist=visual disturbance	wheez=wheezing
uncon=unconsciousness	verti=vertigo (an illusion of movement)	vomit=vomiting	

- ACGIH TLVs and OSHA PELs are TWA concentrations that must not be exceeded during any 8-hour shift or a 40-hour workweek.
- Ceiling concentrations must not be exceeded during any part of the workday; if instantaneous monitoring is not feasible, the ceiling must be assessed as a 15-minute TWA exposure.
- IDLH represents the maximum concentration from which, in the event of respiratory failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing (e.g., severe irritation) or irreversible health effects.
- Skin designates the potential for dermal absorption; skin exposure should be prevented. The value only represents inhalation hazards.
- "ppm" is parts per million by volume and is not equivalent to a ppm by weight in soil value, e.g., mg/kg.
- IPs (given in electron volt [ev] units) are presented for photoionization (PID) usefulness evaluation. The PID lamp should have an eV value greater than the analyte it is detecting.

† Exceeds PID detection capabilities.

APPENDIX 3

Physical and Operating Hazards

Back Injuries Due to Improper Lifting

Preventive Measures

- Use proper lifting techniques.
- Lift with the legs, not the back.
- Keep loads close to the body and avoid twisting.
- Loads heavier than 50 pounds (lbs) require a second person or mechanical device for lifting.
- Use mechanical devices such as drum dollies, hand trucks, and tool hoists (for lifting augers) to lift or move heavy loads whenever possible.

Biological Agents

Preventive Measures

- Project work will not expose workers to infectious agents or wastes; however, responders to first aid incidents could contact bloodborne pathogens. Follow the Bloodborne Pathogen Control Plan in this Health and Safety Plan (HSP).

- Identify personnel who are highly sensitive or allergic to insect bites or stings during the "kickoff" meeting so that the appropriate emergency treatment can be made available on-site.

- Never try to capture wild or semi-wild animals—they may bite you or infect you with parasites.

- Avoid direct contact with the water in the Willamette River. During periods of rainfall, raw sewage can sometimes be discharged directly into the river. Personnel should always wash their hands with soap and water immediately after directly contacting river water or handling PPE or equipment/materials that has come in contact with river water.

Poison Ivy, Oak, and Sumac

- Review the Poison Ivy, Oak, and Sumac Field Guide during daily tailgate safety meetings. Worker must be familiar with the appearance of these poisonous plants.

- If there is accidental contact, carefully remove affected clothing and wash skin with soap and warm water as soon as possible.

Ticks

- Tick parasites are commonly encountered in thick vegetation.

  - Check yourself and coworkers regularly for feeding ticks.
  - If a tick is located, remove it with tweezers and place in a vial.
  - If irritation is felt or observed at the bite site, seek medical attention. Bring in removed tick, if possible.

- Tick bites can lead to local infections at the bite site or result in potentially severe illnesses, such as Lyme Disease or Rocky Mountain Spotted Fever.

Hanta Virus

- In areas with rodent infestation, the existence of Hanta virus must be discussed during the tailgate safety meetings.

- Hanta virus is carried by rodents, particularly deer mice. Exposure to the virus through contact with the rodents and their droppings can lead to a severe, often deadly illness in humans.

- Do not sweep up or disturb rodent droppings without an appropriate respirator.

- Do not eat food or drink beverages that have been exposed to rodents and/or their droppings.

Valley Fever

- In parts of the California Central Valley and in other regions of the southwestern United States, there are fungal spores in the soil, which, if inhaled, can cause an illness known as Valley Fever (Coccidioidomycosis).

- During projects in areas of the country where Valley Fever fungal spores are known or suspected to be in the soil, the hazards and symptoms must be discussed during the tailgate safety meetings.

- Inhalation of dust containing the spores can cause the Valley Fever illness, which has a wide range of symptoms. Symptoms can be mild, similar to the flu lasting a few days, to more serious involving damage to the lungs, heart, and central nervous system.

- In areas where the Valley Fever spores are known, dust suppression techniques are critical to minimize exposure. Tarping and wetting down disturbed areas of soil will help to control exposure. In the event these techniques are not feasible or effective, air purifying respirators with P-100 filters shall be worn.

Cold Stress

Preventive Measures

During tailgate safety meetings, train workers to recognize the signs and symptoms of cold stress illnesses:

- Frostbite - Skin color changes to white to reddish, pain followed by cold and numbness in the affected area(s); blisters may appear later.

- Hypothermia - Uncontrollable shivering, a sensation of feeling cold, a slowed and sometimes irregular heartbeat, a weakened pulse, and changes in blood pressure. More severe cases can result in slurred speech, memory lapses, incoherence, and drowsiness.

First Aid

- Frostbite - Cover the frozen body part, provide extra clothing and blankets, bring the victim indoors as soon as possible, place the frozen body part in warm water (~100°F) or re-warm with warm packs. Seek medical assistance as soon as possible.

- Hypothermia - Get victim out of wind, snow, and rain. Keep person awake. Remove any wet clothing and replace with dry, warm clothing. Wrap blanket around victim. If conscious, give victim sweet warm beverages. Seek medical attention as soon as possible.

Prevention

- Provide shelter away from rain, snow, or wind for breaks.

- Institute a work-rest schedule in accordance with the standard operating procedure (SOP).

- Increase fluid intake to prevent dehydration. Drink warm, sweet, caffeine-free, nonalcoholic drinks or soup periodically.

Discharge of Static Electricity (UST related)

Preventive Measures

- Properly ground and bond all equipment.
- Check for and remove ungrounded and unbounded objects in the tank, such as loose gauge floats and sample can.
- Avoid splash filling. Discharge through the fill-pipe outlet near the bottom of the tank with minimal agitation of the water and sediment (sludge).
- Avoid discharging fuel product from a nozzle that is elevated above the liquid level.
- Limit the velocity of the incoming liquid stream to 3 feet per second (ft/sec) until the fill pipe is submerged either 2 pipe diameters or 2 ft, whichever is less.
- Avoid pumping substantial amounts of air or other entrained gas into the tank through the liquid.
- Delay 1 minute or more before gauging, strapping, or sampling of static-accumulating fuels after filling.

Electrocution

Preventive Measures

- Locate all underground power lines by geophysical methods.
- Review engineering drawings with appropriate client contact and/or site personnel.
- Confirm exact location of lines with hand tools, not heavy equipment.
- Wear rubber, insulated protective gloves when hand digging or work on a rubber insulating mat.
- Do not work within 10 feet (ft) of high voltage electrical equipment having live exposed parts unless qualified, trained, and following safe work practices per 29 CFR 1910.331-335.
- Leave at least 20 ft between drilling masts and overhead power lines under 50 kilovolts, unless the lines have been de-energized and visibly grounded at the point of work, or are equipped with insulated barriers to prevent physical contact.
- Lower the drilling mast before moving the rig any distance.
- Lock-out and tag controls that will be deactivated for maintenance or work on energized or de-energized equipment or circuits.
- Extension cords, power/electric tools, pumps, floodlights, and generators that lack double insulation must have grounding conductors that work.
- Use ground fault circuit interrupters (GFCIs) on all 120-volt, 120-amp circuits.
- Never work on-site when there is a threat of lightning storms.

Ergonomic Stress

Preventive Measures

- Lift carefully with load close to body with the legs taking most of the weight.
- Get help with lifts greater than 40 lbs.
- When working with a heavy tool or object, keep legs under the load and do not overreach or twist to the side.
- Reposition body to be more square to the load and work.
- Push loads, rather than pull, whenever feasible.
- Do not persist with lifting when the load is too heavy.
- Use a mechanical lifting aid or have a coworker assist with the lift.
- Rotate repetitive tasks to avoid soft-tissue fatigue.

Fire and Explosion

Preventive Measures

- Make ABC fire extinguishers accessible in the work area.
- Store flammables in Underwriter's Laboratory and Occupational Safety and Health Administration (OSHA) approved metal safety cans equipped with spark arrestors.
- Store flammable containers more than 50 ft from the rig. Store portable (flammable) tanks more than 100 ft from the rig.
- Keep exhaust equipment powered by internal combustion engines well away from flammables and combustibles.
- Secure hot work permits/approvals (Appendix 2) before welding or cutting.
- Store and use compressed gases in a safe manner.
- Never refuel equipment (e.g., generators) while it is in operation or hot enough to ignite fuel vapors.
- Conspicuously mark operations that pose fire hazards "No Smoking" or "Open Flames."
- Remove trash, weeds, and unnecessary combustibles from the Exclusion Zone (EZ).

Heat Stress

Preventive Measures

First Aid

- Perform emergency decontamination.
- Remove victim to cool area.
- Give cool fluids (only if conscious).
- Immediately reduce body temperature.
- Seek medical attention.

Prevention

- Provide shelter or shaded area for work tasks (as feasible) and break areas.
- Adjust work schedules by rotation of personnel or alternate job functions to minimize heat stress or overexertion at one task.
- Work during cooler hours of the day (or night), as feasible.
- To maintain normal body fluid levels, drink 16 ounces (oz) (2 cups) of water before each shift and about 8 oz (1 cup) every 15 to 20 minutes. Drink 2 gallons of water during an 8-hour period.
- Wear nonbinding cotton clothing (e.g., medical scrubs and cotton undergarments) under personal protective equipment (PPE) to absorb moisture and to help prevent heat rash.
- Where feasible, set up field “showers” or hose-down areas to cool down body.

Heavy Equipment Operation

Preventive Measures

- Owner/operator shall inspect equipment daily.
- Correct all discrepancies before placing equipment in service.
- Keep blades, buckets, and other heavy equipment fully lowered when not in use.
- Parking brakes must be engaged.
- After working hours, bucket may be elevated if the locking pin is in place.
- Never leave drill rods or core barrels balancing, leaning, or otherwise unsecured on the rig.
- Chock or block the wheels of equipment parked on inclines. Set the parking brake.
- Never use equipment on unstable or unsafe inclines.
- Use hand signals, radios (as appropriate), and line-of-sight confirmation to communicate effectively with operators.

Inclement Weather, Shut-down Conditions

Preventive Measures

- Poor visibility.
- Precipitation severe enough to impair safe movement or travel.
- Lightning in the immediate area.
- Steady winds in excess of 40 mph.
- Other conditions as determined by the SHSC, FM, or Corporate Health and Safety Director (CHSD).
- Imminent threat of severe tropical storm or hurricane.
- Work will resume when the conditions are deemed safe by the SHSC.
- Complete an Incident Report within 24 hrs for all work shutdowns.

Noise

Preventive Measures

- Wear hearing protection when speech becomes difficult to understand at a distance of 10 ft and while standing within 20 to 25 ft from heavy equipment, pneumatic power tools, steam cleaners, and other equipment in operation that can generate more than 85 decibels (A-weighted scale) (dBA).
- Label equipment as a noise hazard if it generates, or is capable of generating, more than 85 dBA.

Slips, Trips, and Falls

Preventive Measures

- Clear work area of obstructions and debris before setting up. Alter work areas as necessary to provide a safe, reasonably level area.
- All walking and working surfaces shall continually be inspected and maintained to be free of slip, trip, and fall hazards.
- Keep drill platforms, stairs, and immediate work areas clear. Do not allow oil, grease, or excessive mud to accumulate in these areas.
- Channel the discharge of drilling fluids and foam away from the work area to prevent ponding or slippery conditions.
- Backfill open boreholes immediately, or cap and flag them. Barricade open excavations or cover them with steel traffic plates.
- Eliminate slip, trip, and fall hazards or identify them clearly with caution tape, barricades, or equivalent means.
- Store loose or light material and debris in designated areas or containers.
- Secure tools, materials, and equipment subject to displacement or falling.

Ultraviolet Exposure

Preventive Measures

- Wear appropriate clothing (long pants, shirt or tee shirt) and a hat to protect skin from prolonged sun exposure.
- Apply sunscreen (Sun Protection Factor [SPF]>15) prior to working outdoors in the sun and periodically thereafter.
- Wear polycarbonate safety glasses to protect eyes from ultraviolet exposure.
- Use lip balm with SPF 15 or greater.
- Reduce sun exposure from 10 AM to 4 PM. Utilize shade protection especially during these hours.

APPENDIX 4

Job Safety Analysis

Job Safety Analysis

TASK : Removing Select Fill

Required # of Personnel for this task: Number of Field Personnel TBD

Task Description: NEI personnel will oversee the excavation, stockpiling, and disposal of soil and construction debris to an approved construction debris landfill. NEI will also oversee clearning or excavation, stockpiling, and restoration of unanchored large woody debris and habitat layer material required to prepare the site for rock rip-rap replacement.

Potential Physical Hazards:		
☐ Ground intrusion	☐ Electrical/electrocution	☐ Fire/ Explosive
☒ Heavy equipment operation	☒ Traffic	☐ Boat operation
☒ Physical exertion/strain	☒ Noise	☒ Work near water
☒ Slick/wet surface	☒ Lifting/Back injuries	☒ Heat stress
☒ Uneven terrain	☒ Repetitive motion	☒ Cold stress
☐ Falls from elevation > 6 ft.	☐ High pressure	☒ Inclement weather/shutdown
☐ Entanglement in rotating or moving equipment	☒ Ergonomic stress	☐ Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Arsenic	Lead	Various PAHs
Additional Potential Hazards:		
• Working on uneven surfaces. • Vegetation and other trip hazards. • Using power tool and/or cutting tool.		
Levels of Training and Certification:		
☐ HAZWOPER 40-hour training	☐ HAZWOPER Supervisor's training	☐ HAZWOPER 24-hour training
☐ Medical surveillance	☐ Annual respirator fit-test	☐ First Aid
☐ CPR	☐ Confined space entry	☐ Lock-out/Tag-out
Equipment:		
☒ Air monitoring To be conducted only if visible dust cannot be controlled through other means.	**Type:** TSI DustTrak	**Action Level:** < 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak **Maintain Level D or Mod. D** >1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak **Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.**
Other field equipment:		
Cutting tool and/or power equipment for brush cutting.		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	☐ A ☐ B	☐ C ☒ D	☐ Modified D
Respirator (Level C and up)	☐ SCBA, airline ☐ P-100 Filter	☐ Purified respirator ☐ Dust pre-filters	☐ OV/AG cart ☐ Other _____
Protective clothing	☐ Encapsulated Suit ☐ Saranex ® or equiv.	☐ Tyvek ® or equiv. ☐ Splash suit	☐ PE Tyvek ® or equiv. ☒ Other: Safety vest ☒ Other Personal floatation device (if work near water)
Head, face, eyes, ears	☒ Hard hat ☐ Splash shield	☒ Safety glasses ☒ Ear plugs/muffs	☐ Goggles ☐ Other_____
Gloves (outer) (inner)	☐ Nitrile_____ ☐ Nitrile _____	☐ Neoprene ☐ Vinyl	☒ Other Leather work gloves ☐ Other_____
Footwear	☒ Safety-toe leather ☐ Hip waders	☐ Over boots/covers ☒ Shin/knee guards	☐ Safety-toe rubber ☐ Other _____

Additional Mitigation(s):

- Do not use hand power tools during extremely wet or slippery conditions.
- Wear hardhat if working under overhead hazards and/or near heavy equipment.
- Wear earplugs and safety glasses when operating power tools or if working near heavy equipment.
- Wear Safety-toe shoes if working with or near potential drop hazards.
- Wear Personal Floatation Device if working over or adjacent to water.

Special Instruction:

- It is anticipated that workers will not disturb the existing orange demarcation layer that indicates potential contamination. If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will stop work in the area of unanticipated contact, isolate the area, notify Port of Portland Environmental, complete an “Unanticipated Contaminated Material Report” form, and submit it to Port of Portland Environmental within 24 hours of discovery.
- Follow NEI’s Company Safety Policy Manual and Programs for operation of heavy equipment and power tools (available from the SHSC).

Job Safety Analysis

TASK : **Installation of New Rock Rip-Rap**

Task Description: **NEI personnel will oversee installation of new rock rip-rap.**

Potential Physical Hazards:		
☐ Ground intrusion	☐ Electrical/electrocution	☐ Fire/ Explosive
☒ Heavy equipment operation	☒ Traffic	☐ Boat operation
☒ Physical exertion/strain	☒ Noise	☒ Work near water
☐ Slick/wet surface	☒ Lifting/Back injuries	☒ Heat stress
☒ Uneven terrain	☐ Repetitive motion	☒ Cold stress
☐ Falls from elevation > 6 ft.	☐ High pressure	☒ Inclement weather/shutdown
☐ Entanglement in rotating or moving equipment	☒ Ergonomic stress	☐ Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Arsenic	Lead	Various PAHs
Additional Potential Hazards:		
• Working on uneven surfaces. • Trip hazards.		
Levels of Training and Certification:		
☐ HAZWOPER 40-hour training	☐ HAZWOPER Supervisor's training	☐ HAZWOPER 24-hour training
☐ Medical surveillance	☐ Annual respirator fit-test	☐ First Aid
☐ CPR	☐ Confined space entry	☐ Lock-out/Tag-out
Equipment:		
☒ Air monitoring To be conducted only if visible dust cannot be controlled through other means.	**Type:** TSI DustTrak	**Action Level:** < 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak Maintain Level D or Mod. D >1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak **Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.**
Other field equipment:		
N/A		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	☐ A ☐ B	☐ C ☒ D	☐ Modified D
Respirator (Level C and up)	☐ SCBA, airline ☐ P-100 Filter	☐ Purified respirator ☐ Dust pre-filters	☐ OV/AG cart ☐ Other _____
Protective clothing	☐ Encapsulated Suit ☐ Saranex ® or equiv.	☐ Tyvek ® or equiv. ☐ Splash suit	☐ PE Tyvek ® or equiv. ☒ Other: Safety vest ☒ Other Personal floatation device (if work near water)
Head, face, eyes, ears	☒ Hard hat ☐ Splash shield	☒ Safety glasses ☒ Ear plugs/muffs	☐ Goggles ☐ Other_____
Gloves (outer) (inner)	☐ Nitrile_____ ☐ Nitrile _____	☐ Neoprene ☐ Vinyl	☒ Other Leather work gloves ☐ Other_____
Footwear	☒ Safety-toe leather ☐ Hip waders	☐ Over boots/covers ☐ Shin/knee guards	☐ Safety-toe rubber ☐ Other _____

Additional Mitigation(s):

- Wear hardhat if working under overhead hazards and/or near heavy equipment.
- Wear earplugs and safety glasses when operating power tools or if working near heavy equipment.
- Wear Safety-toe shoes if working with or near potential drop hazards.
- Wear Personal Floatation Device if working over or adjacent to water.

Special Instruction:

- It is anticipated that workers will not disturb the existing orange demarcation layer that indicates potential contamination. If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will stop work in the area of unanticipated contact, isolate the area, notify Port of Portland Environmental, complete an “Unanticipated Contaminated Material Report” form, and submit it to Port of Portland Environmental within 24 hours of discovery.
- Follow NEI’s Company Safety Policy Manual and Programs for operation of heavy equipment and power tools (available from the SHSC).

Job Safety Analysis

TASK : Reinstate Select Fill

Required # of Personnel for this task: Number of Field Personnel - TBD

Task Description: NEI personnel will oversee the installation of select fill.

Potential Physical Hazards:		
☒ Ground intrusion	☐ Electrical/electrocution	☐ Fire/ Explosive
☒ Heavy equipment operation	☒ Traffic	☐ Boat operation
☒ Physical exertion/strain	☒ Noise	☒ Work near water
☒ Slick/wet/hot surface	☒ Lifting/Back injuries	☒ Heat stress
☒ Uneven terrain	☐ Repetitive motion	☒ Cold stress
☐ Falls from elevation > 6 ft.	☐ High pressure	☒ Inclement weather/shutdown condition
☒ Entanglement in rotating or moving equipment	☒ Ergonomic stress	☐ Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Arsenic	Lead	Various PAHs
Additional Potential Hazards:		
• Working on uneven surfaces. • Trip hazards.		
Levels of Training and Certification:		
☐ HAZWOPER 40-hour training	☐ HAZWOPER Supervisor's training	☐ HAZWOPER 24-hour training
☐ Medical surveillance	☐ Annual respirator fit-test	☐ First Aid
☐ CPR	☐ Confined space entry	☐ Lock-out/Tag-out
Equipment:		
☒ Air monitoring To be conducted only if visible dust cannot be controlled through other means.	**Type:** TSI DustTrak	**Action Level:** < 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak **Maintain Level D or Mod. D** >1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak **Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.**
Other field equipment:		
• Various equipment of subcontractor		

Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	☐ A ☐ B	☐ C ☒ D	☐ Modified D
Respirator (Level C and up)	☐ SCBA, airline ☐ P-100 Filter	☐ Purified respirator ☐ Dust pre-filters	☐ OV/AG cart ☐ Other _____
Protective clothing	☐ Encapsulated Suit ☐ Saranex ® or equiv.	☐ Tyvek ® or equiv. ☐ Splash suit	☐ PE Tyvek ® or equiv. ☒ Other: Safety vest ☒ Other Personal floatation device (if work near water)
Head, face, eyes, ears	☒ Hard hat ☐ Splash shield	☒ Safety glasses ☒ Ear plugs/muffs	☐ Goggles ☐ Other_____
Gloves (outer) (inner)	☐ Nitrile_____ ☐ Nitrile _____	☐ Neoprene ☐ Vinyl	☒ Other Leather work gloves ☐ Other_____
Footwear	☒ Leather work boots ☐ Hip waders	☐ Over boots/covers ☐ Shin/knee guards	☐ Safety-toe rubber ☐ Other _____

Additional Mitigation(s):

- Wear hardhat if working under overhead hazards and/or near heavy equipment.
- Wear earplugs and safety glasses when operating power tools or if working near heavy equipment.
- Wear Safety-toe shoes if working with or near potential drop hazards.
- Wear Personal Floatation Device if working adjacent to water.

Special Instruction:

- It is anticipated that workers will not disturb the existing orange demarcation layer that indicates potential contamination. If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will stop work in the area of unanticipated contact, isolate the area, notify Port of Portland Environmental, complete an "Unanticipated Contaminated Material Report" form, and submit it to Port of Portland Environmental within 24 hours of discovery.
- Follow NEI's Company Safety Policy Manual and Programs for operation of heavy equipment and power tools (available from the SHSC).

Job Safety Analysis

TASK : Installation of Temporary Access Road

Required # of Personnel for this task: Number of Field Personnel - TBD

Task Description: NEI personnel will oversee furnishing and placing temporary access road fill, mowing of vegetation, placement of geotextile required to prepare the site for quarry spall placement, removal and off-site disposal of quarry spalls, restoration of impacted areas, and installing of hydroseed and jute fabric.

Potential Physical Hazards:		
☒ Ground intrusion	☒ Electrical/electrocution	☐ Fire/ Explosive
☒ Heavy equipment operation	☒ Traffic	☐ Boat operation
☒ Physical exertion/strain	☒ Noise	☐ Work near water
☐ Slick/wet/hot surface	☒ Lifting/Back injuries	☒ Heat stress
☒ Uneven terrain	☒ Repetitive motion	☒ Cold stress
☐ Falls from elevation > 6 ft.	☐ High pressure	☒ Inclement weather/shutdown
☒ Entanglement in rotating or moving equipment	☒ Ergonomic stress	☐ Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Arsenic	Lead	Various PAHs
Additional Potential Hazards:		
• Working on uneven surfaces. • Trip hazards.		
Levels of Training and Certification:		
☐ HAZWOPER 40-hour training	☐ HAZWOPER Supervisor's training	☐ HAZWOPER 24-hour training
☐ Medical surveillance	☐ Annual respirator fit-test	☒ First Aid
☒ CPR	☐ Confined space entry	☐ Lock-out/Tag-out
Equipment:		
☒ Air monitoring To be conducted only if visible dust cannot be controlled through other means.	**Type:** TSI DustTrak	**Action Level:** < 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak **Maintain Level D or Mod. D** >1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak **Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.**
Other field equipment:		
• Various equipment of subcontractor		

Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	☐ A ☐ B	☐ C ☐ D	☒ Modified D
Respirator (Level C and up)	☐ SCBA, airline ☐ P-100 Filter	☐ Purified respirator ☐ Dust pre-filters	☐ OV/AG cart ☐ Other _____
Protective clothing	☐ Encapsulated Suit ☐ Saranex ® or equiv.	☐ Tyvek ® or equiv. ☐ Splash suit	☐ PE Tyvek ® or equiv. ☒ Other: Safety vest
Head, face, eyes, ears	☒ Hard hat ☐ Splash shield	☒ Safety glasses ☒ Ear plugs/muffs	☐ Goggles ☐ Other_____
Gloves (outer) (inner)	☐ Nitrile_____ ☐ Nitrile _____	☐ Neoprene ☐ Vinyl	☒ Other Work gloves ☐ Other_____
Footwear	☒ Safety-toe leather ☐ Hip waders	☐ Over boots/covers ☐ Shin/knee guards	☐ Safety-toe rubber ☐ Other _____

Additional Mitigation(s):

- Wear hardhat if working under overhead hazards and/or near heavy equipment.
- Wear earplugs and safety glasses when operating power tools or if working near heavy equipment.
- Wear Safety-toe shoes if working with or near potential drop hazards.

Special Instruction:

- It is anticipated that workers will not disturb the existing orange demarcation layer that indicates potential contamination. If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will stop work in the area of unanticipated contact, isolate the area, notify Port of Portland Environmental, complete an "Unanticipated Contaminated Material Report" form, and submit it to Port of Portland Environmental within 24 hours of discovery.
- Follow NEI's Company Safety Policy Manual and Programs for operation of heavy equipment and power tools (available from the SHSC).

Job Safety Analysis

TASK : Top Soil Placement

Including trenching, placing culverts, and survey, and all other associated components

Required # of Personnel for this task: Number of Field Personnel - TBD

Task Description: NEI personnel will oversee placement of topsoil and installation of coir fabric.

Potential Physical Hazards:		
☒ Ground intrusion	☐ Electrical/electrocution	☐ Fire/ Explosive
☒ Heavy equipment operation	☐ Traffic (traffic control may be required)	☐ Boat operation
☒ Physical exertion/strain	☒ Noise	☒ Work near water
☒ Slick/wet surface	☒ Lifting/Back injuries	☒ Heat stress
☒ Uneven terrain	☒ Repetitive motion	☒ Cold stress
☐ Falls from elevation > 6 ft.	☐ High pressure	☒ Inclement weather/shutdown condition
☐ Entanglement in rotating or moving equipment	☒ Ergonomic stress	☐ Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Arsenic	Lead	Various PAHs
Additional Potential Hazards:		
• Wear hardhat if working under overhead hazards and/or near heavy equipment. • Wear earplugs if working near heavy equipment. • Wear Safety-toe shoes if working with or near potential drop hazards.		
Levels of Training and Certification:		
☐ HAZWOPER 40-hour training	☒ HAZWOPER Supervisor's training	☐ HAZWOPER 24-hour training
☐ Medical surveillance	☐ Annual respirator fit-test	☒ First Aid
☒ CPR	☐ Confined space entry	☐ Lock-out/Tag-out
Equipment:		
☒ Air monitoring To be conducted only if visible dust cannot be controlled through other means.	**Type:** TSI DustTrak	**Action Level:** < 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak **Maintain Level D or Mod. D** >1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak **Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.**

Other field equipment:

- Various trenching and placement equipment

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	☐ A ☐ B	☐ C ☒ D	☐ Modified D
Respirator (Level C and up)	☐ SCBA, airline ☐ P-100 Filter	☐ Purified respirator ☐ Dust pre-filters	☐ OV/AG cart ☐ Other _____
Protective clothing	☐ Encapsulated Suit ☐ Saranex ® or equiv.	☐Tyvek ® or equiv. ☐ Splash suit	☐ PE Tyvek ® or equiv. ☒ Other: safety vest ☒ Other Personal floatation device (if work near water)
Head, face, eyes, ears	☒ Hard hat ☐ Splash shield	☒ Safety glasses ☒ Ear plugs/muffs	☐ Goggles ☐ Other_____
Gloves (outer) (inner)	☐ Nitrile_____ ☐ Nitrile _____	☐ Neoprene ☐ Vinyl	☒ Other Leather work gloves _____ ☐ Other_____
Footwear	☒ Safety-toe leather ☐ Hip waders	☐ Over boots/covers ☐ Shin/knee guards	☐ Safety-toe rubber ☐ Other _____

Additional Mitigation(s):

- Wear hardhat if working under overhead hazards and/or near heavy equipment.
- Wear earplugs if working near heavy equipment.
- Wear Safety-toe shoes if working with or near potential drop hazards.
- Wear Personal Floatation Device if working adjacent to water.

Special Instruction:

- It is anticipated that a clean source of top soil will be imported for landscaping and all activities associated with this task and that workers will not disturb the existing orange demarcation layer that indicates potential contamination. If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will stop work in the area of unanticipated contact, isolate the area, notify Port of Portland Environmental, complete an “Unanticipated Contaminated Material Report” form, and submit it to Port of Portland Environmental within 24 hours of discovery.
- Follow NEI’s Company Safety Policy Manual and Program for the safe operation of heavy equipment and power tools (available from the SHSC).

Job Safety Analysis

TASK : Landscape Installation

Required # of Personnel for this task: Number of Field Personnel - TBD

Task Description: NEI personnel will oversee placement of topsoil and installation of coir fabric. Casserly Landscape personel will oversee landscape installation activities, which will include planting of 1-gallon riparian plants and maintenance of vegetation until acceptance. NEI personnel will then furnish and install anchored large woody debris from offsite sources to install at Terminal 4.

Potential Physical Hazards:		
☒ Ground intrusion	☐ Electrical/electrocution	☐ Fire/ Explosive
☒ Heavy equipment operation	☒ Traffic	☐ Boat operation
☒ Physical exertion/strain	☒ Noise	☒ Work near water
☒ Slick/wet/ surface	☒ Lifting/Back injuries	☒ Heat stress
☒ Uneven terrain	☒ Repetitive motion	☒ Cold stress
☐ Falls from elevation > 6 ft.	☐ High pressure	☒ Inclement weather/shutdown condition
☐ Entanglement in rotating or moving equipment	☒ Ergonomic stress	☒ Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Arsenic	Lead	Various PAHs
Additional Potential Hazards:		
• Working on uneven surfaces. • Trip hazards.		
Levels of Training and Certification:		
☐ HAZWOPER 40-hour training	☒ HAZWOPER Supervisor's training	☐ HAZWOPER 24-hour training
☐ Medical surveillance	☐ Annual respirator fit-test	☐ First Aid
☒ CPR	☐ Confined space entry	☐ Lock-out/Tag-out
Equipment:		
☒ Air monitoring To be conducted only if visible dust cannot be controlled through other means.	**Type:** TSI DustTrak	**Action Level:** < 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak **Maintain Level D or Mod. D** >1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak **Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.**
Other field equipment:		
• Various equipment of subcontractor		

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).

Initial Level of Protection	☐ A ☐ B	☐ C ☒ D	☐ Modified D
Respirator (Level C and up)	☐ SCBA, airline ☐ P-100 Filter	☐ Purified respirator ☐ Dust pre-filters	☐ OV/AG cart ☐ Other _____
Protective clothing	☐ Encapsulated Suit ☐ Saranex ® or equiv.	☐ Tyvek ® or equiv. ☐ Splash suit	☐ PE Tyvek ® or equiv. ☒ Other: safety vest ☒ Other Personal floatation device (if work near water)
Head, face, eyes, ears	☐ Hard hat ☐ Splash shield	☒ Safety glasses ☒ Ear plugs/muffs	☐ Goggles ☐ Other_____
Gloves (outer) (inner)	☐ Nitrile_____ ☐ Nitrile _____	☐ Neoprene ☐ Vinyl	☒ Other Leather work gloves ☐ Other_____
Footwear	☒ Safety-toe leather ☐ Hip waders	☐ Over boots/covers ☐ Shin/knee guards	☐ Safety-toe rubber ☐ Other _____

Additional Mitigation(s):

- Wear hardhat if working under overhead hazards and/or near heavy equipment.
- Wear earplugs and safety glasses when operating power tools or if working near heavy equipment.
- Wear Safety-toe shoes if working with or near potential drop hazards.
- Wear Personal Floatation Device if working adjacent to water.

Special Instruction:

- It is anticipated that workers will not disturb the existing orange demarcation layer that indicates potential contamination. If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will stop work in the area of unanticipated contact, isolate the area, notify Port of Portland Environmental, complete an “Unanticipated Contaminated Material Report” form, and submit it to Port of Portland Environmental within 24 hours of discovery.
- Follow NEI’s Company Safety Policy Manual and Programs for operation of heavy equipment and power tools (available from the SHSC).

Job Safety Analysis

TASK

Erosion Control

Required # of Personnel for this task: Number of Field Personnel TBD

Task Description: NEI personnel will oversee all maintenance, repair and restoration of temporary erosion, sediment, and pollution control (EPSC) measures to keep them continually functional until project acceptance. Fox Erosion, Inc. will be be responsible for hydroseeding activities to control erosion.

Potential Physical Hazards:		
☐ Ground intrusion	☐ Electrical/electrocution	☐ Fire/ Explosive
☐ Heavy equipment operation	☒ Traffic	☐ Boat operation
☒ Physical exertion/strain	☐ Noise	☒ Work near water
☒ Slick/wet surface	☒ Lifting/Back injuries	☒ Heat stress
☒ Uneven terrain	☒ Repetitive motion	☒ Cold stress
☐ Falls from elevation > 6 ft.	☐ High pressure	☒ Inclement weather/shutdown condition
☐ Entanglement in rotating or moving equipment	☒ Ergonomic stress	☐ Underground/overhead utility lines
Potential Chemical/Biological Exposure Hazards:		
Arsenic	Lead	Various PAHs
Additional Potential Hazards:		
N/A		
Levels of Training and Certification:		
☐ HAZWOPER 40-hour training	☒ HAZWOPER Supervisor's training	☐ HAZWOPER 24-hour training
☐ Medical surveillance	☐ Annual respirator fit-test	☒ First Aid (optional)
☒ CPR	☐ Other:	
Equipment:		
☒ Air monitoring To be conducted only if visible dust cannot be controlled through other means.	**Type:** TSI DustTrak	**Action Level:** < 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak **Maintain Level D or Mod. D** >1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak **Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.**
Other field equipment:		
N/A		

Personal Protective Equipment (PPE)			
Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if warranted by site conditions (as determined by the SHSC).			
Initial Level of Protection	☐ A ☐ B	☐ C ☒ D	☐ Modified D
Respirator (Level C and up)	☐ SCBA, airline ☐ P-100 Filter	☐ Purified respirator ☐ Dust pre-filters	☐ OV/AG cart ☐ Other _____
Protective clothing	☐ Encapsulated Suit ☐ Saranex ® or equiv.	☒ Tyvek ® or equiv. ☐ Splash suit	☐ PE Tyvek ® or equiv. ☒ Other Personal floatation device (if work near water)
Head, face, eyes, ears	☒ Hard hat ☐ Splash shield	☒ Safety glasses ☒ Ear plugs/muffs	☐ Goggles
Gloves (outer) **(inner)**	☐ Nitrile_____ ☐ Nitrile _____	☐ Neoprene ☐ Vinyl	☒ Other Leather work gloves ☐ Other_____
Footwear	☒ Safety-toe leather ☐ Hip waders	☐ Over boots/covers ☐ Shin/knee guards	☐ Safety-toe rubber ☐ Other _____

Additional Mitigation(s):

- Wear hardhat if working under overhead hazards and/or near heavy equipment.
- Wear earplugs if working near heavy equipment.
- Wear Safety-toe shoes if working with or near potential drop hazards.
- Wear Personal Floatation Device if working adjacent to water.

Special Instruction:

- It is anticipated that workers will not disturb the existing orange demarcation layer that indicates potential contamination. If workers are required to disturb the existing soils below the orange demarcation layer at the site (See Figure 3), workers will stop work in the area of unanticipated contact, isolate the area, notify Port of Portland Environmental, complete an "Unanticipated Contaminated Material Report" form, and submit it to Port of Portland Environmental within 24 hours of discovery.
- Follow NEI's Company Safety Policy Manual and Programs for operation of heavy equipment and power tools (available from the SHSC).

APPENDIX 5

Action Levels and Action

Action Levels

Equipment	Action Level	Action To Be Taken
Dust Monitor (Dust Trak)	< 1.5 mg/m^3 8-hr. TWA < 4.5 mg/m^3 Peak	Maintain Level D or Mod. D
Dust Monitor (Dust Trak)	>1.5 mg/m^3 8-hr. TWA > 4.5 mg/m^3 Peak	Cease operations until levels fall to below the action level, and/or apply engineering controls or change in work procedures.

TWA – Time weighted average over an 8-hour work shift

APPENDIX 6

MSDSs and Selected Chemical Data Sheets

MATERIAL SAFETY DATA SHEET

========== CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ==========

TRADE NAME: #2 DIESEL FUEL
CAS NUMBER: 68476-34-6
SYNONYM(S): PROCESS STREAM; NO. 2 DIESEL FUEL; FUEL OIL; MIDDLE DISTILLATE; AB0/AA9-1; AG7; AG8
MSDS NUMBER: 1354
PRODUCT CODE: NA
HIERARCHY: NA
MANUFACTURER/SUPPLIER: BP Oil Company
ADDRESS: 200 Public Square, Cleveland, OH 44114-2375
TELEPHONE NUMBERS - 24 HOUR EMERGENCY ASSISTANCE:
BP America: 800-321-8642
CHEMTREC Assistance (In U.S.): 800-424-9300
CHEMTREC Assistance (Elsewhere): 703-527-3887
TELEPHONE NUMBERS - GENERAL ASSISTANCE: (Normal Office Hours): (8:00-4:30 M-F, EST):
Technical: 216-586-6184
MSDS Contact: 216-586-8023

========== COMPOSITION/INFORMATION ON INGREDIENTS ==========

COMPONENT:Diesel Fuel No. 2, A distillate having a minimum viscosity of 32.6 SUS at 100 degrees F to a maximum of 40.1 SUS at 100 degrees F
CAS NO.: 68476-34-6
% BY WT.: 99.9 - 100
EXPOSURE LIMITS: None Established

========== HAZARDS IDENTIFICATION ==========

EMERGENCY OVERVIEW:

Clear Liquid With Hydrocarbon Odor. May Be Dyed For Identification. Danger! Harmful or Fatal If Swallowed. Aspiration Hazard If Swallowed--Can Enter Lungs and Cause Damage. May Be Irritating To the Eyes and Respiratory Tract. Causes Skin Irritation. Vapors May Be Harmful. Possible Cancer Hazard - Contains Material Which May Cause Cancer Based On Animal Data. Combustible Liquid & Vapor.

POTENTIAL HEALTH EFFECTS:

SKIN:

Repeated or prolonged contact may result in defatting, redness, itching, inflammation, cracking and possible secondary infection. May cause allergic reactions in some individuals. Absorption from prolonged or massive skin contact may cause poisoning. High pressure skin injections are Serious Medical Emergencies. Injury may not appear serious at first; within a few hours, tissue will become swollen, discolored and extremely painful (see Notes to Physician section).

EYE:

Exposure to vapors, fumes or mists may cause irritation.

INHALATION:

May cause respiratory tract irritation. Exposure may cause central nervous system symptoms similar to those listed under "Ingestion" (see Ingestion section). Degenerative changes in the liver, kidneys and bone marrow may occur with prolonged, high concentrations. Repeated or prolonged exposures may cause behavioral changes.

INGESTION:

Aspiration into lungs may cause pneumonitis. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. May cause harmful central nervous system effects. Effects may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death.

SPECIAL TOXIC EFFECTS:

Based on animal studies, repeated overexposure may produce skin tumors upon repeated and prolonged skin contact in the absence of good personal hygiene. However, long-term dermal application studies of similar materials, i.e. middle distillates, in animals have shown that skin tumors are produced only when marked and prolonged skin irritation takes place during the study. Therefore, this product should not present a significant hazard of skin tumor formation when the "Skin Protection" recommendations are followed. IARC has determined that diesel engine exhaust is probably carcinogenic to humans. (IARC Class- 2A). Lifetime exposure to whole diesel exhaust has been shown to cause cancer in laboratory animals. NIOSH recommends that whole diesel exhaust be regarded as a potential occupational carcinogen. Warning: The use of any hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products and inadequate oxygen levels. IARC has determined that occupational exposures in petroleum refining are probably carcinogenic to humans.

FIRST AID MEASURES

SKIN:

Remove contaminated clothing immediately. Wash area of contact

thoroughly with soap and water. Get medical attention if irritation persists. High pressure skin injections are serious medical emergencies. Thermal burns require immediate medical attention. Get immediate medical attention.

EYE:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists. Thermal burns require immediate medical attention.

INHALATION:

Remove affected person from source of exposure. If not breathing, ensure clear airway and institute cardiopulmonary resuscitation (CPR). If breathing is difficult, administer oxygen if available. After administration of oxygen, continue to monitor closely. Get medical attention.

INGESTION:

Do not induce vomiting because of danger of aspirating liquid into lungs. Get immediate medical attention. If spontaneous vomiting occurs, monitor for breathing difficulty.

NOTES TO PHYSICIAN:

In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Consideration should be given to the use of an endotracheal tube, to prevent aspiration. Individuals intoxicated by Diesel Fuel No. 2 should be hospitalized immediately, with acute and continuing attention to neurologic and cardiopulmonary function. Positive pressure ventilation may be necessary. After the initial episode, individuals should be followed for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated. In case of skin injection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.

FIREFIGHTING MEASURES

FLASH POINT:	51.7 C (125.06 F)
AUTOIGNITION TEMPERATURE:	ND
FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER:	> 0.7
FLAMMABILITY LIMITS IN AIR (% BY VOL.) UPPER:	< 5

HAZARDOUS COMBUSTION PRODUCTS:

Combustion may produce CO, CO2 and reactive hydrocarbons.

BASIC FIRE FIGHTING PROCEDURES:

Use water spray, dry chemical, foam or carbon dioxide to extinguish

fire. Use water spray to cool fire-exposed containers, structures and to protect personnel. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers or other drainage systems. Exposed firefighters must wear MSHA/NIOSH approved positive pressure self-contained breathing apparatus with full face mask and full protective clothing.

UNUSUAL FIRE & EXPLOSION HAZARDS:

Irritating and/or toxic substances may be emitted upon thermal decomposition. Dangerous when exposed to heat or flame. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire.

ACCIDENTAL RELEASE MEASURES

If your facility or operation has an "Oil or Hazardous Substance Contingency Plan", activate its procedures. Take immediate steps to stop and contain the spill. Caution should be exercised regarding personnel safety and exposure to the spilled material. For technical advice and assistance related to chemicals, contact CHEMTREC (800/424-9300) and your local fire department. Notify the National Response Center, if required. Also notify appropriate state and local regulatory agencies, the LEPC and the SERC. Contact the local Coast Guard if the release is into a waterway. Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. (Also see Personal Protection Information section.) Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces. Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Large Spills: Dike far ahead of liquid spill for later disposal.

When reporting a spill to the National Response Center or the Coast Guard, you may need to supply the Coast Guard Chemical Hazard Response Information System (CHRIS) code:

Group Number: 33
CHRIS Code: OTD

Additional spill related information may be found in the U.S. Coast Guard Chemical Hazard Response Information System (CHRIS) Manual.

During an accidental release, personal protection equipment may be required (see Section EXPOSURE CONTROLS/PERSONAL PROTECTION). Additional regulatory requirements may apply (see Section REGULATORY INFORMATION).

HANDLING AND STORAGE

HANDLING:

Use non-sparking tools. Ground lines and equipment used during transfer to reduce the possibility of static spark-initiated fire or

explosion.

Empty containers may contain toxic, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose containers unless adequate precautions are taken against these hazards.

STORAGE:

Store in tightly closed containers in cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles.

EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Ventilation may be used to control or reduce airborne concentrations.

PERSONAL PROTECTION EQUIPMENT (PPE):

EYE PROTECTION:

Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye washing facilities readily available where eye contact can occur.

SKIN PROTECTION:

Wear impervious gloves and protective clothing to prevent skin contact.

RESPIRATORY PROTECTION:

NIOSH/MSHA approved breathing equipment may be required for non-routine and emergency use.

See Section COMPOSITION/INFORMATION ON INGREDIENTS For Exposure Guidelines.

PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:	160 C (320 F)
SP. GRAVITY (Water=1):	0.84 - 0.88 @ 15.56 C (60.008 F)
MELTING POINT:	NA
% VOLATILE:	Negligible
VAPOR PRESSURE:	0.4 MM HG @ 20 C (68 F)
EVAPORATION RATE:	Slower
VAPOR DENSITY (Air=1):	4.7
VISCOSITY:	1.2 - 4.6 CST @ 37.8 C (100.04 F)
% SOLUBILITY IN WATER:	Negligible
POUR POINT:	-12.22 C (10.004 F)
pH:	NEUTRAL
MOLECULAR WEIGHT:	NA
MOLECULAR FORMULA:	Mixture

ODOR/APPEARANCE:
Clear Liquid With Hydrocarbon Odor. May Be Dyed For Identification.

STABILITY AND REACTIVITY

STABILITY/INCOMPATIBILITY:

Stable. Avoid contact with strong oxidizers.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

Thermal decomposition or combustion may produce CO, CO_2 and reactive hydrocarbons.

TOXICOLOGICAL INFORMATION

OTHER:

An extensive profile which characterizes adverse health effects information for this material has been prepared by the Agency for Toxic Substances Disease Registry (ATSDR). Individuals interested in a summary of the toxicology of this material should reference this document. This profile can be obtained from the National Technical Information Services (NTIS).

DISPOSAL CONSIDERATIONS

WASTE DISPOSAL (Resource Conservation & Recovery Act - RCRA):

This material, when discarded or disposed of, is a characteristic hazardous waste according to Federal regulations (40 CFR 261). This material exhibits the characteristic of ignitability and is assigned the EPA Hazardous Waste Number of D001. The discarding or disposal of this material must be done at a properly permitted facility in accordance with the regulations of 40 CFR 262, 263, 264, and 268. Additionally, the discarding or disposal of this material may be further regulated by state, regional, or local regulations. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate. The transportation, storage, treatment and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

There may be specific current regulations at the local, regional, or state level that pertain to this information. Chemical additions, processing, or otherwise altering this material may make the waste management information presented in this MSDS, incomplete, inaccurate, or otherwise inappropriate.

TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (D.O.T.):

Proper Shipping Name (49 CFR 172.101):	Fuel Oil (No. 2)
Hazard Class (49 CFR 172.101):	3
UN/NA Code (49 CFR 172.101):	NA 1993
Packing Group (49 CFR 179.101):	PG III
Bill Of Lading Desc. (49 CFR 172.101):	Fuel Oil (No. 2), 3, NA 1993, PG III

Labels Required (49 CFR 172.101):	Not Regulated
Placards Required (49 CFR 172.101):	Combustible

INTERNATIONAL AND DOMESTIC AIR TRANSPORTATION:

IATA Proper Shipping Name:	Diesel Fuel
Hazard Class:	3
Subsidiary Risk:	NA
UN Code:	UN 1202
Package Specification:	309, 310
Labels Required:	Flammable Liquid, Orientation Arrows

INTERNATIONAL WATER TRANSPORTATION:

IMDG Proper Shipping Name:	Diesel Fuel
Hazard Class:	3.3
UN Code:	UN 1202
IMDG Page Number:	3375
Labels Required:	Flammable Liquid
Placards Required:	Flammable

CANADIAN TRANSPORTATION OF DANGEROUS GOODS (T.D.G.):

Shipping Name:	Fuel Oil, No. 2
PIN (UN/NA):	UN 1202
Regulated Class:	3
Division:	NA
Packaging Group:	PG III
Labels Required:	Flammable Liquid
Placards Required:	Flammable

========== REGULATORY INFORMATION ==========

NOTIFICATION:

Any spill or release, or substantial threat of release, of this material to navigable water (virtually any surface water) sufficient to cause a visible sheen upon the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Failure to report may result in substantial civil and criminal penalties. Also contact the Coast Guard and appropriate state and local regulatory agencies.

US EPA TOXIC SUBSTANCE CONTROL ACT (TSCA):

All components of this product are listed on the TSCA inventory.

US EPA SUPERFUND AMENDMENTS & REAUTHORIZATION ACT (SARA) TITLE III INFORMATION:

Listed below are the hazard catagories for SARA Section 311/312 (40 CFR 370):

Immediate Hazard:	X

Delayed Hazard:	X
Fire Hazard:	X
Pressure Hazard:	-
Reactivity Hazard:	-

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

All components of this product are listed on the Canadian DSL or NDSL inventories.

CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) CATEGORIES:
The following WHMIS categories apply to this product:

Compressed Gas:	-	Other Toxic Effects:	X
Flammable/Combustible:	X	Bio Hazardous:	-
Oxidizer:	-	Corrosive:	-
Acutely Toxic:	X	Dangerously Reactive:	-

========== OTHER INFORMATION ==========

NFPA RATINGS:		HMIS RATINGS:	
Health:	0	Health:	0
Flammability:	2	Flammability:	2
Reactivity:	0	Reactivity:	0
Special Hazards:	-	Personal Protective Equipment:	H

REVISION DATE:	27-sep-1996
REPLACES SHEET DATED:	17-feb-1995
COMPLETED BY:	BP OIL HSEQ DEPARTMENT

REVISION SUMMARY: The following section(s) have been revised since the previous issue of this MSDS:

- HAZARDS IDENTIFICATION
- FIRST AID MEASURES
- EXPOSURE CONTROLS / PERSONAL PROTECTION
- STABILITY AND REACTIVITY
- TOXICOLOGICAL INFORMATION
- DISPOSAL CONSIDERATIONS
- TRANSPORT INFORMATION
- REGULATORY INFORMATION
- OTHER INFORMATION

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

ND: No Data NA: Not Applicable *See specific note or section

APPENDIX 7

Justification of Action Levels

Justification of Action Levels

Establishment of action level for applying dust suppression methods or changes in work procedures.

Airborne Dust

Instrument Data

Type	Model	Particle range	Calibration Gas	Concentration (ppm/v)
Dust Monitor	TSI DustTrak Model 8520	PM10	Factory Calibrated	NA

An action level based on the respirable dust ACGIH TLV of 3.0 mg/m^3 for respirable dust will provide adaquate protection against general dust created from non-contaminated soils. When a safety factor of two is applied to the TLV, this produces an action level of 1.5 mg/m^3.

ACGIH suggests that excursions above an established limit should not exceed 3 times the limit for a total of 30 minutes for a work day. Thus a peak excursion limit of 4.5 mg/m^3 is being established.

FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN
Addendum No. 1

Terminal 4
Wheeler Bay
Bank Repairs
Port of Portland

Prepared for:

Northwest Earthmovers, Inc.
13600 SW Galbreath Drive
Sherwood, Oregon 97140

Submitted by:

AMEC Earth & Environmental, Inc.
7376 SW Durham Road
Portland, Oregon 97224

0-61M-121622

September 2010

Copyright © 2010 by AMEC Earth & Environmental, Inc.
All rights reserved.

Site-Specific Health and Safety Plan
Addendum No. 1
Terminal 4 Wheeler Bay Bank Repairs
Port of Portland
Portland, Oregon

This addendum to the Site-Specific Health and Safety Plan (HASP) has been developed in accordance with State of Oregon OAR 437 Division 2 and Division 3 regulations (OR-OSHA) and has been streamlined to avoid duplication of existing Northwest Earthmovers Inc. (NEI) documents. It is a project manger's responsibility that the HASP is current and covers all work activities at the Site.

REVIEW AND APPROVALS

Prepared by:

September 27, 2010

Garry D. Rossing, CIH
Associate / Certified Industrial Hygienist
AMEC Earth & Environmental, Inc.

Date

Approved by:

Jeff Hargens
President/Project Manager
Northwest Earthmovers, Inc.

Date

Carl Johnson
Site Supervisor
Northwest Earthmovers, Inc.

Date

The Site-Specific Health and Safety Plan for this project is modified as follows, and except as set forth herein, otherwise remains unchanged and in effect:

CHANGES:

Add Terminal 4 Marine Security and phone number to the Port of Portland entry on the Project Emergency Call List on pages ii & 35:

PROJECT EMERGENCY CALL LIST

Title	Name	Telephone Number
Project Manager	Jeff Hargens	(503) 625-3100 (Office) (503) 849-8562 (Cell)
Site Supervisor	Carl Johnson	(503) 625-3100 (Office) (503) 849-8551 (Cell)
Site Health and Safety Coordinator (SHSC)	Carl Johnson	(503) 625-3100 (Office) (503) 849-8551 (Cell)
Corporate Health and Safety Director (CHSD)	Jeff Hargens	(503) 625-3100 (Office) (503) 849-8562 (Cell)
Health and Safety Representative	Garry Rossing, CIH	(503) 639-3400 (Office) (503) 816-9254 (Cell)
Port of Portland	Tim Stone- (Anchor QEA) Inspector Kelly Madalinski **Terminal 4 Marine Security**	(503) 475-9150 (Cell) (503) 415-6676 (Office) (503) 805-6952 (Cell) **(503) 240-2104**

* In the event of an occupational accident or incident, for NEI employees please indicate to the medical facility that this is a Workers' Compensation case; that your employer is Northwest Earthmovers, Inc; and insurance administrator information is available from Teresa (Northwest Earthmovers, Inc.) 503-625-3100.

Add the following entries to page iii after: Nearest Water: Carry water or an eyewash station is located at the construction trailer.

First Aid Kits: First aid kits will be carried in each of the NEI field vehicles.

AED Device: An AED will be available via Terminal 4's Marine Security. Each of the security guards is trained in the use of AED devices and the Terminal 4 security vehicle, which is on site at all times, is equipped with an AED device.

End of Addendum No. 1

APPENDIX B
NEI CONSTRUCTION QUALITY CONTROL PLAN (CQCP)

GENERAL SUBMITTAL TRANSMITTAL FORM

Form designed by TRC, 1-29-97, SBMTLTRX.XLS

Please fill in all information as completely as possible. One "submittal type" per form. Highlighted areas are information necessary for documents sent to the Technical Reference Center.

Submittal Type: ☑ One	Submittal No.	Port Project Name	Port Business Unit:	Port EAN
☐ Material Description ☐ Shop Drawing ☐ O&M Manual ☒ Specification ☐ Calculations ☐ Warranty ☐ Change Order ☐ Other _____	4.0	Terminal 4 Wheeler Bay Bank Repairs	820027	2010D015

Submitted By (name of person)	General Contractor	Contractor Job No.
Philip Hansen (Estimating Dept.)	Northwest Earthmovers, Inc.	#1019
	Sub-Contractor	
	Material Supplier:	
	Primary Consultant	
	Anchor QEA	

Port Drawing Reference		Router
Drawing No.	Sht. No.	

Port of Portland

Transmittal Routing ("From" > "To")	Copies	Attention (destination name)	Date Sent	Date Rec'd	Date Due
Contractor > Port Const.	10	John Durst	9/14/10		
Port Const. > Consultant		Roger Anderson			
Consultant > Sub-Consultant		Anchor QEA			
Sub-Consultant > Consultant					
Consultant > Port Engineering					
Port Const. > Port Engineering		Roger Anderson			
Consultant > Port Const.					
Port Engineering > Port Const.		John Durst			
Port Const. > Contractor		Northwest Earthmovers			
Port Const. > TRC		TRC Specialist			

Specification Reference			Action			
Section No.	Paragraph No.	Submittal Title or Description	A	B	C	Info.
014500		Contractor Quality Control				

CONTRACTOR/CONSULTANT NOTES:

Per Roger Anderson's instructions, an electronic copy was emailed to Mary Green 9-13-10

TRC USE ONLY

Date Rec'd At TRC:

Index No:

Document Quality: OK / Resubmit

PORT NOTES:

File

P. Bales

SUBJECT TO ALL CONTRACT REQUIREMENTS

A = PROCEED

B = CORRECT AS NOTED & PROCEED

C = REVISE AND RESUBMIT

INFO = FOR INFORMATION ONLY

NORTHWEST EARTHMOVERS INC.
TERMINAL 4 WHEELER BAY BANK REPAIRS
Contractor Quality Control
9-14-10

Introduction:

The T4 Wheeler Bay Bank Repairs project's Contractor Quality Control Plan (CQC) will be implemented by Northwest Earthmovers Inc (NEI) own management team. The quality control measures, inspection and verification activities shall be addressed within these contents.

NEI's Quality Control (QC) procedures are structured to fit the project. The bank repair project's QC plan consists of 4 components that reflect the work to assure the work meets the design standards and specifications.

The first component is assuring that the materials to be installed meet or exceed specifications. Material suppliers and subcontractors will submit to NEI product material data that reflect the requirements of the applicable specification sections for materials to be incorporated into the project. Project manual specifications 312000 through 353200 will be utilized to approve the materials. Upon review by NEI the data sheets will be provided to the PORT as submittals.

The second component is to prepare the existing bank for the rip rap and select fill operations. Starting with control points supplied by the PORT's surveyor, NEI's project foreman will lay out the limits of the work to ensure that the existing demarcation fabric limits are located and not excavated. The existing grade will be cleared of woody debris, existing anchors protected as possible, and the habitat layer salvaged from the failing rip rap to be restored upon completion. The work will be visually inspected and approved.

The third component is the placement of the new Rip Rap layer, select fill (as required) and replacing the salvaged habitat layer. The preparation inspection will have identified areas where the existing armoring has been eroded or otherwise damaged, and the select fill may be imported and placed as needed to repair the damaged sections. Upon approval of the select fill, the rock rip rap will be imported and placed, select fill placed per the detail to meet the lines and grade prior to topsoil and then the salvaged habitat layer will be replaced. NEI's project foreman will determine the repair depths & finish grade for the select fill and will visually inspect each stage of the work. Staking control for the limits and 2:1 slope will be provided for this work as needed. NEI's project foreman will visually inspect the grades & tolerances for approval.

The fourth component of the QC will be to provide the landscape work. The landscape & seeding work will be performed by experienced landscape subcontractors with NEI's

foreman inspecting their work for compliance with the specifications. Plant & seed certificates will be provided by the subcontractors. NEI's foreman will lay out the location of the anchored large woody debris.

Quality Control Organization:

NEI QC manager
Jeff Hargens

Philip Hansen (Contracts Manager)
→ Supplier & Subcontractor Quality Control

Carl Johnson (Project Foreman)
→ Field Personnel Performing Inspection
→ Consultant Inspection (as required)

NEI supervisory personnel will report QC activities to the QC manager, Jeff Hargens. The QC manager has the authority to Stop Work in cases where the quality of the work is unacceptable, particularly where the work in question is about to be built upon or concealed. Background for each of the above personnel is attached.

Philip Hansen will be responsible for preparing and tracking submittals as required by the specifications. Review technical reports, submittals, as-built drawings, and other documentation. Preparing change orders as necessary.

Carl Johnson will be responsible for supervising all construction field activities, including NEI employees, subcontractors and off-site material suppliers. Mr. Johnson will consult with Jeff Hargens and Philip Hansen to ensure specification compliance. Ensures materials meet specifications before being incorporated into the work. Identifies deficient work items and recommends corrective actions. He is responsible for ensuring that any deficiency that is identified is resolved. After completing the corrective action, the resolution shall be documented in the Foreman's Daily Report.

Inspection & Testing Requirements:

Prior to source sampling NEI will provide documentation of the origin of the borrow source material and determine that the material to be delivered to the site is likely to meet the appropriate specifications. Arrangements will be made for the PORT's consultant to obtain a 5-gallon sample of the material. The PORT will provide the results of the tests to the Contractor. The delivered materials will be visually inspected by the contractor upon delivery to see that spec compliance is maintained. (Per section 312000 2.2) These samples are to include the Select Fill, Topsoil and any other fill material if needed. (For purposes of the Port's chemical analysis testing.)

Select Fill

Select fill shall be placed in one lift following rock rip rap installation & prior to topsoil installation to meet the lines and grades shown on the drawings. Select fill will be visually inspected for compaction, due to small area of work. (If volumes or thickness' warrant the select fill may be tested for compaction. (Minimum of 85percent of AASHTO T-180)) Material shall comply with gradation limits per specification section #312000 – 2.3. Visual inspection on a daily basis.

Fill Material for Temporary Access Road will per provided per the select fill standards.

Geo-textile

Mirafi 160 N or equal will be provided. Visual inspection on a daily basis.

Rock Rip Rap

The rock rip rap will be placed in accordance with ODOT 00390.00 and the material shall meet the requirements of ODOT Class 700 rip rap. Visual inspection on a daily basis.

Demarcation Layer Repair Materials

The intent is to repair the existing demarcation layer if it is found to be damaged where it has been exposed. An economy-grade or medium duty orange construction fencing with minimum 4-ft roll width will be used. (submittal to be provided prior to use) Visual inspection on a daily basis.

Jute Matting

Jute matting shall be of a uniform, open, plain weave of unbleached, single just yarn. (per Section 329119 – 2.1) Jute matting will be stapled to the slope per the manufacturer's recommendations. Visual inspection on a daily basis.

Coir Fabric

Geocoir/Deko WE 900 or equal will be provided. Installed according to Section # 3239119 - 3.6 Visual inspection on a daily basis.

Top Soil

Submittals will be provided for the topsoil and the compost. (per section 329119-2.4) The topsoil material shall be spread in layers not to exceed 6 inches of uncompacted depth. Except as noted otherwise, it shall be compacted to 85% of maximum density, as measured by AASHTO T-180. Visual inspection on a daily basis.

Seeding

Seeding material shall be blue tag certified grass seed. Prior to delivery of seed the Contractor shall submit one copy of the grass seed analysis tag. The tag shall comply with standards established by the Official Seed Analysts of North America. For non-blue tag certified seed, the Contractor shall submit the seed vendor's certified statement of each seed required. (Section 329219-1.3 A, B.)

All seeding, fertilizer, tackifier, and mulch will be provided by NEI's Hydroseeding Subcontractor. Fertilizer, tackifier, and mulch products will be inspected on site with proper documentation to assure adherence to material specifications. NEI will provide the PORT a 48 hour notice prior to seeding operations. Visual inspection on a daily basis. (Section # 329219)

Trees, Shrub, & Ground Covers

NEI will provide one supervisor that shall direct work, be familiar with best practices for installation, and be present at all times during landscape work. All trees and shrubs shall be nursery grown that have been held in a nursery for at least 1 year. They shall meet specifications in regards to plant size and climatic conditions. All plants of each type shall be obtained from the same nursery. Submittals regarding nursery sources and photographs per section 329300 1.4A will be provided. Submittals regarding samples & certificates per section 329300 1.4B will be provided. Mulch & Fertilizer materials shall be inspected/identified by product tags and documented according to documentation procedures. Fertilizer & mulch shall be installed in accordance with installation procedures & also inspected and documented by the installation supervisor.

Woody Debris

Submittals for the anchoring system and the source of logs will be provided. The PORT will be provided a minimum of 48 hrs notice before placement of the Large Woody Debris, so that a representative may be present during installation. Installation procedures will be visually inspected throughout the process.

Non-Conformance:

The overall non-conformance process will generally be the same for all steps throughout the repair project.

Materials: Gradation testing, chemical testing (by the port) and other product material certification will be made and reviewed to be sure the proposed materials meet the project specification. Upon delivery of the materials, the site foreman will visually inspect and monitor the materials to ensure that the product being delivered to the site appears to meet specification. If a product appears to be out of specification, it will be set aside or rejected. Set-aside product will be reviewed for compliance either rejected and sent back to the source, or incorporated in the project as applicable.

Workmanship: Sub-grade surfaces will be inspected for suitability and compliance. Any work found in non-conformance will be corrected prior to proceeding with subsequent work. Layer thickness tolerances and limits of work will be checked on an on-going basis and any non-conformance will be corrected by adding or removing material (such as rock rip rap) as applicable. Landscape plant and tree spacing will be reviewed and corrected as necessary. Hydro-seeding coverage will be reviewed and corrected as

necessary. Woody debris will be placed as directed adding or removing debris to obtain Port's desired concentrations. Inspection will be made to ensure that each anchored tree is secured properly according to manufacturer's recommendations. If anchors are found to be missing or loose, corrections will be made.

Documentation of quality control activities:

Contractor will maintain submittal records of the material testing, data sheets, off-site certifications, and other quality control records.

The project foreman's daily report will be used to document the inspections of the work performed on this project. Record of the operations and activities occurring each day will be included as well as record of inspections. Records provided by consultants, delivery documentation and certificates shall be maintained with the daily reports. Finally any corrective actions will be described and noted.

NEI's Quality Control manger, Jeff Hargens, will make a weekly review of the daily inspection reports. Jeff Hargens' review is intended to pay specific attention to the corrective actions taken when quality control &/or acceptance criteria are not met. Upon completion of the review, the daily inspection reports and any corrective actions directed by Mr. Hargens, will be provided to the PORT.

Industry Experience:
28 years

Education:
Oregon State University
Corvallis, OR
Construction Engineering
Management, B.S. 1983

Jeff Hargens

President and Operations Manager

Qualifications:
Mr. Hargens joined NEI in 1984 as a Project Manager immediately following the formation of the Company. Mr Hargens came to NEI with prior experience as an operator, a Field Engineer with Reidel Intl. and as a Project Manager for Columbia Excavating. As a Project Manager Mr. Hargens has been responsible for NEI's largest projects from Tanasbourne to SW 185th Avenue. In 1991 Mr. Hargens took on the responsibilities of Vice President and then in 2006 was elevated to the position of President of NEI. As President Mr. Hargens is responsible for all field operations as well as the supervision of the equipment maintenance function. Each Project Manager and Field Superviser report directly to Mr. Hargens. Since taking over control of the field operations Mr. Hargens has grwon NEI from a Company performing $10.9 million dollars worth of work in 1991 to $33.0 million worth of work in in 2007. Mr. Hargens has 40 hour HAZMAT training and the 8 hour HAZMAT supervisory training.

Industry Experience:
29 years

Education:
Southern Methodist University
Dallas, TX
Civil Engineering
B.S. 1985

Philip Hansen

Project Estimator / Contracts Manager

Qualifications:
Mr. Hansen joined NEI in 2001 as an Estimator. Mr Hansen came to NEI with a wealth of experience having operated his own contracting firm in El Paso, Texas. Mr Hansen has been around grading and bridge construction his entire life. His education added technical abilities to his practical experiences. Mr. Hansens responsibilities include estimating and contract administration of a portion of NEI's projects. Since joining NEI Mr. Hansen has been responsible for a diverse range of projects including the Camas High School Sitework, various road reconstruction projects, Santosh Landfill Cap project for DEQ, and numerous multi-phase subdivisions. Mr. Hansen has proved to have a great deal of skill in handling the budgeting process for some of NEI's largest dvelopment projects.

Mr. Hansen is just completing work on the Troutdale Reynolds Industrial Park project (TRIP) for the Port of Portland which consisted of infrastructure improvemnts on the old Reynolds Aluminum Plant. This proposal for this 10 million dollar project was provided through a "Request for Proposal" format, which NEI had to demonstrate an understanding, and proposed means and methods of dealing with Hazardous materials to be encountered on the project, and an extensive dewatering plan. In addition to the typical components of an infrastructure project, TRIP included construction of 3000 lf sanitary line 16 ft below the groundwater table, large dia 48" to 66" RCP storm system, the installation of an 8x12 box culvert crossing of Sundial Road which required the by-pass pumping of Salmon Creek, off-site Sundial Road reconstruction; the construction of 2 Sanitary Pump stations complete with control buildings, stand-by generators, and instrumentation & control to the City of Troutdale; and 3500 lf of off-site forcemain to serve the two pump stations. Mr. Hansen particpated in and provided the budgeting process for a significant value engineering redesign of the sanitary system.

Industry Experience:
32 years

Education:
Clackamas High School
Graduate 1976

Carl Johnson

Site Superintendent

Qualifications:
Mr. Johnson joined NEI 1984 as a Site Superintendent. Mr Johnson came to NEI with a vast amount of field expereince having spent his entire working life in the sitework and road work business. Mr Johnson worked for Columbia Excavating 1976 to 1984 employed as an operator and foreman.
In the capacity of foreman Mr. Johnson has work on several projects involving underground storage tank clean up and removal of diesel contaminated soils. He also worked out at the TRIP project managing the mitigation grading, working under the HASP requirements of that project. Mr. Johnson has 40 hour HAZMAT training and the 8 hour HAZMAT supervisory training.

APPENDIX C
NEI ENVIRONMENTAL PROTECTION PLAN (EPP)

NORTHWEST EARTHMOVERS INC.
TERMINAL 4 WHEELER BAY BANK REPAIRS
Environmental Protection Plan

SECTION 1 PROJECT DESCRIPTION

Project Name: Wheeler Bay Bank Repairs Date: 9-14-10
Agency / Owner Name: Port of Portland
Location: Terminal 4 – shore line between Berth 408 and Berth 410
County: Multnomah County

1. Project Purpose

Restoration of shoreline aggregate, large woody debris, plantings, & landscaping.

2. Contractor Activities

Repair of existing Rip Rap, to include geotextile placement, Topsoil placement, & Landscaping. The Rip Rap & select fill materials will be imported, clean granular material. No water will be created (ie…ground dewatering) or discharged.

3. Soil Disturbing Activities

None.

4. Non-storm water Discharges

None.

5. Estimated Start Date

September 2010 (pending TWIC cards)

6. Nearest Surface Water Bodies

Wheeler bay Harbor

7. Receiving Waters

Willamette River

8. Special Environmental Considerations

Investigation results at the Wheeler Bay bank area indicated soil containing concentrations of polycyclic aromatic hydrocarbons (PAHs), metals, and/or pesticides above screening levels for human or ecological receptors. In 2008, a source control action was completed on the bank area that entailed shoreline stabilization & capping of impacted soils to prevent direct contact by potential receptors. Due to this existing condition, special consideration for the capped impacted soil.

9. Designated EPCM	Phone No.
Jeff Hargens	503-849-8562

10. Contractor's Project Supervisor	Phone No.
Carl Johnson	503-849-8551

11. Port of Portland Contacts	Phone No.
John Durst, Project Manager	503-415-6847
Philipp Bales, Inspector	503-415-6819
Marcel Hermans, Engineering Proj Manager	503-415-6305
Roger Anderson, Project Engineer	503-415-6402
Kelly Madalinski, Environmental Proj Manager	503-415-6676

12. Contacts in case of Spill

Northwest Earthmovers Inc.	Jeff Hargens	503-849-8562
Port of Portland	Tim Stone	503-475-9150

If a spill occurs during the work at Wheeler Bay, notify Jeff Hargens (NEI), Tim Stone (PORT inspector), and Marine Security (503-240-2230) immediately. Marine Security will notify the on-duty Port Marine Environmental Manager. The on-duty Port Marine Environmental Project Manager will make further notifications to the following agencies in addition to EPA depending upon the type and scope of spill:

National Response Center	800-424-8802
U.S. Coast Guard	503-240-9370 / 503-240-9379
Oregon Emergency Response Center	800-452-0311

SECTION 2 Contamination Prevention, Containment & Cleanup

Due to the small size of the project the staging area size will be minimal, stockpiles will be kept to a minimum, and there will not be fuel & oil storage on site other than the that tanks on the equipment. The equipment will be inspected for visible oil & fuel leakage prior to delivery to the project. The supervisor & operators will continue to monitor the equipment for leaks during the course of the project. NEI will be prepared to modify our procedures, methods, & equipment as becomes necessary to maintain water quality. Erosion control installation and other work procedures to be performed according to current Best Management Practices identified in the specifications, including design details and drawings, Water Quality Compliance Conditions and Monitoring plan, & Biological Opinion.

A. Offsite Vehicle Tracking & Dust Prevention

- Water truck will be in operation during all grading activities to limit dust.
- Gravel construction entrance will be constructed as needed for leaving area.
- If construction activities become needed that do require vehicles to come in contact with impacted material, a contained wheel wash will have to be constructed and wash debris properly disposed. (This is not an expected activity and would be viewed as a change in conditions)

B. Contractor Activities – Pollution Control Measures

- Construction activities to take place during the dry summer months to limit pollution potential.
- Employees will be educated regarding the limits of grading & the purpose of the demarcation mesh to prevent excavation of existing material.
- No upland equipment will be driven into the water.
- Water truck will be in operation during all grading activities to limit dust.

C. Material Management & Spill Prevention:

1. Onsite material inventory:

- Petroleum Based Products
- Fuel

2. The following product-specific storage practices will be followed onsite:

- Mobile equipment will be parked in a preferred staging area north of tracks while not in operation.

3. The following practices will be followed for spill prevention:

- Equipment maintenance to take place in designated areas away from waterway.
- Equipment to be inspected daily for leaks or potential leaks.
- Use of secondary containment, such as a drain pan or drop cloth when changing fluids.

4. The following practices will be followed for spill cleanup:

- Employees will be trained in spill prevention & cleanup.
- Jeff Hargens will be contacted immediately if a spill occurs.

Be prepared to provide the following:

a. Type of spill (ie…oil, fuel, other chemical or debris)
b. Location of spill. (Did the spill involve the waterway?)
c. Quantify the spill. (Approx how many gallons or

- Spill kits will be placed on job site.

- Absorbent booms (exhibit A) will be deployed to contain oil or fuel spills that enter a waterway.
- Additional supplies & materials will be obtained from:

Geotk, LLC	Vancouver, WA	360-750-1955
Sanderson Safety Supply	Portland, OR	503-238-5700

D. Waste Management

- Construction waste materials will be hauled to Waste Management dumpsite.
- Sanitary waste will be disposed by Schultz Clear Water (portable toilet).
- No Hazardous waste will be generated by this project.

E. Vehicle & Equipment Maintenance

- Use of secondary containment, such as a drain pan or drop cloth when changing fluids.
- Mobile equipment fueling to take place in a designated area away from the waterway.
- Mobile equipment maintenance to take place in designated area away from the waterway.
- Cleaning of equipment to take place in designated area away from the waterway.

SECTION 3 EROSION AND SEDIMENT CONTROL PLAN

Total Project Area: < 1 ACRE
Total Disturbed Area: < 1 ACRE

1. Temporary Stabilization Practices: (on as needed basis)

- Stockpile Plastic Sheeting
- Straw Mulch

2. Permanent Stabilization Practices:

- Rock Rip Rap
- Hydro-seeding
- Erosion control matting
- Landscape improvements

3. Sediment Retention:

- Aggregate Construction Entrance (as necessary)
- Silt Fence, Unsupported will be placed between the work area and the water per the erosion control plans
- Sediment curtain, Boom is available from NEI (stock) if conditions require additional turbidity control. (This is not expected)

4. Velocity Checks / Flow Diversion: (on as needed basis)

- Temporary Berms
- Temporary Bio Bag Check Dams
- Rock Rip Rap

SECTION 4 INSPECTION AND MAINTENANCE

- Daily inspection of the sediment control measures will be performed by the project supervisor.
- Any erosion control deficiencies will be corrected immediately.
- After significant rain events inspection and cleaning of the sediment control measures will be performed.
- Observations of the adjacent Harbor water for any evidence of contamination from the work (only) such as discoloration, oily sheen, or new (unusual) odors. (To include turbidity plumes.)
- A notice will be reviewed at the first tool box meeting regarding finding sick, injured, or a dead specimen of a threatened or endangered species in the project area. (Per specification 015719 1.3 A6 terms & conditions f.)
- Inspection reports will be incorporated with the daily foreman report, copies to be made available to the PORT.

SECTION 5 EMPLOYEE AND SUBCONTRACTOR EDUCATION

- The pollution control plan shall be kept in the construction supervisor's truck or in the construction trailer. (as applicable)
- All NEI employees and subcontractors will be familiar with the project pollution control plan and its requirements.

APPENDIX D
CONSTRUCTION DRAWINGS AND SPECIFICATIONS

PORT OF PORTLAND
P.O. Box 3529
Portland, Oregon 97208

PROJECT MANUAL

Including Specifications

for

TERMINAL 4
WHEELER BAY
BANK REPAIRS

Solicitation No. BT488

AS BID

EAN 2010D015

August 2010

ADDENDA CHANGES INCORPORATED

Reprinted August 2010

DOCUMENT 000107
APPROVALS

TERMINAL 4
WHEELER BAY
BANK REPAIRS

Project Manager: _____

Project Engineer: _____

Consultant:

Anchor QEA, LLC
1423 3rd Avenue, Suite 300
Seattle, WA 98101
(503) 287-9130

REGISTERED
658
Peter Hummel
OREGON
3/24/08
LANDSCAPE ARCHITECT
Expires: 3/31/2011
8/9/10

Stamp

REGISTERED PROFESSIONAL
ENGINEER
77473PE
OREGON
NOV. 8, 2005
JOHN RICHARD VERDUIN
8/9/10
EXPIRATION DATE: 6/30/12

Stamp

DOCUMENT 000110
TABLE OF CONTENTS

TERMINAL 4
WHEELER BAY
BANK REPAIRS

PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP

Document 000107 Approvals 000107-1

Document 000115 Drawings Index 000115-1

Document 001100 Invitation to Bid 001100-1

Document 002100 Instructions to Bidders 002100-1

Document 002200 Supplementary Instructions to Bidders 002200-1

Document 004100 Bid Form 004100-1

Document 004335 First-Tier Subcontractor Bids Submitted 004335-1

Document 004336 First-Tier Subcontractor Bids Selected 004336-1

Document 005200 Agreement 005200-1

Document 006100 Performance Bond 006100-1

Document 006101 Labor and Material Payment Bond 006101-1

Document 007200 General Conditions 007200-1

Document 007300 Supplementary Conditions 007300-1

Document 007346 Wage Rates 007346-1

SPECIFICATIONS GROUP

GENERAL REQUIREMENTS SUBGROUP

DIVISION 1 – GENERAL REQUIREMENTS

Section	011100	Summary of Work
	012200	Unit Prices
	013100	Project Management and Coordination
	013300	Submittal Procedures
	013529	Safety and Health
	013553	Marine Terminal Security, Safety, and Operating Regulations
	014500	Quality Control
	015000	Temporary Facilities and Controls
	015639	Tree and Plant Protection
	015713	Temporary Erosion, Sediment, and Pollution Control
	015719	Environmental Protection
	017000	Execution Requirements
	017700	Closeout Procedures

SITE AND INFRASTRUCTURE SUBGROUP

DIVISION 31 – EARTHWORK

Section 312000 Site Clearing, Earthwork, and Shoreline Stabilization

DIVISION 32 – EXTERIOR IMPROVEMENTS

Section 329119 Topsoil and Landscape Grading
329219 Seeding
329300 Trees, Shrubs, and Ground Covers
353200 Anchored Woody Debris Structures

EXHIBIT A – DESIGN ANALYSIS REPORT (INCORPORATED BY REFERENCE)

EXHIBIT B – NATIONAL MARINE FISHERIES SERVICES BIOLOGICAL OPINION (INCORPORATED BY REFERENCE)

EXHIBIT C – USEPA WATER QUALITY MONITORING AND COMPLIANCE CONDITIONS PLAN (INCORPORATED BY REFERENCE)

ADDENDUM NO. 1

DOCUMENT 000115
DRAWINGS INDEX

TERMINAL 4
WHEELER BAY
BANK REPAIRS

DRAWING NUMBER	SHEET TITLE
T4 2010-500	
GI-1	EXISTING CONDITIONS
C-1	STABILIZATION REPAIR PLAN
C-2	DETAILS
C-3	EROSION CONTROL PLAN
C-4	EROSION CONTROL DETAILS
L-1	SURFACE STABILIZATION AND PLANTING PLAN
L-2	SURFACE STABILIZATION AND PLANTING DETAILS
L-3	SURFACE STABILIZATION AND PLANTING DETAILS
T4 2009-500	
C-1	REFERENCE DRAWING
T4 2008-501A	
SU-1	REFERENCE DRAWING

DOCUMENT 001100
INVITATION TO BID

THE PORT OF PORTLAND

TERMINAL 4
WHEELER BAY
BANK REPAIRS

Solicitation No. BT488

Sealed bids for the Terminal 4, Wheeler Bay Bank Repairs project will be received at the office of the Manager, Contracts and Procurement, of The Port of Portland, 7200 N.E. Airport Way, 8th Floor, Portland, Oregon 97218 (mailing address: Post Office Box 3529, Portland, Oregon 97208) until, but not after, 2 p.m. on August 25, 2010, and thereafter opened and read.

The work includes but is not limited to:

> Restoration of shoreline aggregate, large woody debris, plantings, and landscaping, as well as construction of an access roadway to the work area. The work area is within a designated Superfund site. The Contractor shall comply with permits and regulations of local, state, and federal agencies.

The Port has authorized the award of this contract under emergency procurement circumstances as provided under ORS 279B.080.

Prequalification is not required for this work.

The contractor or a subcontractor need not be licensed for asbestos work under ORS 468A.720.

A pre-bid meeting will be held at 3:30 p.m. on August 17, 2010, in the Terminal 4 Administration Building at 11040 N. Lombard St., Portland, Oregon, to discuss all phases of the work. A site visit will immediately follow the meeting. Attendees will be required to have a valid driver's license, business card, hard hat, and construction safety vest before entering Terminal 4. Bidders who have already obtained a Transportation Worker Identification Credential (TWIC) are strongly encouraged to bring it to the site visit. This will be the only opportunity to examine the work site prior to bid opening.

Please direct technical questions to the Project Engineer, Roger Anderson, (503) 415-6402. Please direct all other questions to the Project Buyer, Michael Smelser, (503) 415-6623.

Contractors, subcontractors, consultants, and suppliers are strongly encouraged to register through the Port's SROS system. Registered firms can view current business opportunities, receive electronic notification of Port solicitations, and have access to view, download, or request copies of solicitations, addenda, and solicitation-holders lists.

The Port may reject bids that do not comply with applicable public contracting procedures and requirements. The Port may reject for good cause any or all bids if the Port finds that doing so is in the public interest. Bidder compliance for this project includes the following:

A. Bids must be on the Port's bid form and must be accompanied by bid security made payable to The Port of Portland in an amount equal to at least 10 percent of the total amount bid.

B. In accordance with ORS 279C.370 and additional Port requirements for providing and tracking equal opportunities to small business enterprises, bidders must submit the enclosed first-tier subcontractor bid reports within two working hours after bid opening. The reports identify those subcontractors the bidder has received bids from and those he intends to subcontract work to.

C. The Port will not receive or consider a bid unless the bid contains a statement by the bidder that the bidder will comply with the provisions of ORS 279C.800 to 279C.870 (regarding payment of prevailing wage rates on public works projects over $50,000). Current wage rates determined by the Oregon Bureau of Labor and Industries (BOLI) may be obtained from BOLI's web site at www.boli.state.or.us.

D. Bidders are hereby alerted that public works contractors generally must file a public works bond with the Construction Contractors Board, as provided in ORS 279C.836.

E. No bid will be considered unless the bidder is registered with the State of Oregon Construction Contractors Board, pursuant to ORS 701.026, prior to submitting a bid.

F. Bids must identify whether the bidder is a resident bidder, as defined in ORS 279A.120.

Apprentice Opportunities on Port Projects: As a founding member of Construction Apprentice Workforce Solutions (CAWS), the Port requires contractors to provide on-the-job training opportunities for approved and registered apprentices on construction projects over $500,000. CAWS and the Port support efforts to build a diverse and skilled workforce for the construction industry and to increase the representation of diverse apprentices on Port projects. The Port's overall target for registered apprentice participation is 15 percent of total labor hours.

Small Business Participation Program: The Port is committed to increasing small business participation in Port contracts. For fiscal year 2009-2010, the Port's overall small business participation target is 10 percent participation of small businesses as a percent of contract dollars awarded directly and as subcontracts; and 25 percent participation of small businesses as a percent of the total number of contracts awarded directly and as subcontracts. The Port encourages all bidders to consider how they can help the Port achieve its small business participation target. However, the bidders' ability to meet the Port's target will not be taken into consideration for contract award.

THE PORT OF PORTLAND

Craig Johnsen, Manager
Contracts and Procurement

August 13, 2010

CPD/CON

DOCUMENT 002100
INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

ARTICLE 1 – DESCRIPTION 1

ARTICLE 2 – PRE-BID INTERPRETATION OF CONTRACT DOCUMENTS 1

ARTICLE 3 – RESIDENT BIDDER PREFERENCE 1

ARTICLE 4 – EQUIVALENT MATERIALS, PRODUCTS, OR SERVICES 1

ARTICLE 5 – ESTIMATED QUANTITIES 2

ARTICLE 6 – EXAMINATION OF SITE 2

ARTICLE 7 – ELECTRONIC DOCUMENTS 2

ARTICLE 8 – BID SECURITY 2

ARTICLE 9 – EXECUTION OF BID 3

ARTICLE 10 – DISCLOSURE OF FIRST-TIER SUBCONTRACTORS 3

ARTICLE 11 – SUBMISSION OF BID 3

ARTICLE 12 – WITHDRAWAL OF BID 4

ARTICLE 13 – OPENING OF BIDS 4

ARTICLE 14 – ACCEPTANCE OR REJECTION OF BIDS 4

ARTICLE 15 – EXECUTION OF AGREEMENT AND BONDS 5

ARTICLE 16 – NOTICE TO PROCEED 6

ARTICLE 1 – DESCRIPTION

1.1 Provide labor, materials, and other means required by the contract documents to complete the work.

ARTICLE 2 – PRE-BID INTERPRETATION OF CONTRACT DOCUMENTS

2.1 If the bidder finds discrepancies, omissions, or is in doubt as to the true meaning of any part of the contract documents, submit a written request for a clarification or interpretation to the Manager, Contracts and Procurement, no less than five business days prior to the bid opening date. The Port may not consider requests submitted less than five business days prior to the bid opening date.

2.2 Clarification or interpretation of the contract documents will be made by addendum. Consider addenda in the bid. The Port is not responsible for explanation, clarification, or interpretation made or given except by addendum.

ARTICLE 3 – RESIDENT BIDDER PREFERENCE

3.1 Each bid shall contain a statement as to whether the bidder is a resident bidder, as defined in ORS 279A.120.

3.2 Under ORS 279A.120(1), a "resident bidder" is a bidder that has paid unemployment taxes or income taxes in this state during the 12 calendar months immediately preceding submission of the bid, has a business address in Oregon, and has stated in the bid whether the bidder is a "resident bidder" pursuant to ORS 279A.120(1).

3.3 Under ORS 279A.120(1), a "non-resident bidder" is a bidder who is not a "resident bidder" as defined in Item 3.2 above.

3.4 Failure to complete the "resident bidder" certification statement of residency or nonresidency contained in the bid form may result in rejection of the bid.

3.5 In determining the lowest responsive bidder, the Port will, for the purpose of awarding the contract, add a percent increase on the bid of a nonresident bidder equal to the percent, if any, of the preference given to that bidder in the state in which the bidder resides.

ARTICLE 4 – EQUIVALENT MATERIALS, PRODUCTS, OR SERVICES

4.1 Specified materials, products, or services are named for the purpose of establishing a standard of quality and characteristics desired. Unless the specification or description indicates that no substitution is permitted, other materials, products, or services of equal quality and characteristics for the purposes intended may be submitted at the appropriate time for approval. The Substitution Request Form is enclosed at the end of these Instructions to Bidders. The Port will be the judge of the equality and suitability of the proposed substitution.

4.2 The following definitions of the phrases stated after materials, products, or services in the Specifications determine the extent to which substitutions may be proposed.

A. "PRE-BID APPROVED EQUAL" materials, products, or services require approval by addendum prior to bid opening. Materials, products, or services which the bidder proposes to substitute, and which he/she considers equal to those specified, must be submitted on the Substitution Request Form and received by the Manager, Contracts and Procurement, no less than five business days prior to the bid opening date. Requests shall be accompanied by complete technical data and such pertinent information and/or samples as necessary, or as specified, to fully identify and appraise the material, product, or service. Approval of materials, products, or services deemed equivalent will be issued by addendum prior to the bid opening date.

B. "EQUAL" materials, products, or services require approval after contract award. See the General Conditions for requirements.

C. "NO SUBSTITUTION" materials, products, or services are not eligible for substitution requests. See the General Conditions for requirements.

ARTICLE 5 – ESTIMATED QUANTITIES

5.1 Estimated quantities shown in the bid form provide a basis for comparison of bids only. The bidder shall verify the quantity of each bid item prior to submission of his/her bid. Reference is made to Change of Contract Price in the General Conditions.

ARTICLE 6 – EXAMINATION OF SITE

6.1 Examine the site and conditions thereon. Bids shall take into consideration conditions which may affect the work. No additional compensation or extension of time will be allowed because of any condition of which the bidder could have informed himself either by examination, testing, sampling, review of records, or otherwise. The Port's site study information, if any, will be made available to prospective bidders for review; however, the Port disclaims liability and responsibility for the completeness or accuracy thereof.

ARTICLE 7 – ELECTRONIC DOCUMENTS

7.1 If available, the Port may provide access to construction design or related documents in electronic form. Because electronic documents are subject to data erosion, erasure, and alteration, the Port makes no warranties or representations regarding the integrity or completeness of any electronic documents it provides. Because computer software may become obsolete with time, the Port makes no warranties or representations regarding the ability to access electronic documents it provides. The Port makes no warranties or representations regarding the presence or absence of computer viruses in electronic documents it provides; any person using an electronic document provided by the Port should have the document and supporting medium (e.g., floppy disk, CD, or tape) checked for computer viruses before using it in a manner that might allow the spread of a computer virus. All or parts of electronic documents provided by the Port may be copyrighted, and those using them are responsible for determining the existence of copyrights and for obtaining permission to copy copyrighted material. Those using electronic documents provided by the Port do so at their own risk. Only the hard copy documents incorporated into the bid package, or documents issued by addendum through the Port's Contracts and Procurement Office, may be relied upon by the bidder.

ARTICLE 8 – BID SECURITY

8.1 The bid shall be accompanied by bid security. The security shall be a certified or cashier's check, an irrevocable letter of credit, or a bid bond made payable to the Port of Portland. Checks shall be drawn on a United States bank. Irrevocable letters of credit shall be issued by a commercial bank as defined in ORS 706.005. Bid bonds shall be executed by a surety company licensed to do business in the State of Oregon. The amount of the check, letter of credit, or bond shall be equal to at least 10 percent of the total amount bid. The check, letter of credit, or bond will be held by the Port as security and a guaranty that the bidder will execute the Agreement, give satisfactory evidence of insurance, and furnish a 100 percent performance bond and a 100 percent labor and material payment bond.

8.2 The Port may retain the bid security of the three lowest responsive bidders until:

A. all bids are rejected,

B. the fully executed Agreement is delivered to the successful bidder, or

C. expiration of the bids,

at which time the bid security of all bidders will be promptly returned.

8.3 The bid security of those other than the three lowest responsive bidders will be returned promptly following bid opening.

ARTICLE 9 – EXECUTION OF BID

9.1 Bids shall be on the bid form provided to prospective bidders.

9.2 When the bid form provides for writing the bid price in words and numerals, the price as written in words governs over the price written in numerals.

9.3 In the case of conflict between the amount bid and the product of the estimated quantity and the unit bid price, the unit bid price prevails and the corrected product will be used in computing the total amount bid. All arithmetic errors apparent on the face of a bid will be corrected in determining the total bid price.

9.4 Complete the bid form requirements, including acknowledgement of receipt of addenda, if applicable; statement of resident status; and any other requirements specifically called for in the bid.

9.5 Execute the bid in the name of the firm followed by the signature of the officer authorized to sign for the firm and the printed or typewritten designation of the officer's name and office held.

9.6 Type or print the address and telephone number of the bidder on the bid form.

ARTICLE 10 – DISCLOSURE OF FIRST-TIER SUBCONTRACTORS

10.1 Within two working hours of the date and time the bids were due, the bidder shall separately disclose first-tier subcontractors meeting the following criteria, regardless of subcontract amount:

A. All first-tier subcontractors who submitted subcontract bids to furnish labor or labor and materials in connection with the work;

B. All first-tier subcontractors who were selected to furnish labor or labor and materials in connection with the work.

10.2 Disclosure of first-tier subcontractors may be submitted with the bid form or delivered by fax (fax number 503-548-5812) or by clearly labeled envelope, within the time allowed, to the Contracts and Procurement office. For the purposes of this article, working hours are between 8 a.m. and noon, and 1 p.m. and 5 p.m. Monday through Friday, except Port holidays. The Contracts and Procurement office is closed between the hours of noon and 1 p.m.

ARTICLE 11 – SUBMISSION OF BID

11.1 Seal the bid in a separate envelope, addressed to the Manager, Contracts and Procurement, The Port of Portland, 7200 N.E. Airport Way, Portland, Oregon (Mailing address: P.O. Box 3529, Portland, Oregon 97208) showing on the outside of the envelope the name of the bidder, the bidder's State of Oregon Construction Contractors Board registration number, and the contract title preceded by the words "SEALED BID." To deliver bids to the above address, park in the long term parking garage. Use the garage elevators at the east end of the garage to enter the Headquarters Building at the first floor level and then use the Port office

elevators to check in with the receptionist on the eighth floor. Bidders should allow extra time to hand deliver their bids. Parking validation is not available.

11.2 Bids will be received at the place and until the time stated in the Invitation to Bid.

11.3 A bid received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

ARTICLE 12 – WITHDRAWAL OF BID

12.1 Prior to bid opening, a bidder may withdraw his/her bid. This will not preclude submission of another bid by such bidder prior to the time set for bid opening.

ARTICLE 13 – OPENING OF BIDS

13.1 The Port reserves the right to postpone a bid opening.

13.2 At the time and place set for the opening and reading of bids, bids received prior to the scheduled closing time for receipt of bids will be opened and read aloud.

ARTICLE 14 – ACCEPTANCE OR REJECTION OF BIDS

14.1 The Port may reject any bid not in compliance with all prescribed public bidding procedures and requirements, and may, for good cause, reject any or all bids upon a finding it is in the public interest to do so. In any case where competitive bids are required and all bids are rejected, and the proposed contract is not abandoned, new bids may be called for as in the first instance. The Port may cancel a solicitation at any time before a contract is signed, if the Port determines cancellation is in the Port's best interests. If a solicitation is canceled, the Port will not be liable for any costs incurred by prospective bidders or bidders. If a solicitation is canceled before bids are opened, the bids will be returned to the bidders unopened, except that the Port may open a bid to determine the identity and address of the bidder if the name and address are not shown on the outside of the envelope. If a solicitation is canceled after bids are opened, the Port will retain the bids.

14.2 The Port may disqualify any bidder if, at any time, it finds:

A. The bidder has been convicted for the commission of a criminal offense as an incident in obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of such contract or subcontract;

B. The bidder has been convicted under state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty that currently, seriously, and directly affects the bidder's responsibility as a contractor;

C. The bidder has been convicted under state or federal antitrust statutes; or

D. The bidder has violated a contract provision that is regarded by the Port to be so serious as to justify disqualification. A violation may include, but is not limited to, a failure to perform the terms of a contract or an unsatisfactory performance in accordance with the terms of the contract. However, a failure to perform or an unsatisfactory performance caused by acts beyond the control of the contractor may not be considered to be a basis for disqualification.

14.3 The Port may disqualify an apparent low bidder if, at any time, it finds that the bidder:

A. Does not have available the appropriate financial, material, equipment, facility and personnel resources and expertise, or the ability to obtain the resources and expertise, necessary to meet all contractual responsibilities;

B. Does not hold current licenses that businesses or service professionals operating in Oregon must hold in order to undertake or perform the work specified in the contract;

C. Is not covered by liability insurance and other insurance in amounts the Port requires in the solicitation documents;

D. Does not qualify as a carrier-insured employer or a self-insured employer under ORS 656.407 or, if applicable, has not elected coverage under ORS 656.128;

E. Has not made the first-tier subcontractor disclosure required under ORS 279C.370;

F. Has not completed previous contracts of a similar nature with a satisfactory record of performance;

G. Does not have a satisfactory record of integrity;

H. Is not legally qualified to contract with the Port; or

I. Is otherwise not responsible pursuant to ORS 279C.375, or fails to supply all necessary information in connection with demonstrating such responsibility.

14.4 In determining the low responsive bid, the Port will not consider alternates called for in the bid form.

14.5 The Port reserves the right to reject any irregular Bid if rejection is in the best interest of the Port. Irregular bids include, but are not limited to:

A. Bids that are incomplete or conditioned in any way;

B. Bids that contain erasures or alterations;

C. Bids that contain unit prices that are obviously unbalanced;

D. Bids that do not acknowledge receipt of previously issued addenda.

14.6 The Port may waive minor irregularities or technicalities in a Bid if such waiver is in the best interest of the Port.

14.7 Acceptance of a bid by the Port and award of the Contract will be made by delivery of the fully executed Agreement to the successful bidder within 50 days after the bid opening date (or as modified by Document 004100, Bid Form). The bid may not be revoked by the bidder within this period. Failure by the Port to deliver the fully executed Agreement to the successful bidder within the 50-day period will permit the bidder to withdraw his/her bid. If withdrawn, the Port will return the bid security. A bid remains effective until it is withdrawn by an affirmative act of the bidder or until the Port rejects the bid, either expressly or impliedly, by awarding the contract to another bidder.

ARTICLE 15 – EXECUTION OF AGREEMENT AND BONDS

15.1 Within 48 hours after issuance of the Port's written notice (or as otherwise requested), the apparent low bidder (Contractor) shall execute and deliver the Agreement, the Performance Bond, and the Labor and Material Payment Bond to the Port. The bonds shall each be for the total amount of the Contract. The company providing the bonds shall be authorized to do

business in the State of Oregon. The Agreement and the bonds shall be on the forms provided by the Port.

15.2 If the bidder fails to execute the Agreement, give satisfactory evidence of insurance, and furnish the bonds within 48 hours after the Port's written notice, the bid security shall be forfeited in accordance with the applicable statute. The Port may extend the time for delivery of the executed contract documents. If the Port extends the time for delivery of the executed contract documents at the successful bidder's request, the Port may:

A. Extend the time (see NOTICE TO PROCEED below) within which to issue a Notice to Proceed by an equivalent number of days, or

B. Reduce the contract duration period (see the Bid and the Agreement) by an equivalent number of days.

ARTICLE 16 – NOTICE TO PROCEED

16.1 Within 45 days after delivery of the fully executed Agreement to the successful bidder, the Port will issue Notice to Proceed. The Notice to Proceed will state the dates: (1) on which the Contractor may begin the work, (2) by which the Contractor is required to attain substantial completion of the work, and (3) by which the Contractor is required to attain final acceptance of the work.

END OF DOCUMENT

Advancement of Construction Technology

The Construction Specifications Institute
Northwest Region

SUBSTITUTION REQUEST

TO: _____

PROJECT: _____

SPECIFIED ITEM:

Section	Page	Paragraph	Description

PROPOSED SUBSTITUTION: _____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of request including identifying applicable data portions.

Attached data also includes description of changes to Contract Documents and proposed substitution required for its proper installation.

Undersigned certifies following items, unless modified by attachments, are correct:

1. Proposed substitution does not affect dimensions shown on drawings.
2. Undersigned pays for changes to building design, including engineering design, detailing, and construction costs caused by proposed substitution.
3. Proposed substitution has no adverse effect on other trades, construction schedule, or specified warranty requirements.
4. Maintenance and service parts available locally or readily obtainable for proposed substitution.

Undersigned further certifies function, appearance, and quality of proposed substitution are equivalent or superior to specified item.

Undersigned agrees, if this page is reproduced, terms and conditions for substitutions found in Bidding Documents apply to this proposed substitution.

Submitted by:

Name (Print) _____

Signature _____

Firm Name _____

Address _____

City, State, Zip _____

Date _____

Telephone _____ Fax _____

General Contractor (if after award of Contract) _____

For use by A/E	
☐ Approved	☐ Approved as noted
☐ Not Approved	☐ Received too late
By	
Date	
Remarks	

Attachments:

DOCUMENT 004100
BID FORM

To The Port of Portland
P.O. Box 3529
Portland, Oregon 97208

The bidder warrants that he has carefully examined the contract documents for the Contract described as follows:

TERMINAL 4
WHEELER BAY
BANK REPAIRS

The bidder further warrants that he has examined, or did not avail himself of the opportunity to examine, the proposed work area independently of the indications in the contract documents and has made, or did not avail himself of the opportunity to make, such investigations as are necessary to determine: (1) the character of the materials to be handled, (2) the probable interferences due to Port operations, and (3) other conditions to be encountered.

The bidder further warrants that if this Bid is accepted, he will contract with The Port of Portland in the form of Agreement hereto annexed and will to the extent of his bid provide all things necessary for the performance of the Contract, including, but not limited to, bonds, labor, material, transportation, and equipment.

The Port will authorize onsite work to commence as soon as the bidder completes all preliminary contract requirements including, but not limited to, bonding, insurance, and providing an acceptable health and safety plan. This is expected to occur no later than September 10, 2010.

Time is of the essence. The bidder promises that all work under this Contract shall be substantially complete on or before October 15, 2010. The bidder agrees to pay, as liquidated damages to the Port for any delay, the sum of $500 per day for each day of delay beyond the substantial completion date so promised.

The bidder further promises that all work under this Contract shall be complete, having gained a successful final inspection and received final acceptance from the Port, on or before October 29, 2010. Final payment will not be made until the work is judged complete by the Port.

The bidder also agrees to pay Other Damages described in the General Conditions.

The bidder submits and proposes the following unit bid prices, to wit:

TERMINAL 4
WHEELER BAY
BANK REPAIRS

Item No.	Item Description	Estimated Quantity	Units	Unit Price	Total Price
0001	Mobilization, Surveying, Cleanup, and Demobilization	1.0	LS		
0002	Contractor Work Plans	1.0	LS		
0003	Remove and Dispose of Unsuitable Soil	75.0	Ton		
0004	Rock Rip-Rap	420.0	Ton		
0005	Select Fill Filter Layer	90.0	Ton		
0006	Temporary Access Road	1.0	LS		
0007	Topsoil and Coir Fabric Restoration	1,000.0	SY		
0008	Riparian Plantings	1,860.0	Each		
0009	Anchored Large Woody Debris	34.0	Each		
0010	Erosion Control	1.0	LS		
	Total Amount Bid (Basis of Award)				$_____

The bidder hereby acknowledges receipt of Addendum Nos. ____, ____, ____, ____, ____, ____, to these contract documents.

This bid may not be revoked by the bidder for a period of 50 days after the date bids are opened.

Accompanying this bid is bid security. The amount is 10 percent of the total amount bid. It is agreed that if this bid is accepted by the Port's written notice within 50 days after bid opening, and the Contractor executes and delivers the Agreement, including a satisfactory performance bond, and labor and material payment bond, each for the full amount of the Contract, within 48 hours after the Port's written notice, said bid security will be returned to the undersigned. Otherwise, said bid security may be collected as liquidated damages at the option of the Port.

After the Contractor has delivered the executed Agreement (including a satisfactory performance bond, and labor and material payment bond, each for the full amount of the Contract) and evidence of insurance, the Port will issue Notice to Proceed. If all of the documents are not provided within 48 hours, the Port may extend the Notice to Proceed date or reduce the contract duration period, as described in the Instructions to Bidders.

The surety company requested to issue the performance bond, and labor and material payment bond will be _____. The bidder hereby authorizes said surety to disclose to the Port any information concerning the bidder's ability to supply the required bonds.

The bidder agrees to comply with the requirements of ORS 279C.800 to 279C.870 governing the prevailing wage rates.

The bidder acknowledges that this bid takes into account the public works bond that the successful bidder generally must file with the Construction Contractors Board and that the bidder will be entitled to no compensation in addition to the bid price on account of that bond.

The bidder certifies that, under ORS 279A.120, it is a (check one):

☐ Resident Bidder ☐ Nonresident Bidder.

If a nonresident bidder, the bidder certifies residency of (insert name of state where the bidder is a resident):

_____.

Failure to complete the foregoing certification of residency or nonresidency may render the bid nonresponsive. Failure of a nonresident bidder to certify its state of residency also may render the bid nonresponsive.

The Port has authorized the award of this contract under emergency procurement circumstances as provided under ORS 279B.080.

The bidder acknowledges that the Port has the right to reject any or all bids.

Name of Bidder: _____

Business Address of Bidder: _____

_____

Business Phone Number: _____ Fax Number: _____

E-Mail Address: _____

Signature of Authorized Person: _____

Printed Name of Authorized Person: _____

Title: _____

Date: _____

State of Oregon Construction Contractors Board Registration No. _____
(Required for Bidding).

Note: Bid security must be included with this bid.

DOCUMENT 004335

FIRST-TIER SUBCONTRACTOR BIDS *SUBMITTED* TO BIDDER

(Required by the Port of Portland)

List **ALL** first-tier subcontractors, regardless of subcontract amount. (Second-tier subcontractors may also be listed if they are to be counted toward satisfaction of the small business goal.) Enter "NONE" if no subcontractors are anticipated for this contract. Attach additional sheets if needed.

CONTRACTOR: _____ **PROJECT NAME:** _____

FORM COMPLETED BY: _____ PHONE: _____ ESB GOAL (if applicable): _____% ACTUAL: _____%

Print or Type

Name, Address, Telephone	Type of Work	Estimated Dollar Value	Certification (if applicable)
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A
			❑ ESB ❑ MBE ❑ WBE ❑ DBE ❑ N/A

Submission of this form is a matter of bidder responsibility.

Signature certifies as to the accuracy of the foregoing information: _____ _____

Authorized Signature Date

DOCUMENT 004336

FIRST-TIER SUBCONTRACTOR BIDS *SELECTED* BY BIDDER

(Required by ORS 279C.370)

List **ALL** first-tier subcontractors, regardless of subcontract amount. (Second-tier subcontractors may also be listed if they are to be counted toward satisfaction of the small business goal.) Enter "NONE" if no subcontractors are anticipated for this contract. Attach additional sheets if needed.

CONTRACTOR: _____ **PROJECT NAME:** _____

FORM COMPLETED BY: _____ PHONE: _____

Print or Type

Name, Address, Telephone	Type of Work	Subcontractor's Registration Number (if required by the State of Oregon Construction Contractors Board)	Estimated Dollar Value

Failure to submit this form by the disclosure deadline will result in a nonresponsive bid. A nonresponsive bid will not be considered for award.

Signature certifies as to the accuracy of the foregoing information: _____ _____

Authorized Signature Date

DOCUMENT 005200
AGREEMENT

THE PORT OF PORTLAND
P.O. BOX 3529
PORTLAND, OREGON 97208

TERMINAL 4
WHEELER BAY
BANK REPAIRS

THIS AGREEMENT made and entered into on the date of full execution of this Contract by and between The Port of Portland, a port district organized under ORS Chapter 778, hereinafter called "the Port," and _____ of _____, hereinafter called "the Contractor."

W I T N E S S E T H:

That the Contractor in consideration of the covenants, agreements and payments to be performed and made by the Port, hereby covenants and agrees to provide all things necessary for the performance of the Contract, including, but not limited to, bonds, labor, material, transportation, and equipment required to execute, construct and furnish in full compliance with the contract documents, in an expeditious, substantial and workmanlike manner, the work and material hereinafter particularly described:

TERMINAL 4
WHEELER BAY
BANK REPAIRS

The Contractor agrees that the following are hereby made a part of this Contract and are mutually cooperative therewith: (1) a copy of the Contractor's Bid signed on _____, 20____, including any documentation accompanying the Bid; (2) this Agreement, including any post-Bid documentation attached as an exhibit to this Contract; (3) Performance Bond; (4) Labor and Material Payment Bond; (5) General Conditions; (6) Supplementary Conditions; (7) Wage Rates; (8) Drawings; (9) Specifications; and (10) Addenda.

The Port has authorized the award of this contract under emergency procurement circumstances as provided under ORS 279B.080.

For satisfactorily completed work under this Contract, the Port will pay the Contractor as provided by the Contract, but in no event more than $_____ without an amendment or change order.

The Port will authorize onsite work to commence as soon as the Contractor completes all preliminary contract requirements including, but not limited to, bonding, insurance, and providing an acceptable health and safety plan. This is expected to occur no later than September 10, 2010.

Time is of the essence. The Contractor promises that all work under this Contract shall be substantially complete on or before October 15, 2010. The Contractor agrees to pay, as liquidated damages to the Port

for any delay, the sum of $500 per day for each day of delay beyond the substantial completion date so promised.

The Contractor further promises that all work under this Contract shall be complete, having gained a successful final inspection and received final acceptance from the Port, on or before October 29, 2010. Final payment will not be made until the work is judged complete by the Port.

The Contractor also agrees to pay Other Damages described in the General Conditions.

The Contractor shall obtain the prior written consent of the Port to any proposed assignment of any interest in or part of this Contract. Such consent shall be at the sole discretion of the Port.

Under the same date as this Agreement, the Contractor is furnishing the Port with a performance bond, and a labor and material payment bond with _____ as surety, each in the amount of _____. These bonds shall insure complete performance by the Contractor of this Contract in accordance with all of its terms and provisions and payment of all amounts owed by the Contractor to others for work performed or materials provided under this Contract.

The Contractor agrees to diligently prosecute the work to final acceptance and to accept as full payment hereunder the amounts specified in this Contract; and the Port agrees to make payments at the time, in the amount, and upon the terms and conditions specified herein.

The Contractor agrees to comply with all federal and state laws and regulations regarding nondiscrimination in employment, employee benefits, and facilities.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed:

(FULL NAME OF CORPORATION)

BY: _____
(Signature)

NAME: _____
(Print)

TITLE: _____

DATE: _____

THE PORT OF PORTLAND

BY: _____
(Signature)

NAME: _____
(Print)

TITLE: _____

DATE: _____

Approved as to Legal Sufficiency for the Port of Portland:

_____
Counsel for The Port of Portland

Approved by Commission on

DOCUMENT 006100
PERFORMANCE BOND

Parties

Principal: _____ (Name)
_____ (Address)
_____
_____ (Telephone)

Surety: _____ (Name)
_____ (Address)
_____
_____ (Telephone)

Obligee: The Port of Portland
7200 N.E. Airport Way
P.O. Box 3529
Portland, Oregon 97208

Agreement

Principal has entered into a contract ("Contract") with Obligee for the following project:

_____
_____. By this reference, the Contract is made a part of this bond.

Subject to the provisions of this bond, Principal and Surety, and their respective heirs, executors, administrators, successors, and assigns, are jointly and severally held and firmly bound unto Obligee, and Obligee's successors or assigns, in an amount equal to the total amount of the Contract, or to the guaranteed maximum price if the Contract is a guaranteed maximum price contract. The foregoing obligation shall be void if Principal promptly, faithfully, and fully performs the Contract including but not limited to warranty and maintenance work required under the Contract.

Surety waives any right it may have to notice of changes in the Contract agreed to by Principal and Obligee, or required by Obligee in accordance with the Contract, including but not limited to changes that increase the total amount of the Contract, or the guaranteed maximum price if the Contract is a guaranteed maximum price contract, and changes that extend the term of the Contract. Surety shall not be released from its obligation under this bond because of Obligee's failure to give Surety prompt notice of a breach or default by Principal.

Signed and sealed this _____day of _____, 20____.

PRINCIPAL	**SURETY**
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Attorney in Fact

DOCUMENT 006101
LABOR AND MATERIAL PAYMENT BOND

Parties

Principal: _____ (Name)
_____ (Address)
_____
_____ (Telephone)

Surety: _____ (Name)
_____ (Address)
_____
_____ (Telephone)

Obligee: The Port of Portland
7200 N.E. Airport Way
P.O. Box 3529
Portland, Oregon 97208

Agreement

Principal has entered into a contract ("Contract") with Obligee for the following project:

_____
_____. By this reference, the Contract is made a part of this bond.

Subject to the provisions of this bond, Principal and Surety, and their respective heirs, executors, administrators, successors, and assigns, are jointly and severally held and firmly bound unto Obligee, for the use and benefit of claimants as defined below, in an amount equal to the total amount of the Contract, or to the guaranteed maximum price if the Contract is a guaranteed maximum price contract. The foregoing obligation shall be void if Principal promptly pays all claimants for all labor and material supplied for the prosecution of the work provided for in the Contract, including but not limited to warranty and maintenance work required under the Contract.

For the purposes of this bond, a claimant is any person who has a right of action against a payment bond under ORS 279C.600 to 279C.625.

Surety waives any right it may have to notice of changes in the Contract agreed to by Principal and Obligee, including but not limited to changes that increase the total amount of the Contract, or the guaranteed maximum price if the Contract is a guaranteed maximum price contract.

Signed and sealed this _____day of _____, 20____.

PRINCIPAL	**SURETY**
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Attorney in Fact

DOCUMENT 007200
GENERAL CONDITIONS

TABLE OF CONTENTS

Title	Page Number
DEFINITIONS	1
ARTICLE 1 – TERMINOLOGY	3
ARTICLE 2 – PRELIMINARY MATTERS	3
Port Representative	3
Contractor's Representative	3
Communications	3
Copies of Project Manual and Drawings	4
Commencement of Contract Time	4
Starting the Work	4
Before Starting Construction	4
ARTICLE 3 – CONTRACT DOCUMENTS	5
Intent	5
Reference Standards	6
Reporting Discrepancies	6
Reuse	6
Electronic Documents	6
ARTICLE 4 – AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; SURVEY CONTROL	6
Availability of Lands	6
Physical Conditions – Investigations, Reports, and Tests	7
Differing Site Conditions	7
Survey Control	7
ARTICLE 5 – BONDS AND INSURANCE	7
Bonds	7
Workers' Compensation	7
Liability Insurance	8
Builder's Risk Insurance	8
ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES	9
Administration and Supervision	9
Labor and Material	9
"Pre-Bid Approved Equals," "Equals," and Substitutes	10
Concerning Subcontractors	12
Patent Fees and Royalties	12
Permits	12
Laws and Regulations	13
Environmental Responsibilities	16
Taxes	17
Use of Premises	17
Safety and Protection	18
Emergencies	18
Submittals (Shop Drawings, Product Data, Maintenance Data, and Samples)	18
Access to the Work	19
Prosecution of the Work	20
Port's Right to Do the Work	20
Indemnification	20
Prevailing Wage Rates	20
Labor Relations	21

Records and Audits 21
ARTICLE 7 – WORK BY OTHERS 22
ARTICLE 8 – PORT'S STATUS DURING CONSTRUCTION 22
Construction Contract Manager 22
Clarifications and Interpretations 23
Rejection of Defective Work 23
Port Inspectors 23
Limitations on the Port's Responsibilities 23
ARTICLE 9 – CHANGE IN THE WORK 24
ARTICLE 10 – CHANGE OF CONTRACT PRICE 25
Contract Price Adjustment Methods 25
Fixed Price Method 25
Unit Price Method 27
Force Account Method 27
Cost Changes to Bonds and Insurance 30
Rental Rate Blue Book 30
Lump-Sum Breakdown 30
Deleted Work 31
ARTICLE 11 – CHANGE OF CONTRACT TIME 31
ARTICLE 12 – WARRANTY; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK 32
Tests and Inspections 32
Uncovering Work 32
Warranty 33
Correction or Removal of Defective Work 33
Port May Correct Defective Work 33
ARTICLE 13 – PAYMENTS TO THE CONTRACTOR AND COMPLETION 34
Before Request for Progress Payment 34
Request for Progress Payment 34
Retainage 35
Review of Request for Progress Payment 35
Substantial Completion 35
Partial Utilization 36
Final Inspection and Final Acceptance 36
Final Payment 36
Contractor's Continuing Obligation 36
Contractor's Warranty of Title 37
Waiver of Claims 37
Liquidated Damages 37
Other Damages 37
ARTICLE 14 – SUSPENSION OR TERMINATION OF THE WORK 38
Port May Suspend the Work 38
Port May Terminate the Work 38
Port May Terminate the Work for Convenience 39
ARTICLE 15 – DISPUTE RESOLUTION 39
ARTICLE 16 – MISCELLANEOUS 40
Giving Notice 40
Computation of Time 40
Liability Claims 40
Rights and Remedies 41
Commencement of Limitations Period 41

PROJECT-RELATED FORMS AND APPLICATIONS ..... Following General Conditions

DEFINITIONS

For the purposes of this Contract, terms are defined in the Agreement and in this article, and may be defined in the Specifications or Drawings. Terms used in a defined sense normally are capitalized; terms used in a general or undefined sense normally are not capitalized. Unless the context clearly requires otherwise, or the term is expressly defined otherwise for a particular purpose, the following definitions apply throughout this Contract.

Act of God - Any misadventure or casualty caused by the direct, immediate, and exclusive operation of the forces of nature, uncontrolled and uninfluenced by the power of man and without human intervention, which could not have been prevented or escaped by any amount of foresight or prudence, by any reasonable degree of care, or by the aid of any appliances reasonably required under the circumstances. A meteorological event, including but not limited to, cold, heat, rain, snow, wind, flood, or lightning, shall be rebuttably presumed not to be an Act of God if it falls within two standard deviations of the mean of records for that event maintained by the U.S. Weather Bureau for the Portland International Airport at Portland, Oregon.

Addenda - Written or graphic instruments issued prior to bid opening which clarify, correct, or change the bidding documents or this Contract.

Agreement - The written document signed by the parties and incorporating other documents.

Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the price(s) for the Work to be performed.

Change Order - A written amendment to this Contract which authorizes an addition, deletion, or revision to the Work described in this Contract, and which may authorize an adjustment in the Contract Price, the Contract Time, or both.

Construction Contract Manager - An individual authorized in writing by the Port to represent the Port with respect to this Contract within the scope of the authority conferred by the written authorization.

Contract - The entire written agreement between the Port and the Contractor establishing their respective rights and obligations concerning the Work.

Contract Documents - The Contract Documents include all documents that make up this Contract, including but not limited to the Contractor's signed Bid; the Agreement; bonds; these General Conditions; the Supplementary Conditions; wage rates; the Specifications; the Drawings; the Notice to Proceed; Addenda; and Change Orders.

Contract Price - The total compensation payable to the Contractor for performing the Work as stated in this Contract and as modified by Change Order.

Contract Time - The number of days between the Work Start Date established by the Notice to Proceed and the date by which Substantial Completion of all work must be achieved under this Contract.

Contractor's Representative - An individual authorized in writing by the Contractor to represent the Contractor with respect to this Contract.

Day or Calendar Day - Any 24-hour period beginning at midnight.

Day, Business - Any Calendar Day other than Saturday, Sunday, or a holiday on which the Port's administrative offices are closed.

Defective - (1) Unsatisfactory, faulty, or deficient, (2) not conforming to this Contract, or (3) not meeting the requirements of any inspection, test, or approval required by this Contract or federal, state, or local law.

Drawings or Plans - The graphic representations which show the character and scope of the Work to be performed, which have been prepared or approved by the Port, and which are expressly incorporated into this Contract.

Final Acceptance - The Port's written acknowledgment that the Work has been fully completed and all Contract-required documentation has been received and accepted.

He, Him, His - Used solely for legibility and ease of writing and applies equally to both genders.

Law – Any statute, rule, regulation, ordinance, or order of any federal, state, or local government including, but not limited to, ordinances and resolutions adopted by the Board of Commissioners of the Port of Portland, and rules and regulations adopted in accordance with those ordinances and resolutions.

Maintenance Data – Manufacturer's catalog information, shop drawings, installation, operation, and maintenance manuals, and other information needed for operating, troubleshooting, preventive maintenance, repair, restoration, or overhaul of materials, products, systems, and equipment furnished or provided by the Contractor.

Notice to Proceed - A written notice given by the Port to the Contractor fixing the Contract Time and designating a date on which the Contractor is authorized to begin the Work.

Owner - The Port of Portland.

Product Data - Pictures, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

Samples - Physical examples of material, equipment, or workmanship which demonstrate and establish standards by which the Work will be judged.

Shop Drawings - Diagrams, drawings, illustrations, instructions, and other data submitted by the Contractor to illustrate some portion of the Work.

Specifications - Those portions of this Contract consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual or firm having a direct contract with the Contractor or with any other Subcontractor at any tier for the performance of a part of the Work.

Substantial Completion - Completion of the Work, or a part of the Work designated by the Port, in accordance with this Contract, to the point where it may be utilized for the purpose for which it was intended.

Work - The labor, material, equipment, and services required by this Contract.

Work Start Date - The day stated in the Notice to Proceed when the Contract Time will begin to run in accordance with this Contract.

ARTICLE 1 – TERMINOLOGY

1.1 Unless stated otherwise in this Contract, words or phrases which have a well-known technical, construction industry, or trade meaning are used in accordance with such recognized meaning.

1.2 Unless stated otherwise in this Contract, all specifications are directed to the Contractor. This includes statements which have no grammatical subject, as in "Install equipment plumb and level."

1.3 In the interest of brevity, this Contract frequently omits modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.4 The following terms are used in this Contract: as allowed, as directed, as ordered, as required, acceptable, proper, reasonable, satisfactory, suitable. These items and any others of like effect or import describe direction, judgment, requirement, or review of the Port. Such use is solely to evaluate the Work for compliance with this Contract unless there is a specific statement otherwise. The use of such terms never indicates the Port has authority to supervise or direct performance of the Work.

1.5 The words, "Furnish," "Install," "Perform," and "Provide" shall have the following meanings for the purposes of this Contract. When such verbs are not used in connection with services, materials, or equipment in a context clearly requiring an obligation on the part of the Contractor, "provide" is implied.

A. Furnish shall mean to supply and deliver services, materials, or equipment to the Work site (or other specified location) ready for use or installation and in usable or operable condition.

B. Install shall mean to put into use or place in final position services, materials, or equipment complete and ready for intended use.

C. Perform or provide shall mean to furnish and install services, materials, or equipment complete and ready for intended use.

ARTICLE 2 – PRELIMINARY MATTERS

Port Representative

2.1 The Port's Chief Engineer is authorized to represent the Port with respect to this Contract, provided that his authority to amend this Contract is limited to the amount set by Port policy. The Chief Engineer will appoint a Construction Contract Manager in writing to exercise all or part of his authority.

Contractor's Representative

2.2 The Contractor shall authorize the Contractor's Representative to receive communications from the Port and to sign the Contractor's communications to the Port. The Contractor's Representative shall not be replaced without written notice to the Port except under extraordinary circumstances.

Communications

2.3 In addition to the communication between the Port's Representative and the Contractor's Representative noted above, frequent informal communication will take place between Port and Contractor employees to facilitate the Work. These communications may include Contract enforcement and interpretation. If any communication from the Port appears that it will result in a change in Contract Time or Contract Price, the Contractor shall request that the issue be presented in writing.

Copies of Project Manual and Drawings

2.4 The Port will furnish to the Contractor up to six copies of the project manual and Drawings for execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time

2.5 The Contract Time will commence to run on the Work Start Date stated in the Notice to Proceed. Unless provided otherwise by the Agreement, the Work Start Date may be any date within 45 days after the Port delivers the executed Contract to the Contractor.

Starting the Work

2.6 The Contractor may start to perform the Work on the Work Start Date stated in the Notice to Proceed.

Before Starting Construction

2.7 Generally, a preconstruction meeting to establish a working understanding among the parties will be held before the Contractor begins the Work. Procedures will be established for operations coordination and administrative communication for matters such as submittals, clarifications and interpretations, and Change Orders; and for processing applications for payment. At this meeting, the Contractor shall submit to the Port for review a preliminary work progress schedule, a preliminary submittal schedule, a preliminary cash flow schedule, and the contractor safety information form.

A. The preliminary work progress schedule shall be finalized and submitted to the Port one week after the preconstruction meeting. Unless specified otherwise, the work progress schedule shall indicate the Contractor's planned progress in increments of not more than 7-day periods. The schedule will be subject to review and comment by the Port. The Contractor shall prepare and submit revisions to match actual and projected progress as requested by the Port, before and during the course of the work, at no added cost to the Port. The Contractor shall adhere to the most recent version of the schedule.

B. The preliminary submittal schedule shall be finalized and submitted to the Port one week after the preconstruction meeting. The submittal schedule shall demonstrate that submittals will be submitted in time to allow the Port's review and comment and the Contractor's submission of revised submittals before the Work covered by the submittals is scheduled to start under the work progress schedule.

C. The preliminary cash flow schedule shall be finalized and submitted to the Port one week after the preconstruction meeting. The schedule shall show the estimated dollar amount of each of the Contractor's monthly requests for progress payment and will be used by the Port for financial planning purposes. Payments to the Contractor are not restricted by the amounts given in the cash flow schedule. However, revised work progress and cash flow schedules will be required if amounts paid as monthly progress payments differ greatly from the amounts estimated.

D. Prior to commencement of work, the Contractor shall submit the contractor safety information form for safety planning purposes. The Port expects that the Contractor will abide by all Oregon OSHA requirements and the Contract Documents to provide for the safety of the Contractor's employees, Port employees, tenants, and the general public. Work performed by Subcontractors shall be on the form. The Contractor shall also include applicable company policies, procedures, or plans. Material safety data sheets (MSDS) for

chemical products introduced to Port premises shall not be submitted with this information, but shall accompany the Contractor on site and be available to the Port upon request.

2.8 In the case of a lump-sum agreement or lump-sum bid items, the Contractor shall, no later than one week after receipt of the Notice to Proceed, submit to the Port a detailed breakdown of the amount of each item used in the compilation of the bid. The breakdown format shall be sufficiently detailed to meet the approval of the Port, and to serve as the basis for progress payment requests. The detailed breakdown may be used in the compilation of Change Order prices when such breakdown is determined by the Port to be applicable and consistent with accepted construction practice.

2.9 The Contractor shall, no later than one week after receipt of the Notice to Proceed, submit to the Port a breakdown of the payroll rates for each trade. The Port may use this breakdown when evaluating Contract Price adjustments. The breakdown shall include the base rate, benefits, payroll taxes, and insurance.

2.10 Before undertaking each part of the Work, the Contractor shall carefully study and compare this Contract and check and verify pertinent figures shown therein and all applicable field measurements. The Contractor shall promptly report in writing to the Port any conflict, error, or discrepancy that the Contractor may discover.

ARTICLE 3 – CONTRACT DOCUMENTS

Intent

3.1 This Contract is complementary; what is called for by one element is as binding as if called for by all.

3.2 It is the intent of this Contract to describe the complete Work. Any labor, material, equipment, or service that may be reasonably inferred from this Contract as being required to produce the intended result shall be supplied whether or not it is expressly specified.

3.3 Where provisions of the General Conditions relate in general to the work of the Contractor and Subcontractors as administrative requirements, procedural requirements, or temporary facilities, those provisions may be amplified in other areas of the project manual. Unless expressly provided otherwise, specific requirements in other areas of the project manual take precedence over less rigorous requirements in the General Conditions.

3.4 Clarifications and interpretations of this Contract will be issued by the Port. They will be consistent with or reasonably inferable from the overall scope of this Contract.

3.5 This Contract is unique. Labor, material, equipment, or services approved for other Port work may not necessarily be approved for this Contract.

3.6 Pursuant to ORS 81.105, Oregon law applies to this Contract. In the event ORS 81.105 is deemed invalid or inapplicable, the parties agree that Oregon law applies to this Contract.

3.7 All provisions of this Contract are separable and independent of the others. If any provision of this Contract, including but not limited to any provision of a document incorporated by reference, is declared invalid for any reason, the remainder of this Contract shall remain valid and in full force and effect.

Reference Standards

3.8 Unless expressly provided otherwise, references to standard specifications, manuals, or codes of any technical society, organization, or association, or to the codes of any governmental authorities, shall mean the latest version or edition in effect on the effective date of this Contract. Such reference may be specific or implied. No provision of any referenced standard specification, manual, or code shall change the duties and responsibilities of the Port, the Contractor, or any of their employees, contractors, subcontractors, or agents from those set forth in this Contract.

Reporting Discrepancies

3.9 If, during the performance of the Work, the Contractor discovers any conflict, error, ambiguity, or discrepancy within this Contract, the Contractor shall report it to the Port, in writing, at once. The Contractor shall proceed with the affected Work after receiving clarification or interpretation from the Port. The Contractor shall not be liable to the Port for failure to report any conflict, error, ambiguity, or discrepancy in this Contract unless the Contractor factually knew or reasonably should have known of the conflict, error, ambiguity, or discrepancy.

Reuse

3.10 Neither the Contractor nor any Subcontractor, manufacturer, fabricator, supplier, or distributor shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents, or copies thereof, prepared by or for the Port. They shall not reuse any of them for any purpose unrelated to this Contract without the prior written consent of the Port and of any other person with an intellectual property interest in the documents.

Electronic Documents

3.11 Because electronic documents are subject to data erosion, erasure, and alteration, the Port makes no warranties or representations regarding the integrity or completeness of any electronic document it provides. Because computer software may become obsolete with time, the Port makes no warranties or representations regarding the ability to access electronic documents it provides. The Port makes no warranties or representations regarding the presence or absence of computer viruses in electronic documents it provides; any person using an electronic document provided by the Port should have the document and supporting medium (e.g. disk, CD, or tape) checked for computer viruses before using it in a manner that might allow the spread of a computer virus. All or parts of electronic documents provided by the Port may be copyrighted, and those using them are responsible for determining the existence of copyrights and for obtaining permission to copy copyrighted material. Those using electronic documents provided by the Port do so at their own risk.

ARTICLE 4 – AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; SURVEY CONTROL

Availability of Lands

4.1 The Port will provide access to: (1) lands upon which the Work shall be performed, (2) rights-of-way for access thereto, and (3) such other lands designated in this Contract for the use of the Contractor. Any easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the Port, unless otherwise provided in this Contract. The Contractor shall provide, at no additional cost to the Port, additional lands and access that the Contractor may require for temporary construction facilities or storage of material and equipment.

Physical Conditions – Investigations, Reports, and Tests

4.2 Investigations, reports, or tests which the Port may make available to the Contractor are the Port's best known information at the time the Work is designed. However, the Port makes no warranty or representation regarding accuracy or completeness unless the investigations, reports, or tests have been made a part of this Contract.

Differing Site Conditions

4.3 The Contractor shall promptly notify the Port in writing of any conditions at the site differing materially from those shown in this Contract. The Port will promptly review those differing conditions and advise the Contractor in writing if further investigation or tests are necessary. The Port will obtain any necessary additional investigations and tests. If the conditions differ materially from those shown in this Contract or from what reasonably could have been anticipated by the Contractor, this Contract may be amended to allow additional compensation, time, or both as reasonably necessary to accommodate the differing conditions.

Survey Control

4.4 The Port will provide engineering surveys and establish those survey control points necessary for the Contractor to lay out the Work. The Contractor shall: (1) lay out the Work, unless otherwise specified in this Contract, (2) protect and preserve the established survey control points, and (3) make no change or relocation of the survey control points without the prior written approval of the Port. The Contractor shall report to the Port whenever any survey control point is lost, destroyed, or requires relocation. At no additional cost to the Port, the Contractor shall be responsible for the accurate replacement or relocation of survey control points lost or destroyed without Port approval. Such replacement shall be by a professional land surveyor licensed by the State of Oregon.

ARTICLE 5 – BONDS AND INSURANCE

Bonds

5.1 The Contractor shall furnish a performance bond, and a labor and material payment bond, each in an amount equal to the Contract Price, as security for the faithful performance of, and payment of, all the Contractor's obligations under this Contract. The bonds shall remain in effect until at least one year after the date of Final Acceptance, except as otherwise provided by Law. The performance bond, and labor and material payment bond shall be on the forms prescribed by the bidding and contract requirements and executed by sureties: (1) licensed to conduct business in the State of Oregon, and (2) named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All bonds signed by an agent shall be accompanied by a power of attorney or other evidence of the agent's authority to act on behalf of the surety.

5.2 The Contractor shall substitute another bond and surety meeting the requirements of Item 5.1 within 5 days after the surety on any bond furnished by the Contractor: (1) is declared bankrupt, (2) becomes insolvent, (3) has its right to do business terminated in any state where any part of the Work is located, or (4) ceases to meet the requirements of Item 5.1.

Workers' Compensation

5.3 The Contractor shall maintain workers' compensation and employer's liability insurance for all employees subject to the workers' compensation laws of the State of Oregon, unless exempt, and any other appropriate jurisdiction. The amount of employer's liability insurance shall not be less

than $1,000,000 per accident, and $1,000,000 per employee for disease. In lieu of such insurance, the Contractor may maintain a self-insurance program approved by the State of Oregon and a policy of excess workers' compensation insurance in the amount required by the State, which policy includes coverage for employer's liability. The Contractor shall provide evidence of such insurance and self-insurance to the Port before commencing Work and throughout the term of this Contract.

Liability Insurance

5.4 The Contractor shall maintain the following liability coverages in an amount not less than $1,000,000 per occurrence. The Port shall be given not less than 30 days' written notice prior to cancellation, non-renewal, or material change of the policy. This insurance shall provide primary coverage and shall not seek any contribution from any insurance or self-insurance carried by the Port. One copy of each policy and a certificate(s) of such insurance, including an additional insured endorsement, shall be delivered to the Port before commencing Work and shall be subject to review and approval by the Port. The Port may defer delivery of the copy of the policy, but such deferral shall not be a waiver of the Port's right to a copy of the policy. In the event the Contractor fails to maintain such insurance, the Port may, without incurring liability to the Contractor for any related costs: (1) immediately suspend the Work until the required insurance is obtained, without any increase in the Contract Price or any extension of the Contract Time, directly or indirectly attributable to the suspension; and/or (2) terminate this Contract as provided for in Item 14.4.

A. The Contractor shall maintain commercial general liability insurance to protect against liability for bodily injury and property damage which may arise out of the Contractor's operations under this Contract. Such insurance shall include coverage for products-completed operations liability, independent contractors, contractual liability (including the tort liability of another assumed under a business contract), and all other standard coverages usually afforded by a commercial general liability policy. Such insurance shall name the Port and its commissioners, employees, and agents as additional insureds, and shall insure the Contractor's obligations under this Contract to indemnify and hold harmless the Port, its commissioners, employees, and agents, provided that the Contractor's insurer shall not be required to indemnify the Port for damages arising out of the death or bodily injury to persons or damage to property caused in whole or in part by the negligence of the Port.

B. The Contractor shall maintain business automobile liability insurance to protect against liability arising from the use, loading, and unloading of all of the Contractor's owned, hired, and non-owned automobiles in connection with this Contract. Such insurance shall cover the Port as an additional insured, provided that the Contractor's insurer shall not be required to indemnify the Port for damages arising out of the death or bodily injury to persons or damage to property caused in whole or in part by the negligence of the Port.

Builder's Risk Insurance

5.5 The Contractor shall obtain and maintain for the benefit of the parties to this Contract, as their interest may appear, all risk builder's risk insurance to the extent of 100 percent of the value of the Work. Coverage shall also include: (1) formwork in place, (2) form lumber and form components on site, (3) temporary structures, (4) equipment, and (5) supplies related to the Work. Such insurance shall be endorsed to allow partial occupancy and/or utilization of the Work by the Port prior to Substantial Completion of all the Work. Coverage shall continue until the Port's Final Acceptance of the Work. The Port shall be named as additional insured and loss payee as its interests may appear. The Port shall be given not less than 30 days' written notice prior to cancellation, non-renewal, or material change of the policy. One copy of the policy and one certificate of such insurance shall be delivered to the Port before commencing Work and shall be

subject to review and approval by the Port. The Port may defer delivery of the copy of the policy, but such deferral shall not be a waiver of the Port's right to a copy of the policy. In the event the Contractor fails to maintain such insurance, the Port may, at the Port's sole option, arrange therefor; and any administrative costs and premium incurred shall be reimbursed by the Contractor.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

Administration and Supervision

6.1 The Contractor shall supervise and direct the Work competently and efficiently, applying the skills and expertise as may be necessary to perform the Work in accordance with this Contract. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor shall be responsible for seeing that the finished Work complies accurately with this Contract.

6.2 The Contractor shall provide a competent project superintendent at the site at all times during work progress. The superintendent shall be responsible for oversight of the work being performed by the Contractor and his Subcontractors. The project superintendent shall not be replaced without written notice to the Port.

6.3 If the Contractor's Representative is not available for project administration, the superintendent shall have the authority to receive direction from the Port on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. This authority shall include, but not be limited to, receipt of Port-issued documentation, taking action on Port direction not involving changes to this Contract, taking direct action in emergency situations, and implementing stop work orders issued by the Port.

Labor and Material

6.4 The Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work, and to perform construction as required by this Contract. The Contractor shall at all times maintain good discipline and order at the site.

6.5 The Contractor shall give not less than 24 hours' notice to the Port if work is to be performed outside normal day-shift hours or on Saturday, Sunday or any legal holiday. Emergency conditions relating to safety or protection of persons or property are valid exceptions to such notice. Specific work hour restrictions may be described in the Supplementary Conditions or Division 1.

6.6 Unless otherwise specified, the Contractor shall furnish for the execution, required testing, initial operation, and completion of the Work all necessary material, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, and all other facilities and incidentals.

6.7 All material incorporated into the Work shall be new, except as otherwise provided in this Contract. Products containing asbestos or other hazardous material, as defined by ORS 466.605, shall be used only with the Port's prior written approval. If required by the Port, the Contractor shall furnish satisfactory evidence that the kind and quality of material and equipment provided meet Contract requirements. Satisfactory evidence may include test reports.

6.8 The Contractor shall obtain documentation from distributors, fabricators, manufacturers, and suppliers that provide instructions for the application, cleaning, connection, erection, installation, and use of their products. The Contractor shall follow these instructions unless more stringent requirements are provided in this Contract.

6.9 All material provided and normally tested and labeled by an approved testing laboratory, such as Underwriters Laboratories (UL), Canadian Standards Association (CSA), or by a similarly recognized third-party approval authority, shall be so labeled.

"Pre-Bid Approved Equals," "Equals," and Substitutes

6.10 Whenever an item of material or equipment is specified or described in this Contract by using the name of a proprietary item or the name of a particular supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description indicates that no substitution is permitted, other items of material or equipment, or material or equipment of other suppliers, may be submitted to the Port for evaluation under the circumstances described below:

A. "Pre-Bid Approved Equal" Items: Requests for evaluation of "pre-bid approved equal" material, products, or services shall be made prior to submittal of the Bid, in accordance with the Instructions to Bidders.

B. "Equal" Items: If in the Port's sole discretion an item of material or equipment proposed by the Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by the Port as an "equal" item, in which case evaluation and approval of the proposed item may, in the Port's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. Proprietary materials, products, or services that are specified but not followed by the words "or pre-bid approved equal," "or equal," or "no substitution" will be evaluated as if they were followed by the words "or equal." For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

1. It is at least equal in quality, durability, maintainability, appearance, strength, and design characteristics;

2. It will reliably perform at least equally well the function imposed by the design concept of the completed Work as a functioning whole, and;

3. The Contractor certifies that there is no increase in cost to the Port; and that it will conform substantially, even with deviations, to the detailed requirements of the item named in this Contract.

C. Substitute Items:

1. If an item of material or equipment proposed by the Contractor does not qualify as an "equal" item as defined above, it will be considered a proposed substitute item. This determination will be at the Port's sole discretion.

2. The Contractor shall submit sufficient information, as provided below, to allow the Port to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The Port will not accept requests for evaluation of proposed substitute items of material or equipment from anyone other than the Contractor. The Contractor shall make the request as a submittal.

3. The application shall certify that the proposed substitute item will adequately perform the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified.

4. The application shall state the extent, if any, to which the use of the proposed substitute item will prejudice the Contractor's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in this Contract (or in the provisions of any other affected contract with the Port for work) to adapt the design to the proposed substitute item, and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

5. The application shall identify any variations of the proposed substitute item from that specified, and shall identify available engineering, sales, maintenance, repair, and replacement services.

6. The application shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by the Port in evaluating the proposed substitute item.

7. The Port may require the Contractor to furnish additional data beyond that listed above about the proposed substitute item.

8. The Port may require the Contractor to furnish, at the Contractor's expense, a special performance guarantee or other surety with respect to any substitute.

9. No increase in the Contract Price or extension of the Contract Time will be considered when a substitution is not accepted.

D. No Substitution:

1. Materials, products, or services marked "no substitution" have been determined to be 1) manufactured from a single source only or 2) required for the efficient utilization of existing equipment or systems. Requests for substitution will not be considered for these items. Justifications for classifying these products as "no substitution" are on file as brand name exemption items in the Port's Contracts and Procurement Office.

6.11 Contractor Application for Evaluation: The application for evaluation of "equal" or substitute items shall be made using the forms provided by the Port. These forms may be copied.

6.12 Port's Evaluation: Within 10 days, the Port will evaluate each application for "equal" and substitute items. The Port will be the sole judge of acceptability. No "equal" or substitute item shall be ordered, installed, or utilized until the Port's evaluation is complete, which will be evidenced by either a Change Order for a substitute or an approved submittal for an "equal." The Port will advise the Contractor in writing of any negative determination.

6.13 Substitute Construction Methods or Procedures (Value Engineering): If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in, and expressly required by, this Contract, the Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by the Port. The Contractor shall submit sufficient information to allow the Port, in the Port's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by this Contract. The procedure for evaluation by the Port will be similar to that provided for substitute items. The Port will record time required by the Port and the Port's consultants in evaluating the substitute proposed by the Contractor and in making changes to this Contract (or in the provisions of any other affected contract with the Port for work). If the cost of the Work is reduced by the acceptance of any substitute item, after subtracting the reimbursement cost for Port evaluation, the Port agrees to pay 50 percent of the savings to the Contractor via a Change Order. The Port is not obligated to

review proposals for substitute construction methods or procedures if the evaluation of such substitution appears more costly than the savings, or if such substitution otherwise appears not to be in the Port's best interests.

Concerning Subcontractors

6.14 All subcontracts shall be subject to the provisions of this Contract insofar as applicable.

6.15 Subcontractors and suppliers shall be subject to disapproval of the Port. If the Port has reasonable objection to any of these, the Contractor shall submit an acceptable substitute. The Contractor will not be required to employ anyone against whom he has reasonable objection.

6.16 The Contractor is responsible for: (1) all acts and omissions of his Subcontractors, (2) persons and organizations directly or indirectly employed by his Subcontractors, (3) persons and organizations for whose acts any of his Subcontractors may be liable, and (4) scheduling and coordinating the work of Subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with the Contractor. Nothing in this Contract shall create any contractual relationship between the Port and any Subcontractor or other person or organization having a direct contract with the Contractor. Nothing in this Contract shall create any obligation on the part of the Port to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by Law. The Port may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to the Contractor on account of specific Work completed.

6.17 The divisions and sections of the Specifications and the identifications of any Drawings shall not control the Contractor in dividing the Work among Subcontractors or delineating the work to be performed by any specific trade.

Patent Fees and Royalties

6.18 If any design, device, material, or process covered by letters patent or copyright is used by the Contractor or is provided for the Port's use, the Contractor shall: (1) provide for such use by agreement with the owner of the patent or copyright or a duly authorized licensee of such owner, and (2) defend, indemnify, and hold the Port harmless from all losses and expenses, including, without limitation, legal fees arising from the use of the patented or copyrighted design, device, material, or process.

Permits

6.19 Port-Designed Work

A. The Port will submit to federal, state, and local units of government all calculations and other documentation required for review and checking for purposes of obtaining permits.

B. The Port will obtain, and pay the costs and charges of, general project permits such as building, fill, environmental, and land use.

C. The Contractor shall obtain and pay all costs and charges imposed for permits customarily issued only to a contractor, such as electrical, mechanical, and plumbing.

D. The Contractor shall give all notices necessary for permit-related inspections by third parties.

E. The Contractor shall submit to the Port a legible copy of permits, certificates of approval, and certificates of occupancy issued by the responsible unit of government.

6.20 Contractor-Designed Work

A. The Contractor shall submit to the Port, for review, all calculations and other documentation required for purposes of obtaining permits for Contractor-designed work.

B. After Port review, the Contractor shall submit to federal, state, and local units of government all calculations and other documentation required for obtaining permits. During review by units of government, the Contractor shall notify the Port of proposed deviations from the original permit documentation.

C. The Contractor shall submit to the Port all calculations and other documentation approved by units of government.

D. The Contractor shall pay costs and charges imposed by local units of government for permits issued to the Contractor.

E. The Contractor shall give all notices necessary for permit-related inspections by third parties.

F. The Contractor shall submit to the Port a legible copy of permits, certificates of approval, and certificates of occupancy issued by the responsible unit of government.

Laws and Regulations

6.21 The Contractor shall comply, and shall ensure that his employees and those of his Subcontractors and suppliers at every tier comply, with the most current versions of applicable Laws, rules, regulations, and practices.

6.22 If the Contractor performs any Work knowing or having reason to know that it is contrary to any Law, the Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to the Contractor's performance or the resulting Work. The Contractor shall immediately report to the Port if performance under this Contract would violate any Law in any respect.

6.23 The Contractor shall adhere to the following specific provisions of the Public Contracting Code.

A. The Contractor shall:

1. Make payment promptly, as due, to all persons supplying the Contractor labor or material for the performance of the work provided for in this Contract.

2. Pay all contributions or amounts due the Industrial Accident Fund from the Contractor or any Subcontractor incurred in the performance of this Contract.

3. Not permit any lien or claim to be filed or prosecuted against the Port on account of any labor or material furnished.

4. Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

5. Demonstrate that an employee drug testing program is in place.

B. If this is a public contract for demolition, the Contractor shall salvage or recycle construction and demolition debris, if feasible and cost-effective.

C. If this is a public contract for lawn and landscape maintenance, the Contractor shall compost or mulch yard waste material at an approved site, if feasible and cost-effective.

D. If the Contractor fails, neglects, or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with this Contract as such claim becomes due, the proper officer or officers representing the Port may pay such claim to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due the Contractor by reason of this Contract.

E. If the Contractor or a first-tier Subcontractor fails, neglects, or refuses to make payment to a person furnishing labor or material in connection with this Contract within 30 days after receipt of payment from the Port or the Contractor, the Contractor or first-tier Subcontractor shall owe the person the amount due plus interest charges commencing at the end of the 10-day period that payment is due under ORS 279C.580(4) and ending upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580(5). The rate of interest charged to the Contractor or first-tier Subcontractor on the amount due shall equal three times the discount rate on 90-day commercial paper in effect at the Federal Reserve Bank in the Federal Reserve district that includes Oregon on the date that is 30 days after the date when payment was received from the Port or from the Contractor, but the rate of interest shall not exceed 30 percent. The amount of interest may not be waived.

F. If the Contractor or a Subcontractor fails, neglects, or refuses to make payment to a person furnishing labor or material in connection with this Contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580(5).

G. No person shall be employed for more than ten hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or where the public policy absolutely requires it, and in such cases the employee shall be paid at least time and a half pay:

1. For all overtime in excess of eight hours a day or 40 hours in any one week when the work week is five consecutive days, Monday through Friday; or

2. For all overtime in excess of ten hours a day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday; and

3. For work performed on Saturday, Sunday, New Year's Day on January 1, Memorial Day on the last Monday in May, Independence Day on July 4, Labor Day on the first Monday in September, Thanksgiving Day on the fourth Thursday in November, or Christmas Day on December 25, or, if one of those named holidays falls on a Sunday, on the following Monday or, if it falls on a Saturday, on the preceding Friday.

4. The Contractor shall ensure that each employer of employees working on this Contract gives those employees the written notice required by ORS 279C.520(2) and 279C.520(5)(b), either at the time of hire or before commencement of work on this Contract, or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that the employees may be required to work.

5. The requirements of this section are subject to the exceptions established by ORS 279C.540 including, but not limited to, the exception when the Contractor is a party to a collective bargaining agreement in effect with any labor organization.

6. When specifically agreed to under a written labor-management negotiated labor agreement, an employee may be paid at least time and a half for work performed on Martin Luther King, Jr.'s birthday on the third Monday in January, Veterans Day on November 11, and every day appointed by the Governor as a holiday.

H. The Contractor shall promptly, as due, make payment to any person, copartnership, association, or corporation furnishing medical, surgical and hospital care or other needed care and attention, incident to sickness or injury, to the employees of the Contractor, of all sums which the Contractor agrees to pay for such services and all moneys and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract, or agreement for the purpose of providing or paying for such service.

I. The Contractor shall comply with the terms of the workers' compensation laws of the State of Oregon, unless exempt, and any other applicable jurisdiction. All subject employers performing work under this Contract are either employers that will comply with ORS 656.017 or employers that are exempt under ORS 656.126.

J. The Contractor shall comply with the following requirements (and, if applicable, prompt payment provisions stated in Document 007301, Supplementary Conditions for Federally Assisted Contracts):

1. The Contractor shall include in each subcontract for property or services entered into by the Contractor and a first-tier Subcontractor, including a material supplier, for the purpose of performing this Contract:

   a. A payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under the subcontract within 10 days out of such amounts as are paid to the Contractor by the Port under this Contract; and

   b. An interest penalty clause that obligates the Contractor, if payment is not made within 30 days after receipt of payment from the Port, to pay to the first-tier Subcontractor an interest penalty on amounts due in the case of each payment not made in accordance with the payment clause included in the subcontract pursuant to this subsection. The Contractor or first-tier Subcontractor shall not be obligated to pay an interest penalty if the only reason that the Contractor or first-tier Subcontractor did not make payment when payment was due is that the Contractor or first-tier Subcontractor had not received payment from the Port or the Contractor when payment was due. The interest penalty shall be:

      1) For the period beginning on the day after the required payment date and ending on the date on which payment of the amount due is made; and

      2) Computed at the rate specified in ORS 279C.515(2).

2. The Contractor shall include in each of his subcontracts, for the purpose of performance of this Contract condition, a provision requiring the first-tier Subcontractor to include a payment clause and an interest penalty clause conforming to the standards of this section in each of his subcontracts and to require each of his Subcontractors to include such clauses in their subcontracts with each lower-tier Subcontractor or supplier.

3. The clauses required by this section are not intended to impair the right of the Contractor or a Subcontractor at any tier to negotiate, and to include in the subcontract, provisions that:

   a. Permit the Contractor or a Subcontractor to retain, in the event of a good faith dispute, an amount not to exceed 150 percent of the amount in dispute from the amount due a Subcontractor under the subcontract without incurring any obligation to pay a late payment interest penalty, in accordance with terms and conditions agreed to by the parties to the subcontract, giving such recognition as the parties

consider appropriate to the ability of a Subcontractor to furnish a performance bond and a payment bond;

b. Permit the Contractor or a Subcontractor to make a determination that part or all of the Subcontractor's request for payment may be withheld in accordance with the subcontract agreement; and

c. Permit such withholdings without incurring any obligation to pay a late payment interest penalty if:

1) A notice conforming to the standards of ORS 279C.580(8) has been previously furnished to the Subcontractor; and

2) A copy of any notice issued by the Contractor pursuant to the foregoing subsection has been furnished to the Port.

d. As used in this subsection, "good faith dispute" means a documented dispute concerning:

1) Unsatisfactory job progress.

2) Defective work not remedied.

3) Third party claims filed or reasonable evidence that claims will be filed.

4) Failure to make timely payments for labor, equipment, and materials.

5) Damage to the Contractor or a Subcontractor.

6) Reasonable evidence that the subcontract cannot be completed for the unpaid balance of the subcontract sum.

Environmental Responsibilities

6.24 The following federal, state, and local agencies have enacted ordinances or regulations dealing with the prevention of environmental pollution and the preservation of natural resources that affect the performance of this Contract:

A. City and county where the work is to be performed

B. Metro

C. Oregon Environmental Quality Commission

D. Oregon Fish and Wildlife Commission

E. U.S. Environmental Protection Agency

F. U.S. Fish and Wildlife Service

G. National Marine Fisheries Service

6.25 Known conditions at the construction site that may require the Contractor to comply with statutes or with ordinances or regulations enacted by the agencies listed above are specifically referred to at various places in this Contract, including but not necessarily limited to Division 1 of the Specifications.

6.26 The Contractor is solely responsible for (1) considering applicable statutes and the ordinances and regulations enacted by the agencies listed above, (2) considering the known conditions specifically referred to in this Contract, and (3) ensuring that the activities of the Contractor and the Contractor's employees, Subcontractors (including suppliers), agents, and invitees with respect to those conditions do not violate any of those statutes, ordinances, or regulations. Without limiting the foregoing, the Contractor is solely responsible for the following environmental and natural resource risks associated with the performance of this Contract:

A. Air pollution;

B. Water pollution;

C. Contamination of soil, groundwater, or sediment;

D. Filling or destruction of wetlands;

E. Taking of a federally listed threatened or endangered species through habitat destruction, habitat degradation, or otherwise; and

F. Introduction of an invasive species.

6.27 In addition to the foregoing requirements, the Contractor shall manage and conduct all activities related to the performance of this Contract in accordance with all environmental Laws and regulations, and with the requirements of all permits issued under those Laws and regulations of which the Contractor has been given notice or has actual knowledge. "Environmental laws and regulations" means all federal and state statutes, all local ordinances, and all regulations adopted pursuant to those statutes and ordinances, as any of them may be amended from time to time, dealing with the prevention of environmental pollution or the preservation of natural resources, including but not limited to: the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act, the Toxic Substances Control Act, the Clean Air Act, the Clean Water Act, and Oregon Revised Statutes Chapters 465, 466, 467, 468, 468A, 468B, and 496. If the Contractor believes compliance with a requirement under this Contract or a direction given by the Port will result in violation of any environmental laws or regulations, the Contractor shall so notify the Port in writing immediately and shall not proceed pursuant to that requirement or direction until the Port directs the Contractor to proceed.

6.28 In the event of a sudden spill or discharge of hazardous material as a result of actions related to this Contract by the Contractor or the Contractor's Subcontractor or agent, the Port may take action, including contracting for control or cleanup of the spill or discharge, unless the Contractor takes immediate appropriate action. If the Port takes action pursuant to this paragraph, the Port may recover from the Contractor all reasonable cost necessarily incurred in effecting the control and cleanup of the spill or discharge. Regardless of who undertakes the cleanup or control of the spill or discharge, the methods used shall be subject to the approval of the Port.

Taxes

6.29 The Contractor shall pay or ensure payment of sales, consumer, use, and other similar taxes required of the Contractor or any Subcontractor under any Law with respect to performance under this Contract.

Use of Premises

6.30 . The Contractor shall confine equipment, the storage of material, and the operations of workers to areas permitted by this Contract. The Contractor shall not unreasonably encumber the premises with equipment or material.

6.31 During the progress of the Work, the Contractor shall keep the premises free from accumulations of waste material, rubbish and other debris resulting from the Work. At the completion of the Work, the Contractor shall leave the site clean and ready for occupancy. The Contractor shall restore to their original condition those portions of the site not designated for alteration by this Contract.

6.32 The Contractor shall not permit any part of any structure to be subjected to loads that may endanger its structural stability. The Contractor shall not subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Safety and Protection

6.33 The Contractor shall comply with all Laws applicable to the safety of persons or property. Damage, injury, or loss to property caused by the Contractor, Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor.

6.34 The Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities shall be the prevention of accidents and the maintenance and supervision of safety precautions and programs. This person shall be the Contractor's project superintendent unless otherwise designated in writing by the Contractor to the Port.

6.35 The Contractor shall erect and maintain necessary safeguards for the safety and protection of:

A. Employees on the Work and other persons whose safety may be adversely affected by performance of the Work.

B. The Work and material to be incorporated into the Work, whether in storage on or off the site. If the Contractor fails to protect the Work, the Port may, after giving notice to the Contractor, protect the Work and deduct the resulting cost from payment due the Contractor. The Port's determination of when and to what degree such protection is necessary shall be final.

C. Other property at the site including trees, shrubs, lawn, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement.

D. Adjacent property and utilities when prosecution of the Work may affect them.

6.36 The Contractor's duties and responsibilities for the safety and protection of the Work shall continue until the Contractor has completed all obligations under this Contract.

Emergencies

6.37 In the event of an emergency affecting the safety or protection of persons or the Work or property at, adjacent to, or near the site, the Contractor shall act to prevent threatened damage, injury, or loss. The Contractor may act without special instruction or authorization from the Port. The Contractor shall give the Port written notice within 24 hours of any significant change in the Work or deviation from this Contract caused by the Contractor's acts.

Submittals (Shop Drawings, Product Data, Maintenance Data, and Samples)

6.38 The Contractor shall check and verify all field measurements associated with the fit and function of supplied equipment, products, and material. He shall then submit Shop Drawings, Product Data, Maintenance Data, and Samples to the Port for review in accordance with the accepted submittal schedule, with such promptness as to cause no delay in the Work. All submittals shall be identified as the Port requires, and shall be accompanied by the Port's standard submittal form.

Submittals shall be reviewed and stamped with the approval of the Contractor prior to submittal to the Port.

A. Shop Drawings, Product Data, and Maintenance Data: Seven copies of Shop Drawings, Product Data, and Maintenance Data are required unless otherwise specified. Data shown in submittal information shall be complete with respect to quantities, dimensions, material, and specified performance and design criteria, to allow the Port to verify conformance with this Contract.

B. Samples: The Contractor shall submit to the Port for review the specified number of Samples required by this Contract. Samples shall be identified clearly as to material, manufacturer, pertinent catalog numbers, and intended use.

6.39 The Contractor shall call the Port's attention to any deviations from the requirements of this Contract that the Shop Drawings, Product Data, Maintenance Data, or Samples may have. This shall be in writing at the time of submission.

6.40 Within 10 business days of actual receipt, the Port will stamp, date, and return each submittal to the Contractor indicating the action to be taken, or notify the Contractor of the reason for delay in return. The Port's review will be only for conformance with the design concept of the Work and for general compliance with this Contract. It will not extend to means, methods, sequences, techniques, or procedures of construction; nor will it extend to safety precautions or programs related thereto, or to the assembly in which an item functions.

6.41 The Contractor shall make any corrections required by the Port and proceed according to the Port's stamp and directions. The Contractor shall return the required number of corrected copies of submittal information and resubmit new Samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Port on previous submittals.

6.42 The Contractor's stamp of approval on any submittal shall constitute a representation to the Port that the Contractor has: (1) determined and verified all quantities, dimensions, field construction criteria, material, catalog numbers, and similar data or assumes full responsibility for doing so, and (2) has reviewed and coordinated each Shop Drawing, Product Data, Maintenance Data, or Sample with the requirements of this Contract.

6.43 When submission of a Shop Drawing, Product Data, Maintenance Data, or Sample is required by this Contract, no related Work shall be commenced until the submittal has successfully completed the review process.

6.44 The Port's review of a submittal shall not relieve the Contractor from responsibility for any deviations from this Contract except those called to the Port's attention at the time of submission and accepted by the Port. Changes in the Work shall follow procedures outlined for a Change Order. Review by the Port shall not relieve the Contractor from responsibility for errors or omissions in the submittal.

6.45 Submittals that have successfully completed the review process shall become binding upon the Contractor. He shall be obligated to perform in accordance with the reviewed submittal.

Access to the Work

6.46 The Contractor shall provide reasonable and safe access to the Port and inspection authorities for observation, testing, and inspection of the Work including, but not limited to, ladders, lifts, equipment, and tie-off apparatus.

Prosecution of the Work

6.47 The Contractor shall continue performance of the Work in accordance with the work progress schedule during all claims or disputes with the Port. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Contractor and the Port may otherwise agree in writing.

Port's Right to Do the Work

6.48 If the Contractor fails to prosecute the Work properly or fails to perform any provision of this Contract, the Port, after a 3-day written notice to the Contractor, may without prejudice to any other remedy it may have, make good such failures. The Port may deduct the cost thereof from any payment due the Contractor. In cases of emergency, the Port may prosecute such Work without notice or delay and may deduct the cost thereof from any payment due the Contractor.

Indemnification

6.49 To the fullest extent allowed by law, the Contractor shall defend (using legal counsel acceptable to the Port), indemnify, reimburse, and hold harmless the Port and the Port's commissioners, employees, contractors, and agents for, from and against any and all actual or alleged claims, damages, losses, expenses, costs, fees (including, but not limited to, attorney, accountant, paralegal, expert, and escrow fees), fines, and/or penalties (collectively "Damages") which may be imposed upon, claimed against or incurred by the Port, to the extent such Damages are caused by any of the following: (a) any act, omission or negligence of the Contractor or the Contractor's partners, officers, directors, agents, employees, invitees or Subcontractors; (b) any use, occupation, management or control of Port property by the Contractor or the Contractor's employees, agents, Subcontractors, or suppliers, whether or not due to the Contractor's own act or omission and whether or not occurring on Port property; (c) any condition created on Port property by the Contractor or the Contractor's employees, agents, Subcontractors, or suppliers, and any accident, injury or damage arising from the condition; (d) any breach, violation or nonperformance of any of the Contractor's obligations under this Contract; (e) any damage caused by the Contractor or the Contractor's employees, agents, Subcontractors, or suppliers on or to Port property. Nothing in the foregoing shall be deemed to require any indemnity made void by ORS 30.140.

Prevailing Wage Rates

6.50 The Contractor shall comply with the prevailing wage rate requirements of ORS 279C.800 to 279C.870.

A. The existing prevailing rates of wage which may be paid to workers in each trade or occupation required for this Work and employed in the performance of this Work by the Contractor, a Subcontractor, or any other person doing or contracting to do all or any part of the Work, may be obtained from BOLI's web site at www.boli.state.or.us. The wage rates and amendments in effect at the time this project is advertised are the rates that shall apply for the duration of the Work.

B. Workers in each trade or occupation required for this Work and employed in the performance of this Work by the Contractor, a Subcontractor, or any other person doing or contracting to do all or any part of the Work, shall be paid not less than the minimum hourly rate of wage specified in the foregoing paragraph. The Contractor shall ensure that each subcontract includes a provision that workers shall be paid not less than the minimum hourly rate of wage specified in the foregoing paragraph.

C. The Contractor shall have a public works bond filed with the Construction Contractors Board, as provided by ORS 279C.836. In every subcontract, the Contractor shall include a provision

requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board, unless exempt, as provided by ORS 279C.836.

D. The fee that is required to be paid to the commissioner of the Bureau of Labor and Industries under ORS 279C.825(1) shall be paid under the administrative rule of the commissioner.

Labor Relations

6.51 The Contractor shall be responsible for labor relations and shall seek to resolve disputes between himself and his employees. Any labor dispute arising from this Contract that causes a disruption of the Port's operations shall be to the account of and the responsibility of the Contractor.

Records and Audits

6.52 The Contractor shall retain all financial records that pertain to this Contract for at least three years after the Port has made final payment and all other matters related to this Contract are concluded.

6.53 The Port or its designee may inspect, audit, and copy any of the Contractor's financial records retained pursuant to Item 6.52 and any other records to the extent necessary to: (1) evaluate and verify the costs incurred by the Contractor in performing the work under this Contract or the accuracy of any invoice, change order, payment, or claim submitted under this Contract by the Contractor or the Contractor's payees; or (2) evaluate any claim asserted by the Contractor against the Port.

6.54 The Contractor shall provide the Port such assistance as may be required to allow complete access to such records within 10 Business Days from the original request. The Contractor shall make the records available at any time during regular business hours after reasonable advance notice. If records are located outside the city of Portland, Oregon, and cannot be provided to a location within Portland, Oregon, the Contractor agrees to reimburse the Port for expenses incurred in sending representatives to wherever such records are maintained. Such expense reimbursement shall include transportation, lodging, food, and other out-of-pocket expenses resulting from the necessity of leaving Portland, Oregon. The Contractor shall supply a table, a chair, a standard electrical outlet, lighting, and a weatherized space of adequate size at the site of the Contractor's records to allow the inspection, auditing, and copying of records. The Contractor agrees to provide free access to copiers, fax machines, and other needed office equipment. The Port will bear the cost of copying records.

6.55 The Contractor shall allow the Port to interview the Contractor's employees, and shall cooperate with the Port in arranging interviews with the Contractor's employees and former employees, for the purposes of identifying, evaluating, verifying, or auditing the records described in these requirements.

6.56 For the purpose of these requirements, a record may be in any format whatsoever including, but not limited to, paper, photographic, or electronic format. In those situations where the Contractor's records have been generated from computerized data, the Contractor agrees to provide the Port with extracts of data files in a computer readable format on data disks, e-mail with attached files, or suitable alternative computer data exchange formats or devices.

6.57 The Contractor shall require all insurers, material suppliers, and Subcontractors at any tier to comply with these requirements.

6.58 The Contractor shall be entitled to no extra compensation for complying with these requirements.

ARTICLE 7 – WORK BY OTHERS

7.1 The Contractor shall afford utility service companies, other contractors and Port employees reasonable access to the Work. He shall allow storage of material and execution of work by others. He shall properly connect and coordinate his Work with work by others.

7.2 Notice will be given to the Contractor prior to the start of any additional work by others not noted in this Contract. If the Contractor believes that the performance of such additional work by the Port or others involves additional expense to the Contractor or requires an extension of the Contract Time, the Contractor shall notify the Port.

7.3 If any part of the Contractor's Work depends upon the work of any other contractor, utility service company, or the Port, the Contractor shall inspect and promptly report to the Port in writing any reasons that render work by others unsuitable. The Contractor's failure to report unsuitability of work by others shall constitute the Contractor's acceptance of the work by others as fit and proper for integration with the Contractor's Work. Latent or non-apparent defects and deficiencies in the work by others shall be reported to the Port in writing promptly upon discovery.

7.4 The Contractor shall do all cutting, fitting, and patching of the Work that may be required to make its parts come together properly and integrate with such other work. The Contractor shall not endanger any work by others. The Contractor shall cut or alter work by others only with the written consent of the Port and those whose work will be affected.

7.5 Unless otherwise specified, the Port shall be the final authority regarding coordination issues between the Contractor and work by others.

ARTICLE 8 – PORT'S STATUS DURING CONSTRUCTION

Construction Contract Manager

8.1 The Port's Construction Contract Manager will be the Port's representative during the construction phase of the Work.

8.2 The Construction Contract Manager will resolve any and all questions which may arise as to Contract compliance. The Contractor shall at all times carry out and fulfill the instructions and directions of the Construction Contract Manager insofar as they concern the Work to be performed under this Contract.

A. The Construction Contract Manager's authority includes, but is not limited to:

1. Determining the quantity, quality, and acceptability of material furnished and Work performed.

2. Reviewing and approving/disapproving the manner of performance and rate of progress of the Work.

3. Stopping the Work whenever such stoppage is deemed necessary.

4. Administering this Contract.

5. Determining acceptable fulfillment of this Contract by the Contractor.

B. Written approval by the Construction Contract Manager signifies favorable opinion and qualified consent. It does not carry with it: (1) certification, (2) assurance of completeness, (3) assurance of quality, (4) assurance of accuracy concerning details, dimensions, and quantities.

C. Written approval by the Construction Contract Manager will not relieve the Contractor from responsibility for: (1) errors, (2) improper fabrication, (3) nonconformance with requirements, (4) deficiencies within the Contractor's control.

Clarifications and Interpretations

8.3 The Construction Contract Manager will issue with reasonable promptness such written clarifications or interpretations of this Contract as may be necessary. If the Contractor believes that a written clarification or interpretation justifies an increase in the Contract Price or the Contract Time, the Contractor may notify the Port as provided in Article 9.

Rejection of Defective Work

8.4 The Construction Contract Manager is authorized to disapprove or reject Work which is Defective and to require additional inspection or testing of the Work whether or not the Work is fabricated, installed, or completed.

Port Inspectors

8.5 The Port will assign Port inspectors who are authorized to:

A. Inspect the Work as it is performed and all material being furnished. Such inspections may extend to all or any part of the Work and to the preparation, fabrication, or manufacture of the material to be used.

B. Call the attention of the Contractor to any failure of the Work to meet this Contract.

C. Reject material not meeting the requirements of this Contract.

D. Suspend that part of the Work affected by Contract nonconformance until the issue can be referred to and a decision issued by the Construction Contract Manager.

8.6 Port inspectors are not authorized to:

A. Supervise or perform any other duties for the Contractor, or interfere with the Contractor's management of the Work.

B. Give final approval or acceptance of any portion of the Work.

C. Issue instructions or directions contrary to this Contract.

8.7 No act or failure to act on the part of a Port inspector will render the Port liable in any way, nor shall it relieve the Contractor from fulfilling all of the terms and conditions of this Contract.

Limitations on the Port's Responsibilities

8.8 The Port is not responsible for the acts or omissions of the Contractor or the Contractor's employees, Subcontractors, manufacturers, fabricators, suppliers, distributors, or any other persons at the site or otherwise performing any of the Work, or their agents or employees.

8.9 The Port is not responsible for the Contractor's means, methods, procedures, sequences, or techniques of construction, or related safety precautions and programs except as specified in the Contract Documents.

8.10 The Port is not responsible for the Contractor's failure to perform the Work in accordance with this Contract.

ARTICLE 9 – CHANGE IN THE WORK

9.1 Without invalidating this Contract, the Port may, at any time, authorize additions, deletions, or revisions to the Work by written Change Order. All such Work shall be executed under the applicable conditions of this Contract. A Change Order will be executed to provide an equitable adjustment if any Port-issued change directive or Port-provided Contract interpretation or clarification causes an increase or decrease in the Contract Price, or an extension or shortening of the Contract Time.

9.2 No addition to Contract Price or extension of Contract Time will be allowed because of any condition of which the Contractor could have informed himself either by examination, testing, sampling, review of records, or otherwise.

9.3 Prior to the execution of, or in the absence of, a Change Order the Port may issue a change directive that will define the revision to the Work, may direct the Contractor as to what method to use for price and time adjustments, and may direct the Contractor to proceed with the Work.

9.4 If the Contractor believes that a change directive or Contract interpretation or clarification will require a change in the Contract Price or the Contract Time, the Contractor shall so notify the Port in writing. Such notification shall be delivered to the Port within 7 days after the Contractor receives the change directive or Contract interpretation or clarification.

9.5 The Contractor shall submit, in the format requested by the Port, an itemized cost estimate of any adjustment to the Contract Price, either additive or deductive, resulting from the change directive or Contract interpretation or clarification. If applicable, the Contractor shall also submit a work progress schedule analysis or summary which demonstrates the effect of the change directive or Contract interpretation or clarification on the Contract Time. The itemized estimate or analysis shall be submitted within 15 days of receipt of the change directive, Contract interpretation, or clarification from the Port or the submittal of the Contractor's written notice under Item 9.4. The Contractor shall submit such cost estimate or work progress schedule analysis in less than 15 days if so requested by the Port or if so required by work progress schedule limitations.

9.6 The Port may order the Contractor, in writing, to commence the added work immediately and account for cost using the force account method if: the Contractor fails to submit the cost estimate within the 15-day period (or earlier if requested); the parties fail to agree as to the cost or schedule impact; or the Port for any reason deems it necessary. If direction to proceed has already been given and the Contractor fails to submit the cost estimate within the 15-day period (or earlier if requested), if the parties fail to agree as to the cost or work progress schedule impact, or if the Port for any reason deems it necessary, the Port may issue a lump sum unilateral change to the Contract Price in accordance with the Port's estimate of cost.

9.7 The Contractor shall proceed with the work involved upon receipt of a Change Order or direction to proceed with the Work prior to execution of a Change Order. The Contractor shall continue performance of the Work, including the change, during the negotiation of the Change Order, even if a dispute arises which delays or prevents agreement on the terms and conditions of the Change Order.

9.8 Any Change Order shall constitute an accord and satisfaction with respect to issues related to changes in the Contract Price or the Contract Time. The Change Order shall be deemed to contain all the costs and credits relating to changes in the Work and effects on the unperformed or unchanged Work. If the Contractor contends that inefficiency and cumulative impacts cannot be accurately assessed at the time the Change Order is to be signed, the Contractor shall give the Port notice of a potential inefficiency or cumulative impact claim as soon as the Contractor suspects grounds for the claim exists, and shall submit evidence thereof at the first reasonable opportunity.

9.9 No payment will be made for additions, deletions, or revisions to the Work until a Change Order has been executed.

9.10 Additional work performed without written direction from the Port or authorization by a Change Order will not entitle the Contractor to an increase in the Contract Price or an extension of the Contract Time. Emergencies, as provided in Item 6.37, are an exception.

ARTICLE 10 – CHANGE OF CONTRACT PRICE

Contract Price Adjustment Methods

10.1 A contract price adjustment for the changes in the Work will be made in accordance with one or a combination of the following methods as the Port may elect:

A. Fixed price method as supported by the breakdown of estimated costs. If agreement cannot be reached by the fixed price method, the Port may require the Work to be performed on the basis of force account.

B. Unit price method.

C. Force account method.

Fixed Price Method

10.2 The Contractor shall prepare a fixed price proposal in the following format:

A. Direct Costs

1. Material (itemize)

a. The cost to the Contractor for the material directly required for the performance of the changed Work. Such cost of material may include the cost of transportation. No delivery charges will be allowed unless the delivery is specifically for the changed Work.

b. Trade discounts offered by the supplier to the Contractor shall be credited to the Port. If the material is obtained from a source owned wholly or in part by the Contractor, payment thereof will not exceed the current wholesale price for the material. The term "trade discount" includes the concept of cash discounting.

c. If, in the opinion of the Port, the cost of the material is excessive or if the Contractor fails to furnish satisfactory evidence of a cost to him from the supplier then, in either case, the cost of the material shall be deemed to be the lowest current wholesale price at which similar material is available in the quantities required.

d. The Port reserves the right to furnish such material as it deems advisable and the Contractor shall have no claims for cost or profit on material furnished by the Port.

2. Labor (man-hours, rates by crafts)

a. Payroll costs shall include, but not be limited to, salaries and wages, and fringe benefits including social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, sick leave, vacation and holiday pay applicable thereto. The costs for all supervision, including general superintendents and foremen, shall be included in the markups established by this Contract. The only exception to this shall be working foremen who perform

manual labor. No labor charges will be accepted for engineering or proposal preparation. These costs shall be included in the markups established by this Contract.

b. Overtime and premium time pricing will be allowed only for labor which is authorized by the Port to be performed after normal working hours, or on Saturday, Sunday, or legal holidays.

3. Equipment (type, size, attachments, hours, rate)

a. The cost to the Contractor for the use of equipment directly required in the performance of the changed Work. No mobilization or demobilization cost will be allowed for equipment already on site.

b. For equipment owned, furnished, or rented by the Contractor, costs allowed shall be the actual usage costs incurred as supported by the Contractor's published standard equipment rates or rental invoices. Rates charged shall not exceed the rates established by the Rental Rate Blue Book.

c. The amount to be paid to the Contractor for the use of equipment as set forth above will constitute full compensation for the cost of fuel, power, oil, lubricants, supplies, small tools, small equipment, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, labor (except for equipment operators) and any and all costs incidental to the use of the equipment.

4. Direct costs shall not include:

a. Payroll costs and other compensation of the Contractor's officers, executives, principals of partnerships and sole proprietorships, general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, superintendents and foremen, and similar administrative personnel. These costs shall be considered administrative costs covered by the Contractor's markup.

b. Expense of the Contractor's principal and branch offices other than the Contractor's office at the site.

c. Any part of the Contractor's capital expenses. Interest on the Contractor's capital employed for the Work. Charges against the Contractor for delinquent payments.

d. Costs due to the negligence of the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Negligence costs include correction of defective Work, disposal of material wrongly supplied, and making good any damage to property.

e. Other overhead or general expense costs of any kind.

f. Cost of small tools and supplies.

g. Cost of safety programs.

h. Cost of warranty work.

B. Subcontract Costs

1. Direct costs shall be as outlined in Item 10.2, A.

2. Subcontractors' (at any tier) markups for overhead and profit shall not exceed 15 percent of the direct costs.

C. Contractor's Markup

1. The Contractor's markup for overhead and profit shall not exceed the following:

a. Costs incurred under Item 10.2, A: 15 percent

b. Costs incurred under Item 10.2, B, 1:
(No markup allowed on Subcontractor markup)

1) First $5,000 10 percent

2) Amount above $5,000 8 percent

c. In no case shall the total markups be greater than 30 percent of the direct cost, regardless of the number of subcontract tiers existing. No markup is allowed for direct costs listed in Item 10.2, A, 4.

2. The amount of credit to the Port for a change which results in a net decrease in cost shall be the amount of the actual net decrease plus a deduction in the Contractor's overhead and profit markup by an amount equal to that allowed in the table above.

3. When both additions and credits are involved in any one change, the adjustment in the Contractor's overhead and profit markup shall be computed on the basis of the net change in cost.

Unit Price Method

10.3 In the case of unit price bid items:

A. The Port may increase the units of Work without limit or adjustment of unit prices.

B. The Port may decrease the estimated quantity in a major item of Work. A major item of Work is any item in a unit price bid schedule which is equal to or greater than 10 percent of the Contract Price as bid. If the Port decreases the quantity in a major item of Work in excess of 25 percent, the remaining quantity shall be subject to a negotiated change in unit price.

C. The Port may decrease the estimated quantity or delete a minor item of Work. A minor item of Work is any item in a unit price bid schedule which is less than 10 percent of the Contract Price as bid. If accumulation of such changes decreases the Contract Price more than 25 percent based on the estimated quantities and prices bid, an equitable adjustment will be negotiated on the items of Work remaining.

Force Account Method

10.4 The force account method changes the Contract Price in accordance with the sum of all costs necessarily incurred and paid by the Contractor in the proper performance of the Work plus overhead and profit. Except as otherwise may be agreed to in writing by the Port, such costs shall be in amounts no higher than those prevailing in the locality of the Work, shall include only the following items, and shall not include any of the costs itemized under Item 2.8. The Contractor and the Port shall compare records of force account costs at the end of each workday. Copies of these records shall be made in duplicate by the Contractor and shall be signed daily by both the Port and the Contractor. Fully itemized force account invoices shall be submitted monthly to the Port. The Contractor's submittal shall be in the format described in Item 10.2. Payment will be included with regular periodic progress payments upon issuance of a Change Order for the Work.

The Contractor shall submit final force account billing within 30 days after completion of that unit of Work. Force account costs may include:

A. Cost of all material furnished and incorporated in the Work, in accordance with Item 10.2, A, 1.

B. Labor costs for employees in the direct employment of the Contractor in the performance of the Work in accordance with Item 10.2, A, 2.

C. Cost of equipment furnished and used in completion of the Work in accordance with Item 10.2, A, 3.

   1. Equipment will be eligible for payment when operated and used on a full-time basis. Equipment is considered to be used full time when the equipment must be manned and ready for use at all times.

   2. When the Port determines that equipment need not remain at the site continuously, payment will be limited to actual hours of use.

   3. Rental rates for equipment retained on the Work for an extended duration will be adjusted to the then-current rate on the anniversary of the Work Start Date.

   4. The hourly operating cost will be allowed for each hour that the equipment is in use. The rate will be the monthly rate divided by 176 hours for single-shift operations. Hourly rates will be adjusted for two- and three-shift operations as recommended by the Rental Rate Blue Book.

   5. Equipment attachments will be included in the rate only when deemed by the Port to be essential to the Work. When multiple attachments are approved for use (tractor with ripper, dozer or tractor with loader and backhoe, etc.) and the attachments are being used interchangeably, only the one attachment having the higher rate will be eligible for payment.

   6. Standby time, when ordered by the Port, will be paid as follows: One-third of the total rate established in Items 10.4, C, 4 and 10.4, C, 5 above, rounded to the nearest 10 cents. Standby rates which are calculated at less than one dollar per hour will not be paid. No more than 8 hours of standby will be paid during a 24-hour period. No more than 40 hours of standby will be paid during a one-week period. In the event of breakdown, or shutdown by order of the Port, of part or all of the equipment being used, payment for such equipment that is idled shall cease. Labor that is idled and cannot be diverted to other Work will be paid through the one-half shift during which the breakdown or shutdown occurred. No other payment will be made for non-operating hours. Rental will not be allowed for equipment listed in the Shop Tools section of the Rental Rate Blue Book having a daily rate of less than $5 each. Individual pieces of equipment not specifically covered by the Rental Rate Blue Book and having a value of $350 or less shall be considered "small tools and equipment for which no rental is allowed."

D. Payments made by the Contractor to Subcontractors for Work performed by Subcontractors in accordance with Item 10.2, B. If required by the Port, the Contractor shall obtain competitive bids from Subcontractors acceptable to the Contractor and award to the lowest responsive and responsible bidder. If a subcontract provides that the Subcontractor is to be paid by force account method plus markup, the Subcontractor's force account costs shall be determined in the same manner as the Contractor's force account costs.

E. Supplemental costs:

1. Sales, use, or similar taxes related to the Work, and for which the Contractor is liable, imposed by any governmental authority.

2. Costs for royalty payments, fees, permits, and licenses other than those caused by the negligence of the Contractor or the Contractor's employees, agents, or Subcontractors.

3. Losses, damages, and related expenses sustained by the Contractor in connection with the execution of the Work that are not caused by the negligence of the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and are not compensated for by insurance recovery. Losses, damages, and related expenses shall include settlements made with the written consent and approval of the Port. No such losses, damages and related expenses shall be included in the force account cost for the purpose of determining the Contractor's markup for overhead and profit. If, however, any such loss, damage, and related expense requires reconstruction and the Contractor is placed in charge thereof, the Contractor shall be paid for services in accordance with Item 10.4, G.

4. The cost of utilities, fuel, and sanitary facilities at the site.

5. Minor expenses in connection with the Work such as telegrams, long distance telephone calls, telephone service at the site, expressage, and petty cash items.

6. Rental of all the Contractor-owned and operated power tools and equipment which the Port approves for use.

F. Force account method shall not include:

1. Payroll costs and other compensation of the Contractor's officers, executives, principals of partnerships and sole proprietorships, general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, superintendents and foremen, and similar administrative personnel. These costs shall be considered administrative costs covered by the Contractor's markup.

2. Expense of the Contractor's principal and branch offices other than the Contractor's office at the site.

3. Any part of the Contractor's capital expenses. Interest on the Contractor's capital employed for the Work. Charges against the Contractor for delinquent payments.

4. Costs due to the negligence of the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Negligence costs include correction of defective Work, disposal of material wrongly supplied, and making good any damage to property.

5. The costs of any item not specifically and expressly included in Items 10.4, A through E.

G. The Contractor's markup for overhead and profit shall not exceed the following:

1. Costs incurred under Items 10.4, A, 10.4, B, and 10.4, C — 15 percent
(No markup allowed for Item 10.4, E)

2. Costs incurred under Item 10.4, D less Subcontractor's markup:

a. First $5,000 — 10 percent

b. Amount above $5,000 8 percent

3. If a subcontract is based on the force account method plus markup, the maximum allowable to the Subcontractor as markup for overhead and profit will be in accordance with Item 10.4, G.

4. In no case shall the total markups be greater than 30 percent of the direct cost, regardless of the number of subcontract tiers existing.

Cost Changes to Bonds and Insurance

10.5 When changes in the Work require new or increased premiums on bonds and insurance, the Port will reimburse the Contractor for such costs in the following manner:

A. Costs for new bonds or insurance shall be submitted as part of the Contractor's request for progress payment and supported by invoiced costs from the bond or insurance supplier.

B. Costs for increases to existing bonds or insurance shall be submitted as part of the Contractor's request for final payment and supported by invoiced costs from the bond or insurance supplier.

Rental Rate Blue Book

10.6 Equipment rental rates will be the lowest of: the Contractor's established company rates; actual rental rates; or the rates in effect in each section of the Rental Rate Blue Book on the Work Start Date.

A. When the Rental Rate Blue Book, published by EquipmentWatch, Primedia Corp., 1735 Technology Drive, Suite 410, San Jose, California 95110, will be used to establish equipment rental rates, the following shall apply:

1. For projects of more than one year duration, the rates shall be adjusted annually after the anniversary date of the Work Start Date to reflect published revisions of the Rental Rate Blue Book.

2. The Rental Rate Blue Book denotes discontinued models by showing a star next to the model number. Many manufacturers continue the same model number through successive years. In the event the Port and the Contractor are unable to distinguish discontinued models from current models having different rates in the Rental Rate Blue Book, the lower rate shall apply. In the event a rate is not given for either a new model or an older model, a rate for the most similar model in the Rental Rate Blue Book will be used. Such characteristics as manufacturer, capacity, horsepower, and fuel will be used as the basis for selecting a similar model.

3. In the event a rate has not been established for a particular equipment category in the Rental Rate Blue Book, the Contractor shall call the EquipmentWatch company for written documentation of a rental rate on the equipment and present it to the Port for approval before use of the equipment.

Lump-Sum Breakdown

10.7 The price of changes in a lump-sum agreement or lump-sum bid items will be based on the lump-sum breakdown furnished in accordance with Item 2.8.

Deleted Work

10.8 Deletion of any portion of the Work shall not be a waiver of any requirement of this Contract nor invalidate any of its provisions. The Contractor will be paid for all work performed toward the completion of the portion of the Work prior to its deletion as provided by the force account method. No allowance will be made for anticipated profits on the deleted portion of the Work. If the deletion of the Work results in surplus material that is not returnable by the Contractor for a credit acceptable to the Port, or if the Port so desires, the material will be purchased from the Contractor by the Port at cost, without allowance for overhead or profit.

ARTICLE 11 – CHANGE OF CONTRACT TIME

11.1 All time limits stated in this Contract are of the essence. Contract Time will be changed only by a Change Order. Any extension in Contract Time will be based on written notice delivered to the Port within 7 days of the occurrence of the event precipitating the request. The Contractor shall deliver a work progress schedule analysis or summary justifying the time extension within 15 days of such occurrence. Failure to deliver any documentation to the Port within the time limits specified above shall completely foreclose consideration of an extension of Contract Time and all rights and remedies arising therefrom.

11.2 Time extensions will be granted only when conditions described in Items 11.3, 11.5, and 11.6 exist and when the approved work progress schedule substantiates the need.

A. An adjustment of Contract Time shall be the Contractor's sole remedy for any delay in meeting the specified Substantial Completion, Final Acceptance, or any milestone dates of the Work. Exception shall be to the extent the delay is caused by the acts or omissions of the Port or other contractors performing other work directly for the Port as contemplated in Article 7. To the extent the delay is caused by the acts or omissions of the Port or persons acting for the Port, the Contractor is not precluded from recovery of damages or from an equitable Contract Price adjustment.

11.3 Extension of Contract Time will be determined by the Port and will be an equitable adjustment if all or a part of the Work is hindered, delayed, or suspended by an Act of God, act of war, act of terrorism, or the acts or omissions of the Port or the Port's commissioners, employees, contractors, or agents.

11.4 Requests for extension of Contract Time will not be considered for: (1) contention that insufficient time was specified in this Contract; (2) delays which affect the Contractor's planned early completion but not the specified Contract Time; (3) suspensions made at the request of the Contractor; (4) delays caused by labor disputes involving the Contractor or his Subcontractors; or (5) delays caused by issues known and addressed in this Contract.

11.5 For those contracts which specify a completion date rather than contract duration, the specified Substantial Completion date will be adjusted by the number of days between the anticipated authorization to commence work date shown in the Agreement and the actual date authorizing work commencement shown in the Notice to Proceed, if the actual date is later than that shown in the Agreement. Any such adjustment of the completion date shall meet the requirements specified under Item 11.3 and shall be supported by the Contractor's work progress schedule. The Port may also request acceleration of the Work instead of adjustment of the completion date. If the Port requests acceleration of the Work, the Port will pay an agreed-upon reasonable cost resulting from the directed acceleration of the Work.

11.6 Work covered by a Change Order may require a Contract Time extension or reduction. The amount of time extension or reduction will be agreed upon by the Contractor and the Port as part of the negotiation of the Change Order.

ARTICLE 12 – WARRANTY; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

Tests and Inspections

12.1 The Port will pay the cost of acceptance inspections, tests, and approvals unless otherwise specified.

12.2 The Contractor shall:

A. Be responsible for compliance with laws, ordinances, rules, regulations, codes, and orders of any public body having jurisdiction over inspection, testing, or approval of the Work. The Contractor shall arrange for, obtain, and pay for such inspections, tests, approvals, and related fees.

B. Give the Port and appropriate inspection and approval authorities timely notice of readiness of the Work for required inspections, tests, or approvals.

C. Furnish the Port the required certificates of inspection, testing, and approval from inspection or approval authorities.

D. Be responsible for inspection or testing required for the Port's acceptance of a manufacturer, fabricator, supplier, or distributor of material and pay related fees.

E. Pay the cost of inspections, tests, and approvals required as a result of failure to pass acceptance testing by the Port, unless otherwise specified.

12.3 The following shall not relieve the Contractor from his obligation to perform the Work in accordance with this Contract: (1) observation by the Port, (2) inspections, (3) tests, (4) approvals by others.

Uncovering Work

12.4 The Contractor, at the Port's request, shall uncover, expose, and reconstruct, or otherwise make available for observation, inspection, testing, or approval, any portion of the Work. The Contractor shall furnish all necessary labor, material, and equipment. The cost shall be allocated as follows:

A. The Contractor shall bear the cost if the Work was covered contrary to the direction of the Port.

B. The Contractor shall bear the cost if the Work was covered without concurrence of the Port unless the Contractor had given the Port timely notice of intent to cover such Work, and the Port did not act with reasonable promptness in response to such notice.

C. The Contractor shall bear the cost if the previously installed Work is found to be Defective.

D. For situations not covered above, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction if he makes a request therefor as provided in Articles 10 and 11.

Warranty

12.5 The Contractor warrants for one year after Substantial Completion, or for any longer period expressly provided by this Contract, provided by any special warranty or extended warranty required by this Contract or by a Subcontractor or supplier, or otherwise provided by Law, that all Work is not Defective for any reason.

A. The Contractor shall pass through to the Port any warranty or maintenance obligation provided by a Subcontractor or supplier in excess of that required by this Contract.

B. In special circumstances where a particular item or area of Work is placed in continuous service before Substantial Completion of all the Work, the warranty period for that item will start to run from the later of the following dates: the date given in the Port's letter confirming Substantial Completion of the part of the Work; the date the Port receives training on the systems and equipment in that part of the Work; the date interim operation and maintenance manuals are approved; or the date the Port takes over operation or use in lieu of issuing a letter confirming Substantial Completion for that part of the Work.

Correction or Removal of Defective Work

12.6 The Contractor shall promptly correct all Defective Work without added cost to the Port, whether or not fabricated, installed, or completed or, at the Port's option, remove it from the site and replace it with Work that meets the Contract requirements. If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the Port may have the Defective Work corrected or removed and replaced, and all direct and indirect costs of such correction or removal and replacement, including compensation for additional professional services, shall be paid by the Contractor or the Contractor's surety.

Port May Correct Defective Work

12.7 If the Contractor fails, within 3 days after written notice from the Port, to proceed to correct, or to remove and replace Defective Work as required by the Port, or if the Contractor fails to perform the Work in accordance with this Contract (including any requirements of the work progress schedule), the Port may correct and remedy any such deficiency. In exercising the rights under this paragraph, the Port will proceed expeditiously. To the extent necessary to complete corrective and remedial action, the Port may: (1) exclude the Contractor from all or part of the site; (2) take possession of all or part of the site; (3) suspend the Contractor's services related thereto; (4) take possession of the Contractor's tools, appliances, construction equipment and machinery at the site; and (5) incorporate in the Work material stored at the site or for which the Port has paid the Contractor but which has been stored elsewhere. The Contractor shall allow the Port's representatives, contractors, agents, and employees such access to the site as may be necessary to exercise the rights under this paragraph. All direct and indirect costs in exercising such rights will be charged against the Contractor. A Change Order will be executed incorporating the necessary revisions to this Contract and a reduction in the Contract Price. Such direct and indirect costs will include, in particular but without limitation: (1) additional professional services required; and (2) repair and replacement of the Work of others destroyed or damaged by correction, removal, or replacement of the Contractor's Defective Work. The Contractor will not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise of the Port's rights under this paragraph.

ARTICLE 13 – PAYMENTS TO THE CONTRACTOR AND COMPLETION

Before Request for Progress Payment

13.1 Prior to submitting the first request for progress payment, the Contractor shall submit the following to the Port:

A. Work progress schedule.

B. Final submittal schedule.

C. Cash flow schedule.

D. Lump-sum breakdown of the Work.

E. Wage certification.

1. If the Contractor is required to file a certified statement under ORS 279C.845, and the certified statement has not been filed as required, the Port will retain 25 percent of any amount earned under this Contract until the certified statement has been filed. The Port will pay the Contractor the amount retained within 14 days after the missing certified statement has been filed. Failure of a Subcontractor to file a certified statement required under ORS 279C.845 will not trigger retainage under this paragraph.

Request for Progress Payment

13.2 Thirty days or more following the Work Start Date, the Contractor may request the first monthly progress payment on Work completed by the date of the request. The request shall be made on the Contractor's Request for Payment form (form follows these General Conditions) and shall be accompanied by supporting documentation required by this Contract. Requests shall be signed by the Contractor and submitted to the Port for review.

13.3 All progress payment requests, except the first request, shall include the Subcontractor Payment and Utilization Report and the Contractor's Waiver of Claims to Date stating that all of the Contractor's obligations to date relating to the Work have been paid (forms follow these General Conditions).

13.4 Material delivered and stored on site but not yet incorporated in the Work may be included in the request for progress payment subject to approval by the Port and the following:

A. No payment will be made for material costing less than $50,000 total.

B. The Port's title to and interest in the material must be clearly established and free of all liens or other encumbrances.

C. Value shall be established by invoice, freight bill, or other document.

D. Payment for stored material will be limited to 90 percent of the net cost invoiced to the Contractor.

E. When there is a bid price on material in place, the Port will estimate the cost of placing. The progress payment will be limited to 90 percent of the bid price less the estimated cost of placing.

F. Risk of loss remains with the Contractor.

13.5 Progress payments shall not be construed as acceptance or approval of the Work or waiver of any defects in the Work.

Retainage

13.6 The Port will withhold from progress payments as follows:

A. The Port will retain 5 percent of the total earned for the work completed. The Contractor shall inform the Port if the Contractor wishes to exercise an option under ORS 279C.560.

Review of Request for Progress Payment

13.7 Within 15 days, the Port will review each request for progress payment and recommend payment or respond in writing to the Contractor with the reasons the Port is requiring resubmittal of the pay request before it can be approved.

13.8 The Port may refuse to make payment, in whole or any part, to the extent:

A. The Work is Defective, or completed Work has been damaged requiring correction or replacement;

B. Written claims have been made against the Port or liens have been filed in connection with the Work;

C. The Port has been required to correct Defective Work or to complete the Work;

D. The Contractor's prosecution of the Work in accordance with this Contract is unsatisfactory;

E. The Contractor has failed to make payments covered by past progress payments to Subcontractors, or for labor or material; or

F. The Contractor is in breach of this Contract.

Substantial Completion

13.9 When the Contractor considers the entire Work ready for its intended use, he shall certify in writing that the entire Work is Substantially Complete and request a letter confirming Substantial Completion. Within 15 days thereafter, the Contractor and the Port shall make an inspection of the Work to determine the status of completion. If the Port considers the Work Substantially Complete, the Port will, within 15 days of date of inspection, execute and deliver to the Contractor a letter confirming Substantial Completion with a list of items to be completed or corrected. The letter will state the date of Substantial Completion. If the Port does not consider the Work Substantially Complete, the Port will notify the Contractor in writing giving reasons therefor.

A. Warranties and operation and maintenance manuals shall be submitted and approved by the Port and training shall be completed for the Work to be considered Substantially Complete.

13.10 The Port may exclude the Contractor from that part of the Work after the date of Substantial Completion. The Port will allow the Contractor reasonable access to complete or correct items on the list.

13.11 The Contractor may request, in writing, that the Port confirm Substantial Completion for a part of the Work. The Port will only consider confirming Substantial Completion for a part of the Work if the Port desires that part to become operational.

13.12 The Port may allow the Contractor use of equipment installed as part of the Work prior to Substantial Completion, subject to the Contractor:

A. Obtaining the Port's written approval.

B. Maintaining the equipment, and preparing and maintaining a log recording all maintenance activities.

C. Returning equipment to "as-new" condition upon Substantial Completion.

Partial Utilization

13.13 The Port may request, in writing, the use of any part of the Work which may be used without significant interference with construction of other parts of the Work. If the Port requests use of any part of the Work prior to Substantial Completion of all the Work, the Port will issue to the Contractor a letter granting Substantial Completion for that portion of the Work with a list of items to be completed or corrected. The Port will assume responsibility for security, safety, operation, maintenance, and utilities for that part of the Work while it is being used by or under the control of the Port.

Final Inspection and Final Acceptance

13.14 When the Contractor considers the entire Work, or an agreed-upon portion thereof, to be complete, he shall certify, in writing, that the Work is complete and request a letter granting Final Acceptance. Within 15 days after receipt of the Contractor's certification, the Port will inspect the Work and will notify the Contractor, in writing, of Final Acceptance or of all particulars in which this inspection reveals that the Work is incomplete or Defective. The Contractor shall immediately take such measures as are necessary to remedy such deficiencies. The Contractor's certification shall be preceded or accompanied by all documentation called for in this Contract including but not limited to:

A. Marked-up Drawings for creating record drawings.

B. Bonds, if any.

C. Certificates of inspection from jurisdictional authorities.

D. Releases, waivers, or exoneration of all liens arising out of or filed in connection with the Work.

E. The Contractor's Waiver of Claims To Date form certifying that all payrolls and material bills and other indebtedness connected with the Work for which the Port might in any way be responsible have been paid or otherwise satisfied.

F. Consent of surety, if any, to final payment.

Final Payment

13.15 The Contractor may request final payment after receipt of Final Acceptance. The Contractor shall request final payment following the procedure for progress payments.

13.16 Upon receipt of the Contractor's request for final payment, the Port will, within 15 days, review the request and recommend payment or respond in writing to the Contractor with the reasons the Port is requiring resubmittal of the request before it can be approved. The Contractor shall make the necessary corrections and resubmit the request.

Contractor's Continuing Obligation

13.17 The Contractor's obligation to perform and complete the Work in accordance with this Contract shall be absolute and cannot be waived in whole or in part by the Port except by express written instrument signed by an authorized Port representative. Any such waiver will specifically identify the Work that the Port is willing to accept and the manner in which that Work fails to meet the

original requirements of the Contract. Accordingly, and by way of example only, none of the following will constitute acceptance of Work not in accordance with this Contract or release the Contractor from obligation to perform the Work in accordance with this Contract, regardless of whether any defect, deficiency, or damage is patent or latent:

A. Any act of acceptance by the Port except in an express written instrument as described above.

B. Any correction by the Port of Defective Work.

C. Use, operation, or occupancy of the Work or any part of the Work by the Port.

D. Recommendation by Port staff for any progress or final payment.

E. Payment by the Port to the Contractor.

F. Issuance of a letter of Substantial Completion.

G. Issuance of a letter of Final Acceptance.

Contractor's Warranty of Title

13.18 The Contractor warrants that title to all Work and material covered by any request for payment, whether incorporated in the Work or not, will pass to the Port at the time of payment. Title shall be free and clear of all liens, claims, security interests, and encumbrances.

Waiver of Claims

13.19 The acceptance of final payment will constitute a waiver of all claims by the Contractor against the Port other than those previously made in writing and still unsettled.

Liquidated Damages

13.20 Time is of the essence of this Contract. The Port will be harmed if the Work is not substantially complete by the Substantial Completion date established by this Contract. The parties agree that ascertaining the actual operational or business impact damages suffered by the Port as a result of that harm is impractical. Therefore, the Contractor shall pay the Port liquidated damages at the rate established by this Contract. The parties agree that, as of the date this Contract is signed, the established rate of liquidated damages is a reasonable forecast of the Port's actual operational or business impact damages for late Substantial Completion. The parties agree that the Port does not waive its right to liquidated damages by allowing the Contractor to continue and finish all or any part of the Work after the scheduled Substantial Completion date, or after Substantial Completion is actually achieved. The parties also agree that payment of liquidated damages does not release the Contractor from any duty under this Contract (other than the duty to pay liquidated damages). The parties further agree that the liquidated damages required by this Contract are compensation to the Port only for harm the Port sustains from late completion. They are not compensation for additional effort required by the Port because the Work has been extended over a longer period, or for other harm the Port may sustain from the Contractor's other breaches of this Contract. The Port may withhold liquidated damages from progress payments, or may withhold the full amount of accrued liquidated damages from final payment.

Other Damages

13.21 In addition to the liquidated damages described above, the Port may recover from the Contractor, withhold from payments under this Contract, or both, actual costs incurred by the Port due to the extra effort necessitated because the Work is extended over a longer period of time, such as the actual costs of additional engineering and inspections by the Port. This right to actual damages shall apply to both late Substantial Completion and late Final Acceptance.

13.22 The Port will have the right to recover from the Contractor and, to the extent permitted by Law, to deduct from any payment due the Contractor, the amount of any loss suffered by the Port on account of the failure of the Contractor, Subcontractor, anyone directly or indirectly employed by any of them, and anyone for whose acts any of them may be liable to comply with the rules and regulations referenced or contained in this Contract.

ARTICLE 14 – SUSPENSION OR TERMINATION OF THE WORK

Port May Suspend the Work

14.1 The Port may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice, in writing, to the Contractor. This notice will fix the date on which Work shall stop and the date on which it shall resume. The Contractor shall resume the Work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to the suspension.

14.2 If the work is Defective, or if the Contractor fails to supply sufficient skilled workers or suitable material or equipment, or if he fails to perform the Work in such a manner that the completed Work conforms to this Contract, the Port may order the Contractor to suspend the Work, or any portion thereof, until the cause for such order has been eliminated. However, this right of the Port to suspend the Work shall not give rise to any duty on the part of the Port to exercise this right for the benefit of the Contractor or any other party.

14.3 In the event the Contractor, Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable fails to comply with the rules and regulations referenced in this Contract, the Port may suspend the Work or any portion thereof. The suspension shall continue until completion of any investigation or evaluation by the Port and full compliance with any corrective measures which the Port may reasonably require. The Port will not be liable to the Contractor for any delay caused by such suspension, nor will there be any adjustment in the Contract Price or Contract Time.

Port May Terminate the Work

14.4 The occurrence of any one or more of the following events will justify termination for cause:

A. The Contractor is adjudged bankrupt or insolvent.

B. The Contractor makes a general assignment for the benefit of creditors.

C. A trustee or receiver is appointed for the Contractor or for any of the Contractor's property.

D. The Contractor files petition to take advantage of any debtor's act, or to reorganize under bankruptcy or similar laws.

E. The Contractor fails to supply sufficient skilled workers or suitable material or equipment.

F. The Contractor fails to make prompt payments to Subcontractors or for labor and material.

G. The Contractor disregards Laws, ordinances, rules, regulations, or orders of any public body having jurisdiction including, without limitation, ordinances adopted by the Port and referenced in this Contract, and the rules and regulations adopted by the Port's Executive Director or his designee.

H. The Contractor disregards the authority of the Port.

I. The Contractor otherwise violates in any substantial way any provision of this Contract.

14.5 The Port may, after giving the Contractor and his surety a 7-day written notice: (1) terminate this Contract for default; (2) exclude the Contractor from the site; (3) take possession of the site and the Contractor's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the Contractor without liability to the Contractor for trespass or conversion; (4) incorporate in the Work material stored at the site or for which the Port has paid the Contractor but which is stored elsewhere; (5) finish the Work as the Port may deem expedient, and (6) obtain an assignment of some or all of the subcontracts and purchase orders relating to the uncompleted Work. By executing this Contract, the Contractor consents to the assignment of those subcontracts and purchase orders in the event of termination of this Contract pursuant to this article. In such case the Contractor will not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess will be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor shall pay the difference to the Port. Such costs incurred by the Port will be verified by the Port and incorporated in a Change Order; but in finishing the Work, the Port will not be required to obtain the lowest figure for the Work performed.

14.6 Where the Contractor's services have been so terminated by the Port, the termination will not affect any rights of the Port against the Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due the Contractor by the Port will not release the Contractor from liability.

Port May Terminate the Work for Convenience

14.7 Upon giving the Contractor a 7-day written notice, the Port may, without cause and without prejudice to any other right or remedy, elect to terminate this Contract for the convenience of the Port. In such case, the Contractor will be paid for the costs of all Work acceptably performed and installed, together with reasonable profit and overhead on those costs, and any justifiable costs actually sustained in the process of termination. The Contractor will not be entitled to overhead or profit on the unperformed Work, and will not be entitled to payments in excess of the amount determined by multiplying the percentage of the Work actually and acceptably completed by the Contract Price, as adjusted. If this Contract is terminated for default and it is subsequently determined through mediation, arbitration, or litigation that the termination was improper, this Contract shall be treated as if it had been terminated for the convenience of the Port, and the Contractor shall be entitled to payment under the provisions of this paragraph.

ARTICLE 15 – DISPUTE RESOLUTION

15.1 If the Contractor wishes to assert a claim, he shall submit to the Port a written statement of the claim within 30 Calendar Days after the Contractor first has knowledge of or reason to know of the facts upon which the claim is based. The statement of claim shall recite the facts upon which the claim is based and shall include copies of all documentary evidence in support of the claim. Within 15 Calendar Days after receiving a claim, the Port will respond in writing stating whether the claim is allowed, partially allowed, or denied. If the Contractor disputes the action taken by the Port, the Contractor shall deliver a written notice of dispute to the Port within 15 Calendar Days after the Contractor receives the Port's written response to the claim. The written notice of dispute shall be entitled "Notice of Dispute." A claim shall be barred if the Contractor fails to comply with the foregoing notice of dispute requirement or fails to timely deliver the notice of dispute to the Port.

15.2 The parties shall attempt to resolve all disputes by negotiation. Negotiation shall be initiated at the earliest opportunity. Each party shall freely share unprivileged information requested by the other

and shall make a good faith effort to ensure that all relevant issues are fully developed and fairly presented to the other side.

15.3 If a dispute is not resolved through negotiation between the Contractor and the Port, the parties shall submit the dispute to mediation. Either party may request mediation. The requesting party shall suggest an independent mediator with the request for mediation. If the parties cannot agree upon a mediator, either party may apply to the Presiding Judge, Multnomah County Circuit Court, for appointment of a mediator. The parties shall share equally in the fees and costs of the mediator. Mediation shall be at Portland, Oregon, unless the parties agree otherwise.

15.4 If a dispute is not resolved by mediation, the parties may, but are not required to, agree to submit the dispute to binding arbitration. The parties shall agree upon a single arbitrator, the applicable rules for arbitration, and the time and place of arbitration.

15.5 If a dispute cannot be resolved by mediation, and the parties do not agree to submit the dispute to arbitration, either party may file a lawsuit to resolve the dispute in a court with proper jurisdiction located in Multnomah County, Oregon.

15.6 Should any lawsuit, arbitration, or other action be commenced in connection with any dispute arising out of this Contract, the prevailing party shall be entitled to recover its costs and disbursements, investigation costs and fees, expert witness costs and fees, and attorney costs and fees, as the court or arbitrator may adjudge reasonable, incurred in connection with such dispute before trial or arbitration, at trial or arbitration, upon any motion for reconsideration, upon any appeal or petition for review, and upon any collection efforts or proceedings.

15.7 Except to the extent performance may be legally excused under the particular circumstances, each party shall continue to perform its duties under this Contract while the resolution of a dispute is pending. Failure to comply with this requirement shall be a material breach of this Contract.

ARTICLE 16 – MISCELLANEOUS

Giving Notice

16.1 When this Contract requires that written notice be given, notice shall be deemed valid if it is delivered to the individual who signed the Contract or to the Port's or the Contractor's Representative. Notice shall be deemed as delivered if it is:

A. Hand-carried to the person to whom it is intended, or

B. Hand-carried to an officer of the firm for which it is intended, or

C. Sent by registered or certified "Return Receipt Requested" mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time

16.2 Any period of time referred to in this Contract by days shall be computed to exclude the first and include the last day of such period. If the last day of any time period falls on a Saturday or Sunday or on a day made a legal holiday by the Law of the applicable jurisdiction, such day shall not be included in determining the time period.

Liability Claims

16.3 Should the Port or the Contractor suffer injury or damage to person or property because of any error, omission, or act of the other party or of any of the other party's employees, contractors, or

agents or others for whose acts the other party is legally liable, claim shall be made: (1) in writing, and (2) to the other party within a reasonable time of the first observance of such injury or damage.

Rights and Remedies

16.4 These General Conditions impose duties and obligations on the Contract parties and provide for rights and remedies. The rights and remedies available to each party are in addition to, and shall not limit, actions allowed by Law or other parts of this Contract. All representations, warranties, and guaranties made in this Contract shall survive final payment and termination or completion of this Contract. The content of this paragraph shall apply as if repeated specifically in this Contract in connection with each duty, obligation, right, and remedy.

Commencement of Limitations Period

16.5 As to acts, omissions, breaches of contract or warranty, negligence, misrepresentation, strict liability, fraud, or any other improper conduct of the Contractor or those persons or entities for whom the Contractor is responsible, whether occurring prior to or after completion of the Work, all applicable limitations periods shall not commence to run and any alleged cause of action shall not be deemed to have accrued unless and until the Port is aware of all three of the following: (1) the identity of all party(ies) responsible; (2) the actual magnitude of the damage or injury; and (3) the cause(s) of the damage or injury. The discovery rule provided herein applies in lieu of any otherwise applicable statute or case authority.

PORT OF PORTLAND

APPLICATION NO. _____
PAGE _____ OF _____

THE PORT OF PORTLAND
CONTRACTOR'S REQUEST FOR PAYMENT

CONTRACTOR: _____

PROJECT TITLE: _____

PROJECT NO.: _____ AIP NO.: _____

Work performed through: _____

☐ Wage certifications for all labor are attached, or have been submitted previously in accordance with ORS 279C.845.

☐ The undersigned certifies that to the best of the undersigned's knowledge:

1) work covered by this invoice is in accordance with the contract documents, and

2) the Contractor is entitled to payment of the amount requested by the invoice, and

3) all subcontractors have been paid, and retainage released in accordance with ORS Chapter 279C and, for federally funded work, 49 CFR Part 26.

☐ Waiver of Claims to Date attached (not required for first application for payment).

☐ Subcontractor Payment and Utilization Report attached (not required for first application for payment; required for all subsequent applications for payment).

☐ Site Waste Recycling Form (if applicable)

☐ Monthly Workforce Report (if applicable)

_____
Contractor's Representative

TOTAL WORK COMPLETE TO DATE:

Total Bid Item Work	$ _____
Total Change Order Work	$ _____
Total Material on Hand	$ _____
Total to Date	$ _____
Less 5% Retainage	$ _____
Less Previous Payments	$ _____
PAYMENT NOW DUE	$ _____

PORT OF PORTLAND REVIEW ACTION:

Inspector: Approved (Date): _____
Disapproved (Date): _____

By: _____

Construction Contracts Manager:
Approved (Date): _____
Disapproved (Date): _____

By: _____

Date: _____

PORT OF PORTLAND

Bid Item Payment Summary

Project Title _____ Contractor _____ App. No. _____

Port EAN _____ AIP No. _____ Page _____ of _____

Project No. _____

Bid Item No.	Description	BID Quantity	BID Unit	BID Unit Price	BID Item Total	Complete To Date Quantity	Complete To Date Item Price	Complete This Period Quantity	Complete This Period Item Price

PORT OF PORTLAND

Change Order Payment Summary

Project Title _____ Contractor _____ App. No. _____

Port EAN _____ AIP No. _____ Page _____ of _____

Project No. _____

CO No.	CC No.	Description	Quantity	Unit	Unit Price	Item Total	Complete To Date Quantity	Complete To Date Item Price	Complete This Period Quantity	Complete This Period Item Price

PORT OF PORTLAND

APPLICATION NO._____
PAGE_____OF _____

WAIVER OF CLAIMS TO DATE

_____("the Contractor") and the Port of Portland ("the Port") have entered into an agreement ("the Agreement") for the construction of certain improvements at _____ commonly referred to as the _____Project.

The Agreement provides for monthly progress payments, provided, among other things, the Contractor executes and submits this Waiver of Claims to Date with respect to all claims through the end of the period covered by the immediately preceding progress payment.

The date of the request for progress payment with which this Waiver of Claims to Date is submitted ("Current Progress Payment") is _____("Current End Date"). The end of the period covered by the immediately preceding progress payment ("Last Progress Payment") was _____("Last End Date").

The Contractor certifies that all work covered by the Current Progress Payment is complete.

The Contractor certifies that all subcontractors, laborers, suppliers, and materialmen have been paid in full, less any retainage properly withheld by the Contractor, for all work performed and material provided for which the Contractor received payment in the Last Progress Payment.

The Contractor certifies that no extras have been furnished prior to the Last End Date for which payment has not been received.

The Contractor certifies that no claims are reserved by the Contractor or the Contractor's subcontractors, laborers, suppliers, or materialmen as of the Current End Date.

The Contractor, on behalf of the Contractor and all of the Contractor's subcontractors, laborers, suppliers, and materialmen, hereby waives and releases the Port from any mechanic's lien, stop notice, bond right, or other claim related to the Agreement through the Last End Date.

Exceptions, if any:

_____

_____

_____

I declare under penalty of perjury under the laws of the State of Oregon that the foregoing is true and correct.

CONTRACTOR'S REPRESENTATIVE

By: _____
(Signature)

Printed Name: _____

Title: _____

Date: _____

PORT OF PORTLAND

APPLICATION NO. _____
PAGE _____ OF _____

THE PORT OF PORTLAND
SUBCONTRACTOR PAYMENT AND UTILIZATION REPORT

1. PRIME CONTRACTOR _____
2. CONTACT NAME AND PHONE NO. _____
3. PROJECT NAME _____
4. CONTRACT NUMBER _____ 5. SOLICITATION NUMBER _____
6. PRIME CONTRACT AMOUNT $ _____
7. REQUEST FOR PAYMENT PERIODS FROM: _____ TO: _____ (PRIME) FROM: _____ TO: _____ (SUBCONTRACTORS)
8. REPORT DATE _____

IS THIS THE PRIME CONTRACTOR'S FINAL REQUEST FOR PAYMENT? ☐ YES ☐ NO

9 All First-Tier Subcontractors Utilized	10 Type of Work	11 Original Subcontract Amount	12 Amended Subcontract Amount	13 Amount Paid This Payment Period	14 Total Paid To Date

IT IS HEREBY CERTIFIED THAT THE ABOVE LISTED FIRMS HAVE BEEN UTILIZED BY OUR COMPANY IN THE AMOUNTS REPRESENTED ABOVE AND THAT THE INFORMATION CONTAINED HEREIN IS COMPLETE AND ACCURATE.

_____ _____

Authorized Signature of Contractor Representative Date

Submit with Contractor's Monthly Request for Payment to Construction Contract Manager.

INSTRUCTIONS FOR COMPLETING THE SUBCONTRACTOR PAYMENT AND UTILIZATION REPORT

File this form with each monthly application for payment, beginning with the second application. If no Subcontractors were used during the period for which payment is being requested, write "none" in Column 8. Following final payment, the Port will contact the Contractor within 60 days for verification that final payments to the Subcontractors have been made.

1. **PRIME CONTRACTOR:** Indicate the name of the prime Contractor.
2. **CONTACT NAME AND PHONE NUMBER:** Indicate the name and phone number of the prime Contractor's contact.
3. **PROJECT NAME:** Indicate the project name as shown on the contract documents.
4. **CONTRACT NUMBER:** Indicate the contract number for this project, as recorded on the cover of the signed project manual.
5. **SOLICITATION NUMBER:** Indicate the solicitation number for this project, as recorded on the cover of the signed project manual.
6. **PRIME CONTRACT AMOUNT:** Indicate the total dollar amount of the prime contract.
7. **REQUEST FOR PAYMENT PERIOD:** Indicate the time periods for reported payments. Subcontractor payment period should be for the month preceding the prime Contractor's payment period.
8. **REPORT DATE:** Indicate the date report is being filed. Also indicate if this is the Contractor's final request for payment.
9. **ALL FIRST-TIER SUBCONTRACTORS UTILIZED:** Names of first-tier Subcontractors. Subcontractors do not include firms serving as suppliers only.
10. **TYPE OF WORK:** Briefly describe Subcontractor's work (i.e., landscaping, electrical, paving, etc.).
11. **ORIGINAL SUBCONTRACT AMOUNT:** Indicate the dollar amount for each subcontract at time of award.
12. **AMENDED SUBCONTRACT AMOUNT:** This amount should be the total dollar value (original subcontract amount plus any additions or deletions) of the subcontract.
13. **AMOUNT PAID THIS PAYMENT PERIOD:** This amount should be the dollar amount paid to the Subcontractor this payment period.
14. **TOTAL PAID TO DATE:** This amount should be the total dollar amount paid to the Subcontractor to date.

COMMENTS (Include explanation if any payment amounts made to the Subcontractor are less than requested by the Subcontractor):

_____

_____

PORT OF PORTLAND

CONTRACTOR SAFETY INFORMATION

Project Name: _____ Project Number: _____

Prime Contractor: _____

Scope of Work Summary – Include location(s):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Potential Work Hazards/Concerns Identified (check ALL that apply):

☐ Fall Exposure	☐ Traffic Control	☐ Scaffolding
☐ Excavation	☐ Chemicals	☐ Ladders
☐ Confined Space Entry	☐ Crane/Rigging	☐ Aerial Lift
☐ Electrical	☐ Demolition	☐ Airborne Contaminants/Dust
☐ Hazardous Energy/Lockout-Tagout	☐ Public Safety	☐ High Noise
☐ Asbestos/Lead	☐ Hot Work/Fire Hazard	☐ Painting
☐	☐	☐
☐	☐	☐

Note: Attach any company safety programs, policies, or procedures that will apply to your work at the Port.

Please note any Port facilities safety-related information you request that relates to your work at the Port:

_____

_____

_____

_____

_____

Responsible Persons

List Competent Person(s) responsible ON SITE to monitor work performed on this project. Note: a "Competent Person" by OSHA definition has the ability to identify hazards and has responsibility and authority to take immediate corrective actions.

Name:	Certification:	Phone (Mobile/Pager/Office):

Contractor's Project Manager

Name: _____ Phone (Mobile/Pager/Office): _____

Contractor's Primary On-Site Safety Contact:

Name: _____ Phone (Mobile/Pager/Office): _____

Worksheet Prepared by:

Name: _____ Title: _____ Date: _____

*****PORT USE ONLY*****

Port CCM/Project Manager

Name: _____ Phone (Mobile/Pager/Office): _____

Lead Inspector(s)

Name: _____ Phone (Mobile/Pager/Office): _____

Name: _____ Phone (Mobile/Pager/Office): _____

Distribution:

☐ Risk Management, Loss Control

Ops Safety (Check applicable) ☐ Aviation ☐ Marine ☐ Ind. Properties ☐ Navigation

PORT OF PORTLAND

MONTHLY WORKFORCE REPORT

1. PRIME CONTRACTOR _____
2. CONTACT NAME AND PHONE NUMBER _____
3. PROJECT NAME _____
4. CONTRACT NUMBER _____ 5. SOLICITATION NUMBER _____
6. PRIME CONTRACT AMOUNT $ _____ 7. REPORT PERIOD FROM: _____ TO: _____

	TOTALS			
	8 Prime Contractor Apprentice Hours	9 Subcontractor(s) Apprentice Hours	10 Prime Contractor Journeyman Hours	11 Subcontractor(s) Journeyman Hours
BRICK MASON, STONE MASON				
CARPENTERS				
CARPET INSTALLERS				
CEMENT MASON				
DRYWALL INSTALLERS				
ELECTRICIANS				
GLAZIERS, GLASSWORKERS				
INSULATION WORKERS				
LABORERS				
OPERATING ENGINEERS				
PAINTERS				
PLASTERERS				
PLUMBERS & PIPEFITTERS				
ROOFERS				
SHEET METAL WORKERS				
TRUCK DRIVERS				
WELDERS & CUTTERS				
TOTALS				

It is hereby certified that the above listed apprentice/journeyman hours are the total craft hours, and that information contained herein is complete and accurate.

_____ _____
Contractor Authorized Signature Print Name

_____ _____
Title Date

Submit with Contractor's Monthly Request for Payment to Construction Contract Manager.

INSTRUCTIONS FOR COMPLETING THE MONTHLY WORKFORCE REPORT

File this form with each monthly application for payment, beginning with the first application. If no labor hours were used during the period for which payment is being requested, write "none" in Column 8.

1. **PRIME CONTRACTOR:** Indicate the name of the prime Contractor.
2. **CONTACT NAME AND PHONE NUMBER:** Indicate the name and phone number of the prime Contractor's contact.
3. **PROJECT NAME:** Indicate the project name as shown on the contract documents.
4. **CONTRACT NUMBER:** Indicate the contract number for this project, as recorded on the cover of the signed project manual.
5. **SOLICITATION NUMBER:** Indicate the solicitation number for this project, as recorded on the cover of the signed project manual.
6. **PRIME CONTRACT AMOUNT:** Indicate the total dollar amount of the prime contract.
7. **REPORT PERIOD:** Indicate the time period being reported.
8. **PRIME CONTRACTOR APPRENTICE HOURS:** Indicate the total hours worked by apprentices employed by the prime Contractor.
9. **SUBCONTRACTOR(S) APPRENTICE HOURS:** Indicate the total hours worked by apprentices employed by Subcontractors.
10. **PRIME CONTRACTOR JOURNEYMAN HOURS:** Indicate the total hours worked by apprentices employed by the prime Contractor's journeyman.
11. **SUBCONTRACTOR(S) JOURNEYMAN HOURS:** Indicate the total hours worked by apprentices employed by Subcontractors' journeymen.

DOCUMENT 007300
SUPPLEMENTARY CONDITIONS

1.1 GENERAL

A. These supplements modify, delete from, or add to the General Conditions.

B. Where an article, paragraph, or clause of the General Conditions is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, or clause remain in effect.

1.2 DEFINITIONS

A. See the General Conditions definitions. Add the following new definitions:

"AOC - The Administrative Order on Consent issued by the EPA first described in Section 6.19."

"ARARs - Acronym for 'applicable, relevant and appropriate requirements.'"

"CERCLA - The Comprehensive Environmental Response Conservation and Liability Act."

"EPA - The U.S. Environmental Protection Agency."

"Off-Site - Any property not On-Site."

"On-Site - The Terminal 4 property and adjacent in-water Removal Action Area as defined in the AOC."

1.3 ADDITIONAL INSURANCE REQUIREMENTS

A. See General Conditions Item 5.3. Add the following:

"A. The Contractor may need insurance coverage for claims under the Longshore and Harbor Worker's Compensation Act. The Contractor shall consult with his insurance carrier to determine if his work plan would require this insurance. If applicable, evidence of such insurance, including employer's liability coverage, shall be forwarded to the Port. In lieu of such insurance, the Contractor may provide evidence to the Port from the U.S. Department of Labor that the Contractor is a qualified self-insured employer and may provide a certificate of insurance evidencing excess workers' compensation and employer's liability insurance."

B. See General Conditions Item 5.4. Change first sentence to read, in part, "...in an amount not less than $5,000,000 per occurrence, which amount may be a combination of primary and excess liability insurance."

C. See General Conditions Item 5.4, A. Change to read, in part, "The Contractor shall maintain marine general liability insurance or a commercial general liability policy that covers work in or near a waterway to protect against liability for bodily injury and property damage which may arise out of the Contractor's operations under this Contract. Such insurance shall include coverage for products-completed operations liability for a minimum of 2 years after the Work is complete, independent contractors, contractual liability (including the tort liability of another

assumed under a business contract), and all other standard coverages usually afforded by a commercial general liability policy. If mobile equipment is used, the Contractor shall cover this equipment under the commercial general liability or automobile liability policy. The Contractor's commercial general liability policy shall not exclude coverage for explosion, collapse, and underground ('xcu') hazards. Such insurance shall name the Port...."

D. See General Conditions Item 5.4, B. Delete the last sentence and replace with, "Such insurance shall cover the Port as an additional insured."

E. Following Item 5.5, add:

"**Vessel Insurance**

"5.6 If owned or hired vessels are used in connection with this Contract, the Contractor shall provide certificate(s) of insurance evidencing protection and indemnity insurance, including Tower's Liability for towing vessels, in an amount not less than: (1) the greater of hull value or $5,000,000 per occurrence for towing vessels and crane barges, and (2) the greater of hull value or $1,000,000 per occurrence for other vessels. Such insurance shall name the Port, its commissioners, employees, and agents as additional assureds. The amount of insurance can be a combination of protection and indemnity and bumbershoot (excess) liability insurance.

"5.7 Vessels used in connection with this Contract shall meet the requirements of all applicable state and federal environmental laws, including but not limited to the Oil Pollution Act of 1990 (OPA). The Contractor shall provide evidence that each subject vessel is insured for water pollution liability losses in an amount of the greater of $1,000,000; the OPA statutory limit per vessel; or limits required by other applicable state and federal environmental laws.

"5.8 The Contractor shall provide evidence that the master and crew of any owned or hired vessels used in conjunction with this Contract are covered for compensation under the Jones Act prior to commencing work. If the vessel owner (if different) provides this coverage, the Contractor shall provide the Port with a copy of the vessel owner's certificate of insurance.

"5.9 If the Work includes work in, or over, water or from vessels, any exclusion of such operations in the Contractor's commercial general liability policy shall be removed by endorsement, and a copy shall be provided to the Port.

"**Contractor's Pollution Liability Insurance**

"5.10 The Contractor shall maintain Contractors Pollution Liability insurance in an amount not less than $2,000,000 per occurrence covering liability for sudden and non-sudden pollution on land and on water, including first party clean-up costs. Coverage shall include exacerbation of existing contamination to the extent exacerbated by the Contractor or his Subcontractors. If the policy is claims-made, it shall: (1) have a retroactive date prior to the commencement date of this Contract, and (2) be maintained continuously in force for, or shall be endorsed with an extended reporting period of, two years beyond Final Acceptance of the Work.

"**Contractor's Risks**

"5.11 The Contractor shall be responsible for obtaining any insurance the Contractor deems necessary to cover the Contractor's own risks, including without limitation: (1) business

interruption, such as business income, extra expense, delay of opening, Act of God, or similar coverage; (2) personal property; and/or (3) automobile physical damage and/or theft. In no event will the Port be liable for any: (a) business interruption or any other related or consequential loss sustained by the Contractor; (b) damage to, or loss of, the Contractor's property; or (c) damage to, or loss of, an automobile, whether or not such loss is insured, even if such loss is caused by the negligence of the Port, excluding gross negligence or willful misconduct on the part of the Port."

1.4 PERMITS

A. See General Conditions Items 6.19 and 6.20. Delete and replace with the following:

"Permits and Regulatory Authorizations

"The Work is being performed pursuant to CERCLA under an AOC issued by the EPA. Therefore no permits are required for On-Site Work, except for local permits the Port is obtaining as provided in Item 6.19 below. All On-Site Work must meet the substantive requirements of ARARs and must be authorized by the EPA, in consultation with EPA's federal, state and tribal government agency partners. All Off-Site Work must obtain regulatory permits and meet the requirements of all applicable Laws.

"6.19 Port-Designed Work

"A. The Port will submit all calculations and other documentation required for review and checking for purposes of obtaining regulatory authorizations from EPA and other federal, state and local governments.

"B. The Port will obtain, and pay the costs and charges of, all On-Site general project regulatory authorizations required of the EPA and other federal, state and local governments. The Contractor will obtain, and pay the costs and charges of, all Off-Site general project regulatory authorizations and permits required of the EPA and other federal, state and local governments.

"C. To the extent that local permits are being obtained for operational changes necessary for implementation of the Work, the Contractor shall obtain and pay all costs and charges imposed for permits customarily issued only to a contractor, such as electrical, mechanical, and plumbing. He shall obtain permits no later than 7 days after being advised by the Port that permits are ready to be issued.

"D. Each party shall give the other all notices necessary for permit-related and regulatory inspections by third parties, and each will fully cooperate with any such inspection.

"E. Each party shall provide the other with a legible copy of permits, certificates of approval, and certificates of occupancy issued by the responsible unit of government.

"6.20 Contractor-Designed Work

"A. The Contractor shall submit to the Port, for review, all calculations and other documentation required for purposes of obtaining regulatory authorizations from the EPA and other federal, state, and local governments for Contractor-designed work.

"B. After Port review, the Contractor shall submit to federal, state, and local units of government all calculations and other documentation required for obtaining regulatory authorizations and permits. During review by units of government, the Contractor shall notify the Port of proposed deviations from the original permit and regulatory authorization documentation.

"C. The Contractor shall submit to the Port all calculations and other documentation approved by units of government.

"D. The Contractor shall pay costs and charges imposed by local units of government for permits issued to the Contractor.

"E. The Contractor shall give all notices necessary for regulatory and permit-related inspections by third parties.

"F. The Contractor shall submit to the Port a legible copy of permits, certificates of approval, and certificates of occupancy issued by the responsible unit of government."

1.5 ENVIRONMENTAL RESPONSIBILITIES

A. See General Conditions Items 6.24, 6.25, and 6.26. Delete and replace with the following:

"6.24 The Work is being performed pursuant to CERCLA under an AOC issued by the EPA. All On-Site Work shall comply with the substantive requirements of ARARs and shall be performed in accordance with EPA-mandated environmental conditions. All Off-Site Work shall obtain regulatory permits and meet the requirements of all applicable environmental Laws, and shall comply with EPA's Off-Site rule. The following federal, state, and local agencies have enacted Laws dealing with the prevention of environmental pollution and the preservation of natural resources, as identified by EPA in the Action Memorandum and Contract Documents:

"A. Oregon Department of Environmental Quality Oregon Environmental Quality Commission

"B. Oregon Department of Fish and Wildlife

"C. U.S. Environmental Protection Agency

"D. U.S. Fish and Wildlife Service

"E. National Marine Fisheries Service

"6.25 Known conditions at the construction site that may require the Contractor to comply with ARARs enacted by the agencies listed above are specifically referred to at various places in this Contract, including but not necessarily limited to Division 1 of the Specifications.

"6.26 The Contractor is responsible for (1) considering the ARARs and other requirements imposed by the EPA for the Work, and any statute, regulation, or ordinance that applies to Off-Site activities, (2) considering the known conditions specifically referred to in this Contract, and (3) ensuring that the activities of the Contractor and the Contractor's employees, Subcontractors (including suppliers), agents, and invitees with respect to those conditions do not violate any of those requirements. Without limiting the foregoing, the Contractor is responsible for the following

environmental and natural resource risks associated with the performance of this Contract, if such risks arise from the Contractor's failure to perform the Work in accordance with the Contract Documents:

"A. Air pollution;

"B. Water pollution;

"C. Contamination of soil, groundwater, or sediment;

"D. Filling or destruction of wetlands;

"E. Taking of a federally listed threatened or endangered species through habitat destruction, habitat degradation, or otherwise; and

"F. Introduction of an invasive species."

B. See General Conditions Item 6.27. Change first sentence to read, in part, "...and with the requirements of all regulatory authorizations and permits issued under those Laws...."

1.6 OTHER DAMAGES

A. See General Conditions Item 13.21. Change to read, in part, "...effort necessitated or damage incurred because the Work is extended over a longer period of time, such as the actual costs of additional engineering and inspections by the Port, and fines or penalties imposed against the Port by regulatory agencies arising from late Substantial Completion or Final Acceptance."

1.7 MONTHLY WORKFORCE REPORT

A. Contractors awarded construction contracts over $500,000 shall report all labor hours worked using the Monthly Workforce Report form that follows the General Conditions. Labor hours shall include journeyman hours and registered apprentice hours by trade. The report shall include hours worked by registered apprentices of subcontractors if the subcontract is greater than $100,000.

DOCUMENT 007346

PREVAILING WAGE RATES

for

Public Works Contracts in Oregon

The following pages are excerpted from the BOLI prevailing wage rates booklet and contain current wage rates for Region 2 (Clackamas, Multnomah, and Washington counties). For a complete booklet, contact the Oregon Bureau of Labor and Industries. All forms and other information necessary to comply with ORS 279C.800 through ORS 279C.870 are available from BOLI upon request.

BOLI

OREGON BUREAU OF LABOR AND INDUSTRIES

Brad Avakian
Commissioner
Bureau of Labor and Industries

Effective: July 1, 2010

REGION #2
Clackamas, Multnomah and Washington Counties

OCCUPATION	PREVAILING WAGE RATE	FRINGE RATE
Asbestos Worker/Insulator	See Appendix	See Appendix
Boilermaker	See Appendix	See Appendix
Bricklayer/Stonemason	See Appendix	See Appendix
Bridge & Highway Carpenter (Carpenter Group 5)	See Appendix	See Appendix
Carpenter Group 1 & 2	See Appendix	See Appendix
Cement Mason	See Appendix	See Appendix
Diver	See Appendix	See Appendix
Divers' Tender	See Appendix	See Appendix
Dredger	See Appendix	See Appendix
Drywall, Lather, Acoustical Carpenter & Ceiling Installer	See Appendix	See Appendix
Drywall Taper (Painter & Drywall Taper)	See Appendix	See Appendix
Electrician	See Appendix	See Appendix
Elevator Constructor, Installer and Mechanic	See Appendix	See Appendix
Fence Constructor (Non-metal)	$22.46	$8.38
Fence Erector (Metal)	$19.40	$2.85
Flagger (Laborer Group 5)	See Appendix	See Appendix
Glazier	See Appendix	See Appendix
Hazardous Materials Handler/Mechanic	$16.30	$5.13
Highway and Parking Striper	See Appendix	See Appendix
Ironworker	See Appendix	See Appendix
Laborer Group 1	See Appendix	See Appendix
Laborer Group 2	See Appendix	See Appendix
Laborer Group 3	See Appendix	See Appendix
Laborer Group 4	See Appendix	See Appendix
Laborer Group 5	See Appendix	See Appendix
Landscape Laborer/Technician	$16.14	$3.11
Limited Energy Electrician	See Appendix	See Appendix
Line Constructor	See Appendix	See Appendix
Marble Setter	See Appendix	See Appendix
Millwright Group 1 & 2 (Carpenter Group 3 & 4)	See Appendix	See Appendix
Painter	See Appendix	See Appendix
Piledriver (Carpenter Group 6)	See Appendix	See Appendix
Plasterer and Stucco Mason (Plasterer)	See Appendix	See Appendix
Plumber/Pipefitter/Steamfitter (Plumber)	See Appendix	See Appendix
Power Equipment Operator Group 1	See Appendix	See Appendix
Power Equipment Operator Group 1A	See Appendix	See Appendix
Power Equipment Operator Group 1B	See Appendix	See Appendix
Power Equipment Operator Group 2	See Appendix	See Appendix
Power Equipment Operator Group 3	See Appendix	See Appendix
Power Equipment Operator Group 4	See Appendix	See Appendix
Power Equipment Operator Group 5	See Appendix	See Appendix
Power Equipment Operator Group 6	See Appendix	See Appendix

REGION #2
Clackamas, Multnomah, and Washington Counties

OCCUPATION	PREVAILING WAGE RATE	FRINGE RATE
Roofer	See Appendix	See Appendix
Sheet Metal Worker	See Appendix	See Appendix
Soft Floor Layer	See Appendix	See Appendix
Sprinkler Fitter	See Appendix	See Appendix
Tenders to Mason Trades (Brick and Stonemason, Mortar Mixer, Hod Carrier)	See Appendix	See Appendix
Tender to Plasterer and Stucco Mason	See Appendix	See Appendix
Testing, Adjusting, and Balancing (TAB) Technician	$24.75	$5.92
Tile Setter/Terrazzo Worker: Hard Tile Setter	$24.33	$6.68
Tile, Terrazzo, and Marble Finisher	See Appendix	See Appendix
Truck Driver	$19.12	$5.64

TRADE	BASIC HOURLY RATE	FRINGE
ASBESTOS WORKER/ INSULATOR	**37.51**	**17.16**
BOILERMAKER	**34.15**	**22.42**

BRICKLAYER/STONEMASON
(This trade is tended by "Tenders to Mason Trades")

Area 1	**32.89**	**15.12**

(Add $1.00 per hour to Fringe for Refractory repair work.)

Area 2	**31.67**	**14.77**

(Add $1.00 per hour to Fringe for Refractory repair work.)

Area 1

Baker	Grant	Multnomah	Wallowa
Benton (a)	Hood River	Polk	Wasco (a)
Clackamas	Lincoln (a)	Sherman	Washington
Clatsop	Linn (a)	Tillamook	Yamhill
Columbia	Marion	Umatilla	
Gilliam	Morrow	Union	

Area 2

Benton (b)	Deschutes	Lane	Wheeler
Coos	Jefferson	Lincoln (b)	
Crook	Klamath	Linn (b)	
Curry	Lake	Wasco (b)	

(a) North Half (b) South Half

CARPENTER

Zone 1 (Base Rate)

Group 1	**31.30**	**13.32**
Group 2	**31.45**	**13.32**
Group 3	**31.80**	**13.32**
Group 4	**31.95**	**13.32**
Group 5	**31.80**	**13.32**
Group 6	**32.30**	**13.32**

CARPENTER (Continued)

Zone Differential for Carpenters
(Add to Zone 1 Rate)

Zone 2	**.85**
Zone 3	**1.25**
Zone 4	**1.70**
Zone 5	**2.00**
Zone 6	**3.00**
Zone 7	**5.00**

Zone 1: Projects within 30 miles of city hall in the cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 60 miles.
Zone 5: More than 60 miles but less than 70 miles.
Zone 6: More than 70 miles but less than 100 miles.
Zone 7: More than 100 miles from the respective city hall of the cities listed below.

Reference Cities for Group 1 and 2 Carpenters

Albany	Goldendale	Madras	Roseburg
Astoria	Grants Pass	Medford	Salem
Baker City	Hermiston	Newport	The Dalles
Bend	Hood River	Ontario	Tillamook
Brookings	Klamath Falls	Pendleton	Vancouver
Burns	LaGrande	Portland	
Coos Bay	Lakeview	Port Orford	
Eugene	Longview	Reedsport	

Zones for Groups 3 and 4 Carpenter are determined by the distance between the project site and **either**
1) The worker's residence; ***or***
2) City Hall of a reference city for the appropriate group shown, whichever is closer

Reference Cities for Group 3 and 4 Carpenters

Eugene	Medford	Portland	Vancouver
Longview	North Bend	The Dalles	

Zones for Groups 5 and 6 Carpenter are determined by the distance between the project site and **either**
1) The worker's residence; ***or***
2) City Hall of a reference city for the appropriate group shown, whichever is closer

Reference Cities for Group 5 and 6 Carpenters

Bend	Longview	North Bend
Eugene	Medford	Portland

TRADE	BASIC HOURLY RATE	FRINGE	TRADE	BASIC HOURLY RATE	FRINGE

CARPENTER (Continued)

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

Group 1 (Carpenter Group-I)	Group 2 (Carpenter Group-II)
Group 3 (Millwright Group-I)	Group 4 (Millwright Group-II)
Group 5 (Bridge & Highway Carpenter)	Group 6 (Piledriver)

Welders receive $.75/hour above their group's rate.

When working with creosote and other toxic, treated wood and steel material, workers shall receive $.25/hour premium pay for minimum of eight (8) hours.

When working in sheet pile coffer dams or cells up to the external water level, Group 6 workers shall receive $.15/hour premium pay for minimum of eight (8) hours.

CEMENT MASON

(This trade is tended by "Concrete Laborer")

Zone 1 (Base Rate)

Group 1	**26.87**	**17.59**
Group 2	**27.41**	**17.59**
Group 3	**27.41**	**17.59**
Group 4	**27.94**	**17.59**

Zone Differential for Cement Mason
(Add to Zone 1 Rate)

Zone 2	**.65**
Zone 3	**1.15**
Zone 4	**1.70**
Zone 5	**3.00**

CEMENT MASON (Continued)

Zone 1: Projects within 30 miles of city hall in the cities listed below.
Zone 2: More than 30 miles, but less than 40 miles.
Zone 3: More than 40 miles, but less than 50 miles.
Zone 4: More than 50 miles, but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Bend	Eugene	Portland	The Dalles
Corvallis	Medford	Salem	Vancouver

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all other project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

DIVER & DIVERS' TENDER

Diver	**75.31**	**13.32**
Divers' Tender	**35.53**	**13.32**

1) For those workers who reside within a reference city below, their zone pay shall be computed from the city hall of the city wherein they reside.

2) For those workers who reside nearer to a project than is the city hall of any reference city below, the mileage from their residence may be used in computing their zone pay differential.

3) The zone pay for all other projects shall be computed from the city hall of Portland.

Zone Differential for Diver/Divers' Tender
(Add to Zone 1 Rate)

Zone 2	**.85**
Zone 3	**1.25**
Zone 4	**1.70**
Zone 5	**2.00**
Zone 6	**3.00**
Zone 7	**5.00**

DIVER & DIVERS' TENDER (Continued)

Zone 1: Projects within 30 miles of city hall in the cities listed below
Zone 2: More than 30 miles, but less than 40 miles.
Zone 3: More than 40 miles, but less than 50 miles.
Zone 4: More than 50 miles, but less than 60 miles.
Zone 5: More than 60 miles, but less than 70 miles.
Zone 6: More than 70 miles, but less than 100 miles.
Zone 7: More than 100 miles from the city hall of employee's home local.

Reference Cities for Diver/Divers' Tender

Astoria	Klamath Falls	Newport	Roseburg
Bend	Longview	North Bend	Salem
Eugene	Medford	Portland	The Dalles

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

Depth Pay and Enclosure Pay are added to the Divers' Basic Hourly Rate to obtain the Total Hourly Rate for the Diver.

Basic Hourly Rate Pay	+	Hourly Depth Pay	+	Hourly Enclosure Pay	=	Divers' Total Hourly Rate

Divers' Depth Pay:

Depth of Dive	Hourly Depth Pay
50-100 ft.	$1.00 per foot over 50 feet
101-150 ft.	$1.50 per foot over 100 feet
151-200 ft.	$2.00 per foot over 150 feet

DIVER & DIVERS' TENDER (Continued)

Divers' Enclosure Pay (working without vertical escape):

Distance Traveled In the Enclosure	Hourly Enclosure Pay
5-50ft.	$.50/hr. up to $4.00 maximum per day
50-100ft.	$1.13/hr. up to $9.00 maximum per day
100-150ft.	$2.13/hr. up to $17.00 maximum per day
150-200ft.	$4.63/hr. up to $37.00 maximum per day
200-300ft.	$4.63/hr. up to $37.00 maximum per day, plus $.40 per foot traveled in enclosure.
300-450ft.	$4.63/hr. up to $37.00 maximum per day, plus $.80 per foot traveled in enclosure.
450-600ft.	$4.63/hr. up to $37.00 maximum per day, plus $1.60 per foot traveled in enclosure.

DREDGER

Zone 1 (Base Rate)

Leverman (Hydraulic & Clamshell)	**41.91**	**11.35**
Assistant Engineer (Watch Engineer, Mechanic Machinist)	**39.21**	**11.35**
Tenderman (Boatman Attending Dredge Plant) Fireman	**37.97**	**11.35**
Fill Equipment Operator	**36.96**	**11.35**
Assistant Mate	**34.65**	**11.35**

Zone Differential for Dredgers
(Add to Zone 1 Base Rate)

Zone B	**2.50**
Zone C	**5.00**

Zone mileage based on road miles:

Zone A: Center of jobsite to no more than 30 miles from the city hall of Portland.
Zone B: More than 30 miles but not more than 60 miles.
Zone C: Over 60 miles.

DRYWALL, LATHER, ACOUSTICAL CARPENTER & CEILING INSTALLER

Zone 1 (Base Rate)

TRADE	BASIC HOURLY RATE	FRINGE
Drywall (Acoustical and Drywall Applicator)	**31.59**	**13.03**
Wetwall (Lather)	**29.71**	**14.91**

Zone Differential for Drywall, Lather, Acoustical Carpenter & Ceiling Installer
(Add to Zone 1 Base Rate)

Zone mileage based on road miles:

Zone 2	31-40 miles	**.85**
Zone 3	41-50 miles	**1.25**
Zone 4	51-60 miles	**1.70**
Zone 5	61-70 miles	**2.00**
Zone 6	71-100 miles	**3.00**
Zone 7	101 or more	**5.00**

The correct transportation allowance shall be based on road mileage from the City Hall of the local union having jurisdiction of the job or other transportation reference cities herein listed.

Reference Cities

Albany	Coquille	Medford	Roseburg
Astoria	Eugene	Newport	Salem
Baker	Grants Pass	North Bend	Seaside
Bandon	Hermiston	Pendleton	The Dalles
Bend	Klamath Falls	Portland	Tillamook
Brookings	Kelso-Longview	Reedsport	Vancouver

ELECTRICIAN

Area 1

TRADE	BASIC HOURLY RATE	FRINGE
Electrician	**27.66**	**10.83**
Cable Splicer	**30.43**	**10.97**

Area 2

TRADE	BASIC HOURLY RATE	FRINGE
Electrician	**35.20**	**15.29**
Cable Splicer	**36.96**	**15.34**

Area 3

TRADE	BASIC HOURLY RATE	FRINGE
Electrician	**31.97**	**13.61**

ELECTRICIAN (Continued)

Area 4

TRADE	BASIC HOURLY RATE	FRINGE
Electrician	**34.05**	**15.45**
Cable Splicer	**37.46**	**15.55**
Electrical Material Handler	**17.43**	**7.42**

Area 5

TRADE	BASIC HOURLY RATE	FRINGE
Electrician	**36.05**	**16.58**
Electrical Material Handler	**20.55**	**10.64**
Electrical Welder	**39.66**	**16.69**

Zone Pay for Area 5 Electrician
(Add to Basic Hourly Rate)

Zone mileage based on air miles:

Zone 1	31-50 miles	**1.50**
Zone 2	51-70 miles	**3.50**
Zone 3	71-90 miles	**5.50**
Zone 4	91 or more	**9.00**

There shall be a 30-mile free zone from downtown Portland City Hall and a similar 15-mile free zone around the following cities:

Astoria	Hood River	Seaside	The Dalles
Tillamook			

Further, the free zone at the Oregon coast shall extend along Hwy 101 west to the ocean Hwy 101 east 10 miles if not already covered by the above 15-mile free zone.

Area 6

TRADE	BASIC HOURLY RATE	FRINGE
Electrician	**29.78**	**14.19**
Cable Splicer	**29.78**	**14.19**
Electrical Material Handler	**16.22**	**7.39**

Zone Pay for Area 6 Electrician
(Add to Basic Hourly Rate)

Zone mileage based on road miles:

Zone 1	0-20 miles	**0.00**
Zone 2	21-30 miles	**1.50**
Zone 3	31-40 miles	**3.30**
Zone 4	41-50 miles	**5.00**
Zone 5	51-60 miles	**6.80**
Zone 6	60 or more	**9.50**

TRADE	BASIC HOURLY RATE	FRINGE

ELECTRICIAN (Continued)

Zone Pay for Area 6 **Electrical Material Handler**
(Add to Basic Hourly Rate)

Zone mileage based on road miles:

Zone 1	0-20 miles	**0.00**
Zone 2	21-30 miles	**1.00**
Zone 3	31-40 miles	**2.80**
Zone 4	41-50 miles	**4.50**
Zone 5	51-60 miles	**6.30**
Zone 6	60 or more	**9.00**

There shall be a 20-mile free zone from the downtown Post Office in Grants Pass, Klamath Falls, Medford, and Roseburg.

Reference Counties

Area 1	Area 2	Area 3
Malheur	Gilliam	Coos
	Grant	Curry
	Morrow	Douglas (a)
	Umatilla	Lane (a)
	Wheeler	Lincoln

Area 4	Area 5	Area 6
Benton	Clackamas	Douglas (b)
Lane (b)	Clatsop	Harney
Linn	Columbia	Jackson
Marion	Hood River	Josephine
Polk	Multnomah	Klamath
Yamhill (c)	Sherman	Lake
	Tillamook	
	Wasco	
	Washington	
	Yamhill (d)	

(a) Those portions lying **west** of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County
(b) Those portions lying **east** of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County.
(c) South half
(d) North half

ELEVATOR CONSTRUCTOR, INSTALLER AND MECHANIC

Area 1

Mechanic	**44.14**	**20.04**

Area 2

Mechanic	**44.32**	**20.04**

Reference Cities

Area 1	Area 2
Baker	All
Umatilla	Remaining
Union	Counties
Wallowa	

FLAGGER See Laborer, Group 5

GLAZIER **31.23** **15.26**

Add $1.00 to base rate if safety belt is required by State safety regulations.

Add $4.00 to base rate for work done from a non-motorized single-man bosun chair.

HIGHWAY/PARKING STRIPER **32.22** **8.62**

IRONWORKER **33.62** **19.60**

Zone Differential for Ironworker
(Add to Basic Hourly Rate)

Zone 1	**0.00**
Zone 2	**3.75** hr. or $30.00 maximum per day
Zone 3	**6.88** hr. or $55.00 maximum per day
Zone 4	**8.75** hr. or $70.00 maximum per day

Zone 1: Projects within 45 miles of city hall in the cities listed below.
Zone 2: More than 45 miles, but less than 60 miles.
Zone 3: More than 60 miles, but less than 100 miles.
Zone 4: More than 100 miles.

TRADE	BASIC HOURLY RATE	FRINGE	TRADE	BASIC HOURLY RATE	FRINGE

IRONWORKER (Continued)

Note: Zone pay for Ironworkers shall be determined using AAA road mileage computed from the city hall of the reference cities listed below **or** the residence of the employee, whichever is nearer to the project.

Reference Cities

Medford Portland

LABORER

Zone 1 (Base Rate):

Group 1	**25.50**	**11.60**
Group 2	**26.16**	**11.60**
Group 3	**26.63**	**11.60**
Group 4	**27.05**	**11.60**
Group 5	**22.24**	**11.60**

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. A Group 1 base rate is used for General Laborer on such a site. For further information on this, call the Prevailing Wage Rate Coordinator at (971) 673-0839.

Zone Differential for Laborers
(Add to Zone 1 Rate)

Zone 2	**.65**
Zone 3	**1.15**
Zone 4	**1.70**
Zone 5	**2.75**

Zone 1: Projects within 30 miles of city hall in the cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	Burns	Hermiston	Portland
Astoria	Coos Bay	Klamath Falls	Roseburg
Baker City	Eugene	Medford	Salem
Bend	Grants Pass	Newport	The Dalles

LABORER (Continued)

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

LIMITED ENERGY ELECTRICIAN

Area 2	**26.95**	**13.66**
Area 3	**23.03**	**11.49**
Area 4	**27.04**	**11.46**
Area 5	**26.95**	**13.66**
Area 6	**24.90**	**10.65**

Zone Pay for Area 6 Limited Energy Electricians
(Add to Basic Hourly Rate)

Zone mileage based on air miles:

Zone 1	0-20 miles	**0.00**
Zone 2	21-30 miles	**1.50**
Zone 3	31-40 miles	**3.30**
Zone 4	41-50 miles	**5.00**
Zone 5	51-60 miles	**6.80**
Zone 6	60 or more	**9.50**

There shall be a 20-mile free zone from the downtown Post Office in Grants Pass, Klamath Falls, Medford, and Roseburg.

Area 2	Area 3	Area 4
Gilliam	Coos	Lane (b)
Grant	Curry	Marion
Morrow	Lane (a)	Polk
Umatilla		Yamhill (c)
Wheeler		

Area 5	Area 6
Clackamas	Jackson
Clatsop	Josephine
Columbia	
Multnomah	
Tillamook	
Washington	
Yamhill (d)	

TRADE	BASIC HOURLY RATE	FRINGE

LIMITED ENERGY ELECTRICIAN
(Continued)

a) Those portions lying **west** of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County.
(b) Those portions lying **east** of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County.
(c) South half
(d) North half

LINE CONSTRUCTOR

Area 1

Group 1	**47.34**	**13.74**
Group 2	**42.27**	**13.53**
Group 3	**29.70**	**10.24**
Group 4	**36.35**	**10.85**
Group 5	**31.70**	**10.30**
Group 6	**29.59**	**10.24**
Group 7	**15.77**	**8.98**

Area 1 All counties except Malheur County

Group 1
Cable Splicer
Leadman Pole Sprayer

Group 2
Heavy Line Equipment Man
Journeyman Lineman Welder
Journeyman Lineman
Pole Sprayer

Group 3
Tree Trimmer

Group 4
Line Equipment Man

Group 5
Head Groundman
Jackhammer Man
Powderman

Group 6
Groundman

Group 7
Tree Trimmer Groundman

MARBLE SETTER **33.89** **15.12**
(This trade is tended by "Tile, Terrazzo, & Marble Finishers")

PAINTER & DRYWALL TAPER

Commercial Painting	**19.59**	**7.44**
Industrial Painting	**23.24**	**7.44**

Add $0.75 to base rate for work over 60 ft. high on swing stage, mechanical climber, spider or bucket truck for both commercial and industrial painting.

PAINTER & DRYWALL TAPER
(Continued)

Drywall Taper	**31.76**	**11.38**

PLASTERER AND STUCCO MASON
(This trade is tended by "Tenders to Plasterers")

Nozzleman	**30.86**	**12.81**
Swinging Scaffold	**29.86**	**12.81**
All Other Work	**28.86**	**12.81**

PLUMBER/PIPEFITTER/STEAMFITTER

Area 1	**25.58**	**11.92**

Add $2.21 per hour to basic hourly rate if it is possible for worker to fall 30 ft. or more, or if required to wear a fresh-air mask or similar equipment for 2 hours or more.

Zone Differential for Area 1
Plumber/Pipefitter/Steamfitter/
(Add to Base Rate)

Zone 1	**2.50** per hour
Zone 2	**3.50** per hour
Zone 3	**5.00** per hour

Zone mileage based on road miles:

Zone 1: Forty (40) to fifty five (55) miles-Basic rate plus $2.50 per hour.
Zone 2: Fifty five (55) to one hundred (100) miles-Basic rate plus $3.50 per hour.
Zone 3: Over one hundred (100) miles-Basic rate plus $5.00 per hour.

There shall be a maximum of ten (10) hours of zone pay per workday.

Reference Cities for Area 1:
Boise, Idaho
Twin Falls, Idaho

Area 2	**44.00**	**20.74**
Area 3	**35.69**	**20.39**

TRADE	BASIC HOURLY RATE	FRINGE

PLUMBER/PIPEFITTER/STEAMFITTER
(Continued)

Area 1	Area 2	Area 3
Baker	Grant (b)	All Remaining Counties
Harney (a)	Morrow	
Malheur	Umatilla	
	Union	
	Wallowa	

(a) Except Northwest Portion
(b) Except Southwest Portion

POWER EQUIPMENT OPERATOR

Zone 1 (Base Rate)

Group 1	**37.27**	**11.50**
Group 1A	**39.13**	**11.50**
Group 1B	**41.00**	**11.50**
Group 2	**35.64**	**11.50**
Group 3	**34.65**	**11.50**
Group 4	**33.71**	**11.50**
Group 5	**32.60**	**11.50**
Group 6	**29.61**	**11.50**

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Waste Site. For information on this differential, call the Prevailing Wage Rate Coordinator at (971) 673-0839.

Zone Rates

Zone 2	**3.00**
Zone 3	**6.00**

For the Following Metropolitan Counties:

Multnomah, Clackamas, Marion, Yamhill, Washington and Columbia:

See map on page 46 for Zone 1 of this classification

POWER EQUIPMENT OPERATOR
(Continued)

(A) All jobs or projects located in Multnomah, Clackamas and Marion counties, west of the western boundary of Mt. Hood National Forest and west of mile post 30 on Interstate 84 and west of mile post 30 on State Hwy 26 and west of mile post 30 on Hwy 22 and all jobs located in Yamhill County, Washington County and Columbia County shall receive Zone 1 pay for all classifications.

(B) All jobs or projects located in the area outside the identified boundary above, but less than 50 miles from the Portland City Hall shall receive Zone 2 pay for all classifications.

(C) All jobs or projects located more than 50 miles from the Portland City Hall, but outside the identified border above, shall receive Zone 3 pay for all classifications.

For the Following Cities:

Albany; Bend; Coos Bay; Eugene; Grants Pass; Klamath Falls; Medford and Roseburg:

(A) All jobs or projects located within 30 miles of the respective city hall of the above mentioned cities shall receive Zone 1 pay for all classifications.

(B) All jobs or projects located more than 30 miles and less than 50 miles from the respective city hall of the above mentioned cities shall receive Zone 2 for all classifications.

(C) All jobs or projects located more than 50 miles from the respective city hall of the above mentioned cities shall receive Zone 3 pay for all classifications.

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement). On all other project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

TRADE	BASIC HOURLY RATE	FRINGE

ROOFER

Area 1*

Roofer	**27.03**	**8.65**
Handling coal tar pitch	**29.73**	**8.65**
Remove fiberglass insulation	**29.73**	**8.65**

Area 1*

Clackamas	Gilliam	Multnomah	Washington
Clatsop	Grant	Tillamook	Wheeler
Columbia			

*On all jobs on which coal tar pitch is the basic roofing material or where the old roof being removed is composed of coal tar based material, a rate of pay ten percent (10%) greater than the basic rate of pay shall be paid for all work performed.

*All employees engaged in removing fiberglass insulation shall receive a rate of pay ten percent (10%) greater than the employee's basic rate of pay.

Area 2** (a) & (b)

Roofer	**21.29**	**9.90**

Benton	Marion
Lincoln	Polk
Linn	Yamhill

** Add $2.00 to basic hourly rate for application, spudding and cutting or removal of coal tar products.

** Add $0.50 per hour to base hourly rate for application, spudding and cutting or removal of fiberglass insulation.

Area 4***

Roofer	**23.10**	**9.47**

Umatilla

*** Add $2.00 to basic hourly rate for employees working with irritable bituminous materials.

*** Add $2.00 to basic hourly rate for employees working with "Densdeck" roofing board.

ROOFER (Continued)

*** Add $2.00 to basic hourly rate for employees removing fiberglass insulation.

Area 5****

Roofer	**23.00**	**9.52**

Morrow

**** Add $3.00 to basic hourly rate for employees working with irritable bituminous materials

SHEET METAL WORKER

Area 1	**34.42**	**16.95**

Add $1.00 to base rate for work performed on any swinging platform, swinging chair or swinging ladder.

Add $1.00 to base rate for work with lead or installing material in a plant that uses lead in any form to manufacture a product (excluding soldering).

Add $1.00 to base rate for work performed in a confined space as defined by OSHA.

Area 3	**31.21**	**15.40**

Add $1.00 to base rate for work where it is necessary to wear a chemically activated face mask.

Area 4	**30.00**	**15.12**
Area 5	**28.98**	**15.54**

Area 1	Area 1 (Cont.)	Area 5
Benton	Washington	Coos
Clackamas	Wheeler	Curry
Clatsop		
Columbia	Area 3	
Gilliam	Morrow	
Grant	Umatilla	
Lincoln		
Linn	Area 4	
Multnomah	Douglas	
Tillamook	Lane	

SOFT FLOOR LAYER	**26.28**	**10.85**
SPRINKLER FITTER	**32.75**	**18.10**

TRADE	BASIC HOURLY RATE	FRINGE

TENDERS TO MASON TRADES (Brick and Stonemason, Mortar Mixer, Hod Carrier)

	26.78	**11.15**

Add $0.50 to base rate for refractory work.

Add to base rate an amount equal to that received for safety belt requirements or other unusual job conditions by the mechanic this worker is tending.

TENDER TO PLASTERER AND STUCCO MASON

	26.65	**12.25**

TILE SETTER/TERRAZZO WORKER: Hard Tile Setter **28.90** **13.57**

(This trade is tended by "Tile, Terrazzo, & Marble Finisher")

TILE, TERRAZZO, AND MARBLE FINISHER

TILE, TERRAZZO FINISHER

	22.01	**10.00**

BRICK AND MARBLE FINISHER

	22.01	**10.10**

Add $1.00 to base rate if safety belt required by State safety regulations.

Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.

TRUCK DRIVER

Group 1	**26.90**	**12.75**
Group 2	**27.02**	**12.75**
Group 3	**27.15**	**12.75**
Group 4	**27.41**	**12.75**
Group 5	**27.63**	**12.75**
Group 6	**27.79**	**12.75**
Group 7	**27.99**	**12.75**

(Zone Pay in addition to Basic Hourly Rate and Fringe.)

TRUCK DRIVER (Continued)

For the Following Cities:

Albany	Grants Pass	Ontario
Astoria	Hermiston	Oregon City
Baker	Hood River	Pendleton
Bend	Klamath Falls	Portland
Bingen	LaGrande	Port Orford
Brookings	Lakeview	Reedsport
Burns	Longview	Roseburg
Coos Bay	Madras	Salem
Corvallis	Medford	The Dalles
Eugene	McMinnville	Tillamook
Goldendale	Newport	Vancouver

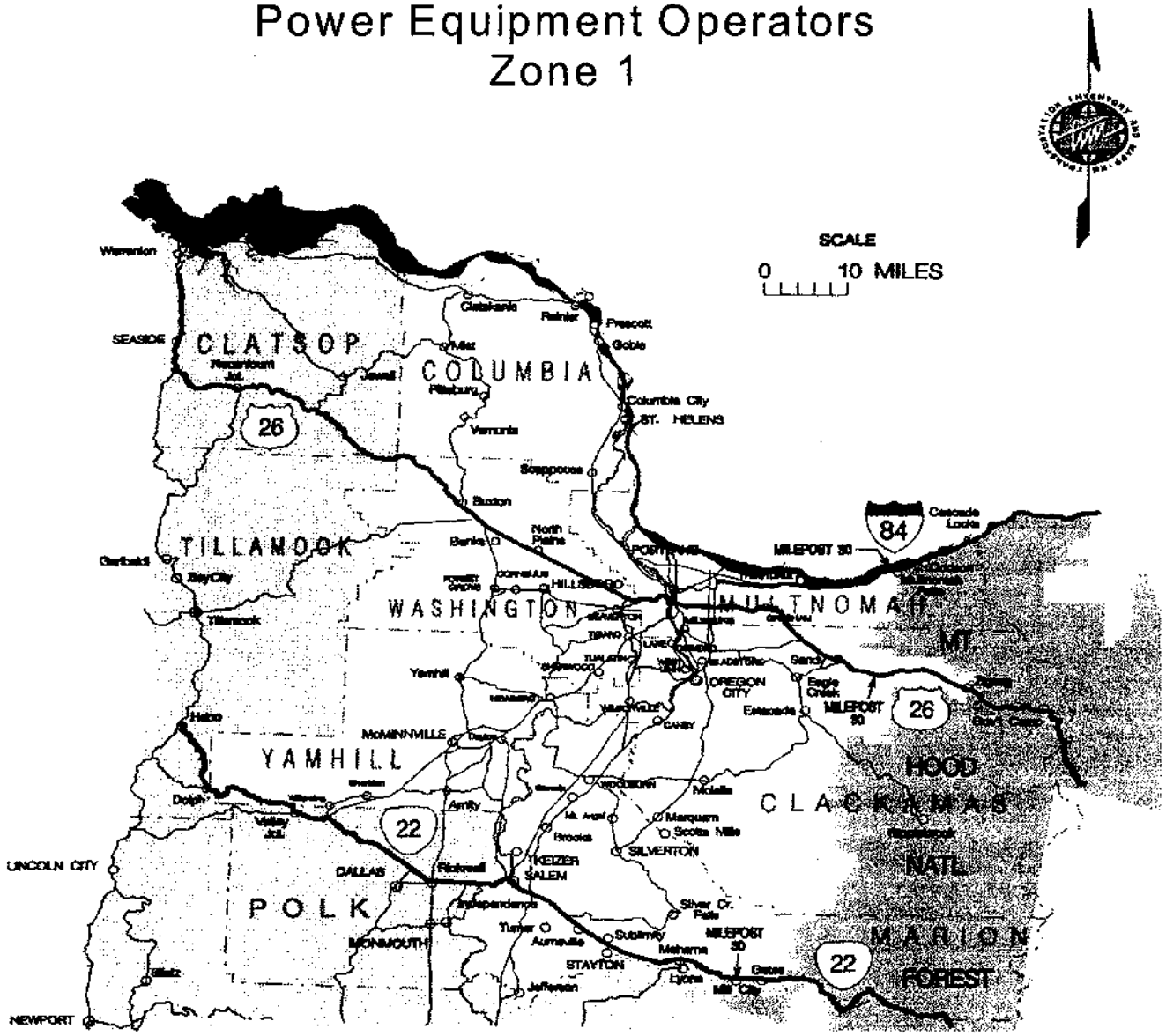
Zone differential for Truck Drivers
(Add to Zone A rate)

Zone B	**.65**
Zone C	**1.15**
Zone D	**1.70**
Zone E	**2.75**

Zone A: Projects within 30 miles of the cities listed above
Zone B: More than 30 miles but less than 40 miles.
Zone C: More than 40 miles but less than 50 miles.
Zone D: More than 50 miles but less than 80 miles.
Zone E: More than 80 miles.

Note: All job or project locations shall be computed (determined) on the basis of road miles and in the following manner. A mileage measurement will start at the entrance to the respective city hall, facing the project (if possible), and shall proceed by the normal route (shortest time-best road) to the geographical center on the highway, railroad, and street construction projects (end of measurement).On all other project contracts, the geographical center where the major portion of the construction is located, shall be considered the center of the project (end measurement).

Power Equipment Operators
Zone 1



SECTION 011100 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work includes but is not limited to:

Restoration of shoreline aggregate, large woody debris, plantings, and landscaping, as well as construction of an access roadway to the work area. The work area is within a designated Superfund site. The Contractor shall comply with permits and regulations of local, state, and federal agencies.

B. The Contractor will be required to develop and submit an acceptable health and safety plan prior to commencing onsite work. A sample health and safety plan is available in the Port Engineering files for the Contractor's reference upon request.

C. The existing state prevailing rate of wage and, if applicable, the federal prevailing rate of wage required under the Davis-Bacon Act (40 USC 3141 et seq.) apply to this work. See the contract documents for more information.

D. The work will require the Contractor, his employees, and subcontractors to obtain and display security identification badges.

1.2 WORK AREA RESTRICTIONS

A. The fish window for the Lower Willamette River is July 1 to October 31 each year. This is the period when in-water work is allowed to be performed. Outside of this window, all activities within any of the waterways, or considered in-water, will not be allowed.

B. In-water work restrictions do not apply to upland work or work that is not considered in-water work by the applicable regulations and/or agencies.

C. The Port does not have a restriction on work hours at the site. However, the Contractor's work shall adhere to City of Portland (City) ordinances regarding light and noise.

D. Scheduling Conflicts: Time-sensitive conflicts that may affect the construction schedule are listed below. The Contractor shall work with the tenants of the Port to accommodate their schedules.

1. Kinder Morgan (Berths 410/411): Kinder Morgan (KM) exports soda ash from the Berth 410/411 facility. The facility has a fixed loader, so ships are brought in and line-towed during loading. Ships are typically loaded over a 2- to 3-day period. Ships call on the facility approximately eight times per month. The Port does not expect the work to affect Kinder Morgan operations. However, the Contractor shall work around KM train operations as needed. When train operations occur at KM, the Contractor will not be able to cross the tracks or have over-land access between the work area and the rest of the terminal or haul route. KM train activity occurs about 5 days a week, with typically no activity occurring between 3 a.m. and 8 a.m., noon and 1 p.m., and 5 p.m. and 6 p.m.

2. Toyota: Berth 414 is currently used to offload automobiles. Toyota's shipping activities are not anticipated to impact the work.

E. Haul Routes: The Contractor shall use the haul routes identified on the drawings and established by the Port. See Section 015000 for additional requirements.

1.3 DESIGN ANALYSIS REPORT AND REGULATORY AGENCY DOCUMENTS

A. Work performed under this contract shall comply with the following exhibits, which are incorporated into this contract by reference:
   1. Exhibit A – Design Analysis Report (DAR)
   2. Exhibit B – National Marine Fisheries Services (NMFS) Biological Opinion
   3. Exhibit C – USEPA Water Quality Monitoring and Compliance Conditions Plan

B. The Contractor shall familiarize himself with the exhibits and ensure full compliance with all of their conditions.

C. Conflicts, if any, between the contract documents and exhibits, observed by the Contractor, shall be brought to the attention of the Port immediately.

D. Electronic Download:
   1. Electronic versions of the exhibits have been placed on an FTP site and can be accessed at the address below using a standard Internet browser.

      From a browser: ftp://port_t4wheelerbay:BayBank@ftp.pi-express.com
      User name (case-sensitive): port_t4wheelerbay
      Password (case-sensitive): BayBank
      Directory: T4Wheelerbay

   2. For optimal viewing, copy and paste the browser address into the address bar in Microsoft Internet Explorer (IE), select "View" from the menu, then "Open FTP Site in Windows Explorer." Right-click in the screen and select "Login As," then enter the user name and password above. As an alternate to IE, open "My Network Places" from the Start menu, click on "Add a Network Place," select "Choose another network location," then enter the address above into the field, "Internet or network address."

1.4 SOILS AND SEDIMENT INFORMATION

A. Records of soil and sediment exploration in the vicinity of this work are available in the Port Engineering files for examination by the Contractor upon request. The Port makes no representation as to the completeness or accuracy of this information.

1.5 KNOWN SITE CONDITIONS AFFECTED BY REGULATORY AGENCIES

A. The following materials or conditions are known to exist on the construction site. The Contractor shall comply with federal, state, or local agencies' ordinances or regulations pertaining to these conditions:
   1. Contaminated soil or groundwater

2. Heavy metals
3. Pencil-pitch
4. Grease, oils, fuels, and other hydrocarbons
5. Polychlorinated biphenyls (PCBs)
6. Volatile organic compounds (VOCs)
7. Environmental (E) – Zone

1.6 UNEXPECTED HAZARDOUS OR ENVIRONMENTALLY SENSITIVE SITE CONDITIONS

A. If the Contractor encounters suspected hazardous or environmentally sensitive conditions in the work area beyond those mentioned in these specifications or on the drawings, the Contractor shall immediately stop all work in the area of the suspected condition and notify the Port.

B. The Port will make arrangements for testing and appropriate abatement, if required.

C. The Contractor shall alert his (her) employees to these facts and shall assure that no operations occur that disturb the suspected hazardous or environmentally sensitive condition.

1.7 PROGRESS MEETINGS

A. Regularly scheduled job meetings will be held between the Contractor and the Port. The Contractor's representative at job meetings shall be the person directly responsible for the work. The time and place of the meetings will be established by the Port.

B. Other unscheduled meetings may be required to resolve specific issues at the work area.

END OF SECTION 011100

SECTION 012200 – UNIT PRICES

PART 1 - GENERAL

1.1 INCIDENTAL WORK

A. Consider work not listed, but necessary to complete the work, as incidental. Each bid item has incidental work associated with it. Some of the incidentals are identified. However, the list is not complete. This does not relieve the Contractor from the responsibility for completing the incidental work. Incidental work includes, but is not limited to, project meetings and seminars, compacting, grading, hauling, mixing, placing, shaping, and watering, as specified.

1.2 WEIGHING, WEIGH AND TRUCK MEASURE DELIVERY TICKETS

A. A ton is 2,000 pounds. Measure and compute weight to the nearest one-tenth (0.1) of a ton.

B. Weigh on certified public or private scales. The scales shall be of a capacity, kind, size, and type suitable for the weighing to be done. Scales shall be tested, sealed, and certified by an acceptable certifying authority. The Port may order recertification of scales to ensure accuracy. Recertification shall be at no added cost to the Port.

C. Within one day after delivery, submit a weight delivery ticket to the inspector for each load. Payment will only be made for material accounted for on a delivery ticket. Delivery tickets shall state project name, product delivered, date and time weighed, name and signature of the weigh master, and name of the truck driver.

D. Where items are paid by truck measure, each haul unit shall be measured by the Port and the Contractor jointly to determine the truck volume. Give each haul unit a unique number which is clearly shown on the unit. Submit a delivery ticket to the inspector for each load. Payment will only be made for material accounted for on a delivery ticket. Delivery tickets shall state project name, product delivered, haul unit number, date and time of delivery, and the driver's name and signature. Heap loads to the satisfaction of the inspector to assure that delivered volume is equal to the truck volume as measured by the Port and the Contractor.

1.3 BID ITEMS

A. Payment constitutes total compensation for furnishing materials; for preparation of these materials; and for labor, equipment, tools, and incidentals necessary to complete the work as specified and shown on the drawings. Measurement will not include unauthorized work performed beyond the design limits. Replace material removed without authorization at no added cost to the Port. The method of measurement and the basis of payment for bid items will be as follows.

PART 2 - BID ITEMS

1 MOBILIZATION, SURVEYING, CLEANUP, AND DEMOBILIZATION – L.S.

A. Payment will be made at the contract lump sum price for mobilization and demobilization of personnel, equipment, supplies, offices, and other facilities necessary for the work; surveying; and cleanup. The price includes premium on bonds and insurance and other costs which are incurred before beginning the work.

2 CONTRACTOR WORK PLANS – L.S.

A. Payment will be made at the contract lump sum price for all work associated with development, writing, and submittal of approved work plans as described in Sections 013529 (Contractor Health and Safety Plan [CHASP)], 014500 (Construction Quality Control Plan [CQCP]), and 015719 (Environmental Protection Plan [EPP]).

B. The price for this item shall include all costs for rewrites of any document needed in order to appropriately address comments received from the Port and U.S. Environmental Protection Agency (USEPA).

3 REMOVE AND DISPOSE OF UNSUITABLE SOIL – TON

A. Pay quantity will be the number of tons of soil and construction debris excavated, transported, and disposed of to the approved construction debris landfill. The price shall include direct costs associated with haul and disposal work, and shall not include indirect costs covered under Unit Item 1. The price shall also include costs to test and appropriately classify material for disposal, as necessary.

B. Payment will be made at the contract unit price per ton.

4 ROCK RIP-RAP – TON

A. Pay quantity will be the number of tons of rock rip-rap accepted in place. This item includes all clearing or excavation, stockpiling, and restoration of unanchored large woody debris and habitat layer material required to prepare or restore the site for rock rip-rap placement.

B. Payment will be made at the contract unit price per ton.

5 SELECT FILL FILTER LAYER – TON

A. Pay quantity will be the number of tons of select fill accepted in place.

B. Payment will be made at the contract unit price per ton.

6 TEMPORARY ACCESS ROAD – L.S.

A. Payment will be made at the contract lump sum price for all work associated with the temporary access road. This item includes furnishing and placing temporary access road fill, mowing of vegetation, placement of geotextile required to prepare the site for quarry spall placement, removal and off-site disposal of quarry spalls, and restoration of impacted areas by scarifying soils and installing hydroseed and jute fabric.

7 TOPSOIL AND COIR FABRIC RESTORATION – S.Y.

A. Pay quantity will be the number of square yards of coir fabric footprint area accepted in place. This item includes all placement of topsoil and installation of coir fabric in accordance with the Contract Documents.

B. Payment will be made at the contract unit price per square yard.

8 RIPARIAN PLANTINGS – EACH

A. Pay quantity will be the number of 1-gallon riparian plants accepted in place. This item includes all maintenance of vegetation until acceptance.

B. Payment will be made at the contract unit price per each.

9 ANCHORED LARGE WOODY DEBRIS – EACH

A. Pay quantity will be the number of anchored large woody debris installations accepted in place. This item includes furnishing and installing anchored large woody from off-site sources.

B. Payment will be made at the contract unit price per each.

10 EROSION CONTROL – L.S.

A. Payment shall be made at the contract lump sum price for temporary erosion, sediment, and pollution control (EPSC) measures in compliances with the contract drawings, specifications, and applicable permits. The price includes all maintenance, repair, and restoration of EPSC measures to keep them continually functional until project acceptance.

END OF SECTION 012200

SECTION 013100 – PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 PORT/TENANT OPERATIONS

A. Work shall be conducted in coordination and cooperation with the Port, tenants, and other contractors so that normal operations may be carried on without interruption.

B. The Port or tenant operations may require that certain of the Contractor's operations be scheduled around Port or tenant activities, and certain areas of the work may be required to be bypassed and accomplished when Port or tenant operations permit.

1.2 OTHER CONTRACTORS

A. The Port reserves the right to award other contracts for work in the vicinity of work covered by this contract.

B. The various contractors and the Port will mutually establish a schedule of construction for the use of common work areas.

1.3 CONTRACTOR'S COORDINATION

A. The U.S. Environmental Protection Agency (USEPA) has legal authority over the project work and the Contractor shall allow unrestricted access to USEPA employees and its contractor staff (collectively referred to in the remainder of this paragraph as USEPA) to observe the work. The Contractor shall coordinate and cooperate with USEPA to the maximum extent possible. The Contractor shall neither temporarily nor permanently withhold any relevant data, observations, or information from USEPA. USEPA shall not provide, nor shall the Contractor accept, verbal direction regarding the means and methods of the work, except that the Contractor shall immediately heed USEPA upon USEPA's direction to the Contractor to shut down the work and standby until further notice. Other than shutting down the work, USEPA shall communicate all direction regarding means and methods and other contractual issues relevant to the Contractor through the Port.

B. The Contractor is responsible for overall coordination of the work.

C. The drawings and specifications are arranged for convenience only and do not necessarily determine which trades perform the various portions of the work.

END OF SECTION 013100

SECTION 013300 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes administrative and procedural requirements for all types of submittals.

1.2 CONTENT AND FORMAT – ALL SUBMITTALS

A. Accompany all submittals with the Port's General Submittal Transmittal form.

B. Unless specified otherwise in the applicable technical section, submit seven copies; one copy will be returned to the Contractor. Three copies will be submitted to the U.S. Environmental Protection Agency (USEPA) through the Port.

C. Organize each submittal by specification section and paragraph number.

D. Include the following information with each submittal:
   1. The Contractor's submittal identification number marked on each item.
   2. Date and revision dates.
   3. Port project title and number.
   4. The names of: The Contractor, subcontractor, supplier, and manufacturer.
   5. Identification of product or material, with the appropriate specification section and paragraph number marked on each item.
   6. Relation to adjacent critical features of work or materials.
      a. A clearly detailed sectional drawing of each system, identifying all components and their method of attachment to supporting structure, adjacent Contractor-designed work, or both.
   7. Field dimensions, clearly identified as such.
   8. Applicable standards.
   9. Identification of deviations from contract documents. Products shall be accompanied by a substitution request form.
   10. The Contractor's stamp.

E. Resubmission Requirements:
   1. Revise initial submittals as directed by the Port and resubmit as specified for the initial submittal. Use the same submittal identification number, except add ".1" to each successive resubmittal (e.g., 024100-4, 024100-4.1, 024100-4.2, etc.). Mark each item with the Contractor's submittal identification number and the appropriate Port specification section and paragraph number.
   2. Indicate on the submittals any changes which have been made to the initial submittal.

1.3 MATERIAL SUPPLIERS/SUBCONTRACTORS LIST

A. Provide a complete list of material suppliers and subcontractors to the Port at the preconstruction conference.

1.4 SHOP DRAWINGS

A. Submit complete shop drawings as required by the applicable technical sections.

B. Present data in a clear and thorough manner.
   1. Drawings shall be identified by reference to the specification section and paragraph number when the item is called out in the specifications and by the original sheet and detail number, schedule, or room numbers when the item is shown on the drawings.
   2. Structural items shall be identified by location in the completed structure.

C. Shop drawing quality:
   1. All line work shall be clean and crisp with no feathering or fading.
   2. Line work important to the drawing shall be emphasized by increasing the line weight and density.
   3. Text size shall be a minimum of 1/8 inch in height and shall be Helvetica style font.
   4. Notes shall be clear and concise.
   5. CAD-generated drawings are preferred.

1.5 PRODUCT/MATERIAL DATA

A. Submit for Port review, prior to commencement of on-site work, all product or material data required by the applicable technical sections.

B. Product or material data consist of manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. Catalog cuts or brochures for items that are standard products shall show the type, size ratings, style, color, manufacturer, and catalog number of each item and be complete enough to provide for positive and rapid identification in the field. Catalog data shall be submitted in loose-leaf, three-ring binders, organized by specification section and paragraph number. Each product or material data item shall be clearly marked and annotated with the appropriate specification section and paragraph number. General catalogs or partial lists will not be accepted.
   1. Clearly mark each copy to identify pertinent product or models.
   2. Show dimensions, weights, and clearances required.
   3. Show performance data consisting of capabilities, revolutions per minute (RPM), kilowatts (KW), pressure drops, design and operating pressures, temperatures, performance curves, noise level curves, and power characteristics and consumption; conforming as closely as possible to the test methods referenced in the drawings and specifications.
   4. Show wiring or piping diagrams and controls.
   5. Modify manufacturer's standard schematic drawings and diagrams to indicate which information is not applicable.
   6. Supplement standard information to provide information specifically applicable to the work.

1.6 SAMPLES

A. Office Samples:
   1. Provide samples of sufficient size and quantity to clearly illustrate the item.
   2. Show functional characteristics of the product or material, with integrally related parts and attachment devices.
   3. Provide full range of color samples.
   4. After review, samples may be used in the work.

B. Where "match sample" is specified, the Contractor's samples shall match the Port's existing sample.

C. Field Samples and Mock-Ups:
   1. Construct, at the work area, at a location acceptable to the Port.
   2. Size or Area: As specified in the respective specification section.

D. Submit the number and type stated in each specification section.

1.7 AS-CONSTRUCTED DRAWINGS

A. At the start of construction, the Port will provide the Contractor with a full-size set of drawings for use in recording revisions (redlines) that develop during construction.
   1. Mark these drawings to indicate the actual installation where the installation varies appreciably from the installation shown originally. Special attention shall be paid to legibility and reproducibility of drawings. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to:
      a. Dimensional changes to the drawings.
      b. Revisions to details shown on the drawings.
      c. Locations and depths of underground utilities (if different by more than 1 inch in depth or more than 1 foot in location).
      d. Revisions to routing of piping and conduits (if different by more than 1 foot from where shown).
      e. Locations of concealed internal utilities (located to within 1 inch).
      f. Details not on original contract drawings.
   2. Mark completely and accurately on contract drawings or shop drawings, whichever is most capable of showing actual physical conditions. Where shop drawings are marked, show a cross-reference on contract drawings location.
   3. All attached documents to the marked-up drawings shall reference original drawings and sheet numbers.
   4. Mark drawings with red pencil or pen.
   5. Mark important additional information, which was either shown schematically or omitted from original drawings.
   6. Note construction change directive numbers, alternate numbers, change order numbers, and similar identification.
   7. Accurately record information in an understandable drawing technique.
   8. Record data as soon as possible after it has been obtained. In the case of concealed installations, record and check the mark-up prior to concealment.

B. Store the Contractor's redline drawings in the field office, apart from contract documents used for construction. Do not permit redline drawings to be used for construction purposes. Maintain redline drawings in good order, and in a clean, dry, legible condition.

C. The Contractor's redline drawings shall be available at all times for inspection by the Port.

D. Submit the final redline drawings upon completion of the work.

1.8 APPRENTICESHIP FOR CONSTRUCTION TRADES

A. Before starting work on any construction contract over $500,000, the Contractor shall submit proof of registration with the Bureau of Labor and Industries Apprenticeship and Training Division as a training agent for each trade where apprentices will be employed. The Contractor shall also submit such proof for each subcontractor employing registered apprentices if the subcontract is greater than $100,000.

1.9 OTHER SUBMITTALS

A. Other submittals include but are not limited to:

Section	011100	1.1
	012200	1.2
	013529	1.2
	013553	1.4
	014500	1.3, 3.2, 3.3, 3.7
	015639	3.1
	015713	1.4, 3.3
	015719	1.3, 3.2, 3.7
	017000	1.3
	017700	1.1, 1.4
	312000	2.2
	329219	1.3
	329300	1.4
	353200	1.5

END OF SECTION 013300

GENERAL SUBMITTAL TRANSMITTAL FORM

Please fill in all information as completely as possible. One "submittal type" per form. Highlighted areas are information necessary for documents sent to the Technical Reference Center.

Submittal Type: ☑ One	Submittal No.	Port Project Name	Port Project No.	Port EAN
☐ Material Description ☐ Shop Drawing ☐ O&M Manual ☐ Specification ☐ Calculations ☐ Warranty ☐ Change Order ☐ Other _____				

Submitted By (name of person)	General Contractor	Contractor Job No.
	Sub-Contractor	
Port Drawing Reference: Drawing No. / Sheet No. / Router	Primary Consultant	

Port of Portland

Transmittal Review Routing ("From" > "To")	Copies	Attention (destination name)	Date Sent	Date Rec'd	Date Due
Contractor > Port Const.					
Port Const. > Consultant					
Consultant > Sub-Consultant					
Sub-Consultant > Consultant					
Consultant > Port Engineering					
Port Const. > Port Engineering					
Consultant > Port Const.					
Port Engineering > Port Const.					
Port Const. > Contractor					
Port Const. > TRC	**1**	**TRC Specialist**			

Specification Reference			Review Action			
Section No.	Paragraph No.	Submittal Title or Description	A	B	C	D

CONTRACTOR/CONSULTANT NOTES:

TRC USE ONLY	
Date Rec'd at TRC:	
Index No.:	
Document Quality:	
OK	Resubmit

PORT NOTES:

SUBJECT TO ALL CONTRACT REQUIREMENTS:

A = PROCEED.
B = CORRECT AS NOTED & PROCEED
C = REVISE & RESUBMIT
D = FOR INFORMATION ONLY. NO PORT REVIEW REQUIRED.

SECTION 013529 – SAFETY AND HEALTH

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes the requirements for safety and health for site workers and the adjacent community. This contract includes earthwork activities potentially near soils with low to moderate contamination levels. All Contractor activities shall comply with Hazardous Waste Operation and Emergency Response, 29 Code of Federal Regulations (CFR) 1910.120, and Oregon Administrative Rules, Chapter 437 (OAR 437), where applicable. The work of this section includes, but is not limited to, worker certification, health and safety plans, personal protective equipment (PPE), health and safety equipment, decontamination, and engineering controls.

B. Some of the work tasks may place workers in the potential position of coming in contact with contaminated soil. Therefore, the Contractor shall comply with appropriate regulations. The Contractor health and safety plan (CHASP; see article 3.3 of this section for specific contents) shall clearly define health and safety requirements for specific site activities. At a minimum, 40-hour health and safety training will be required for:
   1. Workers performing construction activities within eroded areas where the demarcation layer is exposed, including site preparation, clearing, and placement of imported fill materials;
   2. Workers handling decontamination residuals and other potentially contaminated materials; and
   3. The CHASP may allow for reduced training requirements following exposure monitoring if deemed appropriate by the Contractor's health and safety representative.

C. The Contractor shall have a health and safety representative. The health and safety representative shall, at a minimum, be a certified industrial hygienist (CIH). The health and safety representative shall attend the pre-construction meeting, be on site at the beginning of construction to become familiar with site conditions, and advise the Contractor on health and safety procedures for any construction operations that may potentially involve hazardous waste. The health and safety representative shall be available for consultation as necessary and as required by site conditions for the Contractor's continued operations. When training requirements are specifically defined for site activities, increased supervision and monitoring must be performed by the Contractor. At a minimum:
   1. All construction activities with a potential risk of exposure to earthwork activities potentially near soils with low to moderate contamination levels must be supervised by personnel who, at a minimum, have 40-hour health and safety training and are able to identify potential upgrades needed in the level of health and safety protection.
   2. The Contractor's health and safety representative shall be on site at the start of all hazardous waste operations, if any.
   3. Site-specific safety and hazard awareness briefings shall be required for all workers and other people entering the site. Briefings will inform these individuals of the chemical hazards of the soil and define appropriate protections to minimize potential exposure. A written record of the date(s) and time(s) of such training and of the attendees is required.

D. All required health, safety, and environmental monitoring for worker health and safety shall be the responsibility of the Contractor.

1.2 SUBMITTALS

A. A site-specific CHASP (see article 3.3), subject to review by the Port and the U.S. Environmental Protection Agency (USEPA), shall be submitted by the Contractor. The Port will review the CHASP only for completeness, not to approve it.

B. For work conditions that the Contractor's health and safety representative elects or determines to fall under 29 CFR 1910.120, an amendment to the CHASP shall be submitted to the Port. Such amendment will describe the personnel assigned to the particular site activity and their current status in terms of health and safety training, medical clearance, respirator fit testing, first aid and cardiopulmonary resuscitation (CPR) certification, and any other requirements as outlined in the CHASP.

C. No work may commence until the Contractor has submitted the CHASP and the Port and USEPA have acknowledged receipt of the same. Because USEPA's review and acknowledgement requires some time, the Contractor shall submit the CHASP within 5 calendar days of contract execution. The Port will provide the Contractor with comments on the draft CHASP within 2 business days of receiving the draft. The Contractor shall address the comments and issue a revised CHASP within 2 business days of receiving Port comments. Additional modifications may be required after USEPA review.

D. The Contractor is responsible for implementation of the CHASP. The Port and USEPA reserve the right to halt work in the event of health and safety violations.

1.3 JOB CONDITIONS

A. The Contractor represents that it has visited the site to become familiar with the quantity, location, and character of existing materials and contaminants on the site. The Contractor agrees that the premises were made available prior to submission of bids for whatever inspection and tests the Contractor deemed appropriate. The Contractor agrees that remedial investigation reports were made available for supplemental documentation of site conditions. The Contractor assumes full responsibility for compliance with all applicable health and safety requirements as mandated in city, county, state, and federal statutes.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 PREPARATORY WORK

A. Inspection:

1. The Contractor's health and safety representative shall inspect the site and determine area- or activity-specific and worker-specific protection requirements. The Contractor will not be allowed to mobilize work crews for earthwork activities until a CHASP has been submitted to the Port.
2. After mobilization, the Contractor's health and safety representative shall monitor work efforts and shall determine the need for additional worker protection as required by the work being performed or by action levels specified in the CHASP.
3. The Health and Safety Representative shall verify that all work is performed in accordance with the CHASP.
4. Site safety meetings will be held a minimum of once per week for each crew member to address changing site conditions, activities, and personnel. Site safety meetings shall also be held at the start of each major task and whenever site conditions that affect the safety of personnel change. In addition, safety and hazard awareness training (see article 1.1 of this section) is required for all workers and others entering the site.

B. Discrepancies:
1. In the event of a discrepancy related to any aspect of the CHASP, the Contractor shall not proceed with contract work until such discrepancies have been resolved and a method for handling any associated risk has been determined and implemented.
2. Health and safety for workers and the surrounding community is the responsibility of the Contractor's health and safety representative.

3.2 WORKER CERTIFICATION REQUIREMENTS

A. Prior to initiating any work subject to the CHASP, the Contractor shall provide the Port with written documentation of employee training and medical certifications as necessary for work required under 29 CFR 1910.120.
1. Specifically, documentation of the following is required for each site worker for sites and work phases determined by the Contractor's health and safety representative to fall under the requirements of 29 CFR 1910.120:
   a. Initial 40-hour (or 24-hour or 80-hour, where appropriate) hazardous waste health and safety training and current annual 8-hour refresher training, as per requirements of the Occupational Safety and Health Administration (OSHA).
   b. Enrollment in a medical monitoring program, with clearance within the previous 12 months from a licensed physician allowing the worker to participate in field activities and use respiratory protective equipment, if required in the CHASP.
   c. Current respiratory fit testing certification, if respiratory protective equipment is required.
   d. Provision of appropriate PPE for each worker, as necessary, at the highest level of protection identified for the site.
2. In addition, documentation of the following is required for specified site workers for sites and work phases determined by the Contractor's health and safety representative to fall under the requirements of 29 CFR 1910.120:
   a. Eight-hour OSHA hazardous waste supervisory training (required for the field supervisor).
   b. Current CPR and first aid certification for at least one member of each crew.

3.3 CONTRACTOR HEALTH AND SAFETY PLAN

A. The CHASP shall be developed by the Contractor for use by the Contractor. The CHASP shall be consistent with all applicable local, state, and federal health standards and guidelines implemented through, but not limited to, OSHA, the National Institute of Occupational Safety and Health (NIOSH), the American Conference of Governmental Industrial Hygienists (ACGIH), and USEPA. Where these are in conflict, the more stringent requirement shall be followed. The plan shall protect on-site and off-site personnel from the potential physical, chemical, and/or biological hazards particular to the site. The CHASP shall be reviewed and approved by the Contractor's management and health and safety representative.

B. The following points shall be addressed in the CHASP, at a minimum:
   1. Contractor's definition of site-specific work activities that the Contractor has determined would meet the definition of hazardous waste operations or require 40-hour health and safety training.
   2. Identification of specific chemical and physical hazards that may occur during the project.
   3. Description of site control and decontamination procedures for personnel and equipment to be used.
   4. Explanation of potential emergencies and contingency plan of action, including description of the route to the nearest appropriate hospital and posting of emergency phone numbers on the job site.
   5. Delineation of specific tasks and the associated hazards and protective measures to be instituted.
   6. Other pertinent or required issues.

C. No work may commence until the Contractor has submitted the CHASP and received acknowledgement of its completeness as described in article 1.2 of this section.

3.4 PERSONAL PROTECTIVE EQUIPMENT

A. The appropriate level of personal protection will be identified for specific tasks in the CHASP. As work progresses and hazards are identified, the Contractor's staff shall notify the Contractor's site safety officer. If hazards are identified that require a level of protection greater than Level C, work will be suspended and the Port and the Contractor's health and safety representative will be notified. The health and safety representative will determine what actions are required before work can restart.

B. At a minimum, all on-site personnel will wear a hard hat, orange reflective work vests, long pants, steel-toed boots, and safety glasses.

C. The Contractor shall provide additional PPE, other than respiratory PPE, for the use of Port employees and representatives and other visitors authorized by the Port. PPE will be provided in sufficient numbers and sizes that at least five visitors may be accommodated at one time. PPE shall be appropriate for any location on the site and for any work being conducted at that time. This PPE shall include hard hats, safety glasses, orange reflective work vests, boot covers, and personal floatation devices for work near water, per U.S. Coast Guard regulations.

3.5 HEALTH AND SAFETY EQUIPMENT

A. The CHASP shall outline specific health and safety equipment required at each work site.

B. At a minimum, each construction project shall have the following equipment at the site:
   1. First aid kit;
   2. Fire suppression equipment;
   3. Emergency eye wash facility;
   4. Decontamination facilities;
   5. Traffic control; and
   6. First aid station.

3.6 ENGINEERING SAFETY CONTROLS

A. The CHASP shall describe engineering controls to protect health and safety during equipment use and against atmospheric hazards.

B. At a minimum, engineering controls shall include:
   1. Roll-over cages for bulldozers, backhoes, loaders, and tractors;
   2. Back-up alarms for all trucks and heavy equipment;
   3. Decontamination of equipment leaving the site (see Section 015000 – Temporary Facilities and Controls); and
   4. Barricades for open trenches, pits, excavations, and structure demolition.

3.7 OTHER CONTROLS

A. A comprehensive survey of existing utilities shall be performed prior to the initiation of demolition, intrusive digging, or excavation at depths greater than 1 foot. The survey shall include a review of applicable site drawings depicting utility locations in the demolition and excavation areas and an on-site inspection by a utility location company.

END OF SECTION 013529

SECTION 013553 – MARINE TERMINAL SECURITY, SAFETY, AND OPERATING REGULATIONS

PART 1 - GENERAL

1.1 MARINE TERMINAL SECURITY POLICY

A. These requirements are in accordance with the federal Marine Transportation Security Act. The Contractor shall obtain, thoroughly review, and comply with all Port security rules, regulations, and guidelines pertaining to marine security before commencing work under this contract.

B. The regulations contained in this section and the security rules, regulations, and guidelines adopted by the Port are subject to change at any time without notice. Copies of current Port security rules, regulations, and guidelines may be obtained during the Port's normal business hours at the Terminal 6 marine security office.

1.2 SECURITY CONTACTS

A. Contact Port marine security to obtain security information and make arrangements for entry:
   1. Port marine security office: 503-240-2235 or 503-240-2243
   2. 24-hour telephone number: 503-240-2230

1.3 SECURITY GATES AND FENCES

A. Access to the work site shall be through the project security gate as shown on the drawings.

B. Any modifications to the marine terminal security fence shall require 45 days advance notice and coordination with the Port.

C. Temporary openings in the security fence shall be properly secured when not in use or when they cannot be attended to by the Port security guard. Secure temporary openings with replaceable panels, temporary fencing, or a locked gate. Gates in temporary openings shall be locked with Port-provided locks. Only the Port will retain a key. The Contractor shall make arrangements with the Port to unlock such gates.

D. Temporary fence replacement panels and gates shall provide the same level of security and protection against unauthorized access as the adjacent security fence. Temporary fences may utilize undamaged salvaged fence materials. Fence materials need not be galvanized, and posts may be driven. Height of fence or gate woven-wire fabric shall match height of adjacent security fence fabric. Construct replaceable panels, used in lieu of gates or temporary fencing, so that they provide protection against unauthorized access equal to that of the gates and temporary fencing specified herein. Use of such panels is subject to the Port's approval.

E. All equipment, vehicles, and supplies shall be positioned a minimum of 10 feet away from either side of the security fence.

1.4 SUBMITTALS

A. Prior to being granted authorization to enter Port marine terminals, the Contractor shall complete the following:

1. Submit complete contact information, including company name, address, telephone number, and name and telephone number of project superintendent.
2. Submit the name of the Contractor's authorized designee. The authorized designee is the person(s) authorized by the Contractor to submit and modify access lists, notify security staff of deliveries, and verify that the Contactor or subcontractor personnel have completed required security training. Submissions from individuals other than the Contractor's authorized designee will not be accepted by the Port. The authorized designee shall:
   a. Submit and maintain a current, up-to-date list of personnel who will be accessing the terminal to perform work. A format will be provided by the Port. The list shall be updated as necessary and submitted by the authorized designee. Personnel not on the access list will be denied access.
   b. Submit access requests for material delivery personnel or other persons needing access and not originally included in the lists above. Include personal, vehicle, and company affiliation information and submit to the Port at least 24 hours prior to requested access.
   c. Submit documentation that personnel have received training on security measures from the Port marine security department (see Marine Security Training).

1.5 PERSONNEL SECURITY REGULATIONS

A. Transportation Worker Identification Credential (TWIC):

1. The marine terminals are subject to the provisions of the federal Transportation Worker Identification Credential (TWIC) program. Contractor personnel, subcontractor personnel, material delivery personnel, and others entering the terminals and who require unescorted access must possess a valid TWIC to enter the facility. Personnel wishing to enter the marine terminals without a TWIC must comply with the ID and escort provisions noted below.
2. Contractor personnel, subcontractor personnel, material delivery personnel, and others entering the marine terminal without a TWIC and under escort shall present a valid state driver's license or government-issued ID as identification. All identification cards shall:
   a. Be tamper resistant and show no signs of tampering or such disrepair that verification of the ID is impossible.
   b. Include a photograph bearing a close resemblance to the person presenting the credential.
   c. Be current within a visible expiration date on the ID.
   d. Be an original issue document/card. Reproductions, copies, enlargements, etc. are not acceptable forms of ID.
   e. Show the relevant details of the holder such as the name, description, and controlling authority (issuer) of the ID.
3. Personnel within the secure area of a Port marine terminal shall carry the identification used to gain access. In the event the nature of the work does not allow the identification to be carried on their persons, the identification shall be kept in a safe place and produced within 10 minutes of a request by a federal enforcement official or Port staff. Failure or refusal to produce authorized identification will result in revocation of access and proceedings for trespass violation.

B. Escort Requirements for Non-TWIC Personnel:

1. The Contractor shall provide escort for all non-TWIC contractor personnel, subcontractor personnel, material delivery personnel, and others who have been granted permission to enter the terminal. Escorting shall be conducted by a Contractor-provided TWIC-holder already approved for entry. Personnel holding a valid TWIC, having completed required security training, and having approval for entry to a Port marine terminal are automatically granted escort privileges. Failure to maintain an adequate escort will result in revocation of escort privileges and potential liability for any penalties imposed by federal officials.
2. Escorting shall be accomplished by side-by-side accompaniment with a TWIC holder at all times. Side-by side accompaniment requires continuous physical proximity to and visual contact with the escorted individual in order to enable the TWIC holder to witness the escorted individual's actions.
   a. In the portions of secure areas that are not restricted areas, appropriate physical accompaniment exists with one TWIC holder escorting no more than ten (1:10) non-TWIC holders.
   b. In the portions of secure areas that are restricted, appropriate physical accompaniment exists with one TWIC holder escorting no more than five (1:5) non-TWIC holders.
3. Escorts shall be conducted by the Contractor or his subcontractors for their own personnel directly involved in performance of the work. Independent security contractors are not allowed to conduct escorts at Port terminals.

1.6 VEHICLE REGULATIONS

A. All vehicles and occupants entering a Port marine terminal are subject to screening as required by federal regulations. Failure to comply with screening will result in denial of entry.

B. Contractor Vehicles:

1. Contractor vehicles shall be clearly marked either by permanent markings or temporary markings (such as magnetic signs) on both sides of the vehicle.
2. When outside the work area, all personnel, vehicle, and equipment movement shall be under the control of the Contractor's authorized escort, using the Contractor's approved escort vehicle(s).
   a. The Contractor escort vehicle(s) shall be equipped with an amber flashing light mounted on the roof of the cab. The escort vehicle(s) shall have signs mounted on the front and rear of the vehicle consisting of a black background and yellow lettering containing the Contractor's name and the words "ESCORT ONLY." Signs shall be readable from a distance of 300 feet.
   b. The escort vehicle driver shall serve as liaison and shall be responsible for transporting workers to and from the work area.
   c. Personnel and vehicles authorized to be in the marine terminal environment shall remain with the escort vehicle(s) while traveling to and from the work area.
   d. Multiple vehicles may be escorted in convoy formation. Convoy vehicles shall travel in close formation, and the escort vehicle driver shall control speed to maintain safety. Convoys shall consist of no more than three vehicles plus the escort vehicle.

C. Personal Vehicles:

1. Personal vehicles shall be parked in designated areas away from the berth. The Contractor's personnel shall be shuttled to and from the work area by the Contractor.

D. Material Delivery Vehicles:

1. Material delivery personnel will be permitted to access the Port's marine terminals between the hours of 6 a.m. and 8 p.m.
2. The Contractor shall notify the Port prior to deliveries. This notification shall be provided 24 hours prior to arrival at the terminal and shall include:
   a. The name of the delivery company.
   b. The nature of the items being delivered.
   c. The date of delivery.
3. Passengers in vehicles are prohibited. Only employees of the delivery company will be allowed access to the terminal.
4. The Contractor shall provide escort for delivery personnel not holding a valid TWIC.
5. Delivery personnel and vehicles arriving without prior notification and without a TWIC or appropriate escort will be denied access.

1.7 MARINE SECURITY TRAINING

A. Marine security training is required for individuals who frequently work on the Port's marine terminals. All contractors and subcontractors working for more than 30 days in any 90-day period are required to complete the training.

B. The Contractor's authorized designee shall contact the Port marine security superintendent to schedule training classes for all Contractor's and subcontractors' personnel.

C. The authorized designee shall provide as much notice as possible, a minimum of 48 hours, to schedule training class requests for large groups.

D. The approximate duration of the training class is 15 minutes.

E. At its discretion, the Port may provide training materials to the Contractor's authorized designee and allow him or her to conduct training for the Contractor's and subcontractors' employees. The authorized designee shall then verify that all persons on the current access list have received the required training.

F. Personnel who completed marine security training under previous projects may be excused from completing the training upon submission of documentation from the authorized designee and approval by the Port.

1.8 PROHIBITIONS

A. The following actions are prohibited:

1. Giving rides to non-Contractor personnel (including ship's crew) on and off the terminal.
2. Remaining on the terminal after completing work. Vehicles left on the terminal or parked improperly will be towed at the vehicle owner's expense.
3. Opening gates, doors, or other terminal entrance points to allow access to other individuals, whether or not they carry a TWIC.

1.9 REMEDIES OF THE PORT UPON VIOLATION OF REGULATIONS REFERENCED OR CONTAINED IN THIS SECTION

A. In addition to any other rights or remedies that the Port may have in the event that the Contractor, subcontractor, anyone directly or indirectly employed by any of them, and anyone for whose acts any of them may be liable fails to comply with the regulations referenced or contained in this section, the Port shall have the right to:

1. Revoke security clearance of the offending individual and/or the Contractor permanently or for a prescribed period of time.
2. Suspend the work or any portion thereof and continue the suspension until completion of any investigation or evaluation by the Port and full compliance with any corrective measures which the Port may reasonably require.
3. Require the Contractor to provide to the Port a written plan, satisfactory to the Port, to demonstrate the Contractor's ability to prevent future violations.

B. The Contractor shall be fully liable to the Port for any costs or damages incurred by the Port as a result of any breach of security or violation of security regulations by the Contractor. The Contractor shall also be liable to reimburse the Port for any fines, penalties, assessments, judgments or other costs imposed upon the Port as a result of the Contractor's breach of security or violation of security regulations, as described herein. As used herein, reference to the Contractor shall include all of his employees, agents, subcontractors, suppliers, or other invitees.

C. The Contractor shall defend, indemnify, and hold harmless the Port against any and all claims of any nature made against the Port by any party resulting, in whole or in part, from the Contractor's breach of security or security violations. Defense shall be provided by legal counsel acceptable to the Port. As used herein, reference to the Contractor shall include all of his employees, agents, subcontractors, suppliers, or other invitees.

END OF SECTION 013553

SECTION 014500 – QUALITY CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section describes the quality control requirements, duties, and responsibilities of the Contractor and the Port during execution of the work. The intent of this section is to require the Contractor to establish a necessary level of control that will:
   1. Adequately provide for the production of acceptable quality materials and workmanship.
   2. Provide sufficient information to assure both the Contractor and the Port that the specification requirements are and have been met.

B. The Contractor shall establish, provide, and maintain a construction quality control (CQC) plan as specified herein, detailing the methods and procedures that will be taken to assure that all materials and completed construction elements conform to the drawings, technical specifications, and other requirements, whether these elements be manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, it is the responsibility of the Contractor to ensure that construction and construction quality control are accomplished in accordance with the stated purpose and specifications as described herein.

C. The Contractor shall be prepared to discuss and present, at the preconstruction conference, its understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the quality control program has been reviewed and approved by the Port. No partial payment will be made for materials subject to specific quality control requirements until the quality control program has been reviewed and approved.

D. Quality control requirements contained in this section and elsewhere in the technical specifications are in addition to and separate from any acceptance testing requirements. Acceptance testing requirements are the responsibility of the Port. The Contractor shall cooperate fully in facilitating the sampling and inspection necessary for an effective acceptance testing program by the Port.

1.2 RELATED WORK DESCRIBED ELSEWHERE

A. Construction Quality Assurance Plan (CQAP; an exhibit to this contract).

B. Section 013300 – Submittal Procedures

C. Individual tests required in accordance with the pertinent sections of these specifications and the contract drawings, where applicable.

1.3 SUBMITTALS

A. The Contractor shall submit the following in accordance with Section 013300 – Submittal Procedures:
   1. CQC plan
   2. Proposed program administrator's qualifications
   3. Weekly CQC reports
   4. Weekly inspection reports
   5. Certified test reports

PART 2 - PRODUCTS

2.1 GENERAL

A. Products that are used to accomplish or be incorporated into the work of this section shall be as selected by the Contractor, subject to approval by the Port.

PART 3 - EXECUTION

3.1 CONTRACTOR QUALITY CONTROL PROGRAM

A. The Contractor shall establish a quality control program to perform inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. This quality control program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The quality control program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

3.2 CONSTRUCTION QUALITY CONTROL PLAN

A. The Contractor shall describe the quality control program in a written document titled "Construction Quality Control Plan," which shall be submitted to the Port within 5 calendar days of contract execution. The Port will provide the Contractor with comments on the draft CQC plan within 2 business days of receiving the draft. The Contractor shall address the Port's comments and issue a revised CQC plan within 2 business days of receiving Port comments. Additional modifications may be required after U.S. Environmental Protection Agency (USEPA) review. The CQC plan will be used to document inspections, monitoring, surveys, and other actions to be taken by the Contractor to ensure that the work complies with all Contract requirements.

B. The CQC plan shall demonstrate the Contractor's understanding of the total quality control requirements of the Contract and, generally, how these will be utilized to control all processes within material/construction tolerances and acceptance criteria.

C. The CQC plan shall incorporate the requirements of the CQAP (an exhibit to this contract that defines the roles and responsibilities of the Contractor, the Port, and USEPA in regards to quality assurance of the work components). The CQC plan shall specifically address the following performance standards and objectives as described in the CQAP:
   1. Shoreline Stabilization Repair:
      a. Verify quality of import material.
      b. Achieve specified thickness and extent.
      c. Avoid impacts to adjacent structures and tenants.
      d. Minimize short-term water quality impacts.

D. The CQC plan shall be organized to address, as a minimum, the following items:
   1. General requirements;
   2. Quality control organization;
   3. Inspection and testing requirements;
   4. Inspection and test plan;
   5. Documentation of quality control activities; and
   6. Requirements for corrective action when quality control and/or acceptance criteria are not met.

E. The Contractor is encouraged to add any additional elements to the CQC plan deemed necessary to adequately control all production and/or construction processes required by this contract.

F. Control of Non-conforming Items:
   1. The CQC plan shall include a non-conformance procedure that provides for the identification, documentation, disposition, and control of non-conforming items, and identifies the responsibilities for preparation, review, approval, and the proposed resolution. In addition, the procedure shall include requirements for:
      a. Documentation of re-inspection results;
      b. Tagging and segregation, whenever practical;
      c. Approval of repair or accept-as-is dispositions by the Port, prior to implementation; and
      d. Review of completed non-conformance reports by the Port.
   2. Material and items that do not conform to the applicable drawings, specifications, or documents shall be identified as non-conforming and, whenever practical, segregated to prevent their installation or inadvertent use. Non-conformances shall be reviewed by the responsible personnel, and disposed of accordingly.
   3. When the associated documentation for received material or items, such as manufacturer inspection or test reports, certified material test reports, and certificates of compliance or conformance, indicate that the material or items do not comply with the specification or drawing requirements, the subject material or item shall be treated as non-conforming and not used until the non-conformance is resolved.

G. Control of Special Processes:
   1. The CQC plan shall identify special processes and the means by which the Contractor will ensure that they comply with the requirements of the applicable codes and standards identified in the construction specifications. Personnel and procedures shall be qualified

in accordance with the requirements of the applicable code or standard identified in the construction specification. When the construction specification requires procedures and/or personnel qualifications in excess of those defined and required by the codes, the additional requirements will be identified in the construction specification or additional procedures or instructions by reference to the required industry code or standard, or by specific description in the document.

2. Personnel performing or evaluating non-destructive examinations (NDE) must be qualified to the level appropriate to the activity they perform in accordance with the requirements of the American Society for Non-destructive Testing, SNT-TC-1A, latest edition, and supplements. NDE subcontractor(s) hired by the Contractor shall be an NDE service company that has been qualified and evaluated by the Port.
3. Procedures and/or instructions for the performance of special processes shall be placed at the work location prior to commencement of the work.

H. Control of Measuring and Test Equipment:
1. The CQC plan shall establish a system for the calibration, maintenance, and control of measuring and test equipment used by Contractor during construction. Procedures shall provide for the identification of each instrument or equipment item that requires calibration or checking, and the establishment of a calibration system based on the elapsed time or usage cycles.
2. Records of calibration shall be traceable to nationally recognized standards; otherwise, the basis for calibration shall be established and documented. Calibration standards used must meet the accuracy tolerance recommended by the manufacturer of the equipment being calibrated.

I. Supplier Quality Control: The CQC plan shall establish a system for the evaluation and selection of suppliers of material, items, and services. The system shall include:
1. Documented review and assessment of potential suppliers' quality system;
2. Development of specified evaluation criteria;
3. Inclusion of applicable quality criteria in purchase documents; and
4. Regular reviews and evaluations of suppliers' on-going quality performance.

J. The CQC plan shall describe the responsibility, authority, and interrelation of all personnel who manage, perform, and verify work affecting quality. This shall include personnel who need organizational freedom and authority to:
1. Initiate the actions necessary to prevent the occurrence of non-conformances;
2. Identify and record any product quality problems;
3. Initiate, recommend, or provide solutions through designated channels;
4. Verify the implementation of solutions; and
5. Control further processing, delivery, or installation of non-conforming material or items until the deficiency has been corrected.

3.3 QUALITY CONTROL ORGANIZATION

A. The Contractor's quality control program shall be implemented by the establishment of a quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management, production, and construction functions and personnel. The organizational chart shall be included in the CQC

plan. Qualifications of all proposed personnel and independent testing laboratories shall be documented and submitted in the CQC plan.

B. The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the quality control program, including inspection and testing for each item of work. If necessary, different technicians can be utilized for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the quality control program, the personnel assigned shall be subject to the qualification requirements indicated below. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

1. The Contractor shall designate an individual within its organization who is responsible for overall management of the quality control program and has full authority to institute any and all actions necessary for the successful implementation of the quality control program to ensure compliance with the contract plans and technical specifications. This individual, termed the CQC supervisor, shall report directly to a responsible officer of the construction firm and not to this project's line management.
2. The CQC supervisor's qualifications shall be submitted to the Port for review and approval. At the option of the Port, the candidate(s) for CQC supervisor shall be subject to interview by the Port prior to approval. The Contractor's approved CQC supervisor shall not be removed or replaced without prior written approval by the Port.
3. The CQC supervisor shall have the authority to stop the work when and where deemed necessary to ensure compliance with the contract documents.
4. Quality Control Personnel: The Contractor shall maintain a sufficient number of qualified quality control personnel to adequately implement the quality control program. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Quality control personnel shall report directly to the CQC supervisor and shall perform the following functions:
   a. Inspection of all materials, construction, plant, and equipment for conformance with the technical specifications, and as required by article 3.4.
   b. Performance of all quality control tests as required by the technical specifications and the Inspection and Test Plan article (3.6) in this section.
5. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The CQC plan shall state where different personnel will be required for different work elements.

3.4 INSPECTION AND TESTING REQUIREMENTS

A. Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified herein.

1. The CQC plan shall establish a system for ensuring that all inspections are performed in accordance with the inspection and test plan defined in this section. The Contractor shall only use inspection personnel who are independent of craft supervision and field engineering to perform quality verification inspection and testing.
2. The CQC plan shall describe and specify control testing operations required to qualify, demonstrate, or ensure the quality and characteristics of items, site conditions, or the

erection and construction of contract-required items. All testing shall be performed in accordance with the inspection and test plan.

3. Modifications, repairs, and replacements required as a result of test failures will be treated as non-conforming items and controlled in accordance with the controls for non-conforming items.
4. Inspection and testing activities must be performed in accordance with procedures that may be supplemented by specific or standard instructions, work operations, or planning documents, including inspection plans delineating inspection hold points. The inspection activities that shall be planned in advance include:
   a. Receiving inspection;
   b. Construction inspection and testing;
   c. Installation inspection and testing; and
   d. Plant inspections.
5. Inspection and test activities shall have documentation reflecting the applicable inspections or tests performed. Inspection and test procedures and instructions shall provide:
   a. References to applicable documents, such as drawings, specifications, and procedures;
   b. Identification of prerequisites and special-process control requirements, such as personnel, procedure, or equipment qualifications; suitable and controlled environmental conditions; and calibrated instrumentation;
   c. Identification of characteristics to be inspected;
   d. Identification of individuals or groups responsible for performing the inspection;
   e. Identification or frequency of inspection or sampling;
   f. Provisions for establishing mandatory inspection hold points for witness by the Port;
   g. Requirements that inspections of modifications, repairs, and replacements be performed in accordance with either the original inspection procedure, instruction, plan, special procedures or plans appropriate to the work activity; and
   h. Requirements that inspection and test records contain:
      1) A description of the observation;
      2) A record of the date and results of the inspection or test, including any special documentation and sign-off by the inspector;
      3) Inspector identification;
      4) Evidence as to acceptability of the results;
      5) Verification that inspection or test operations are complete and acceptable;
      6) Action taken to resolve any discrepancies noted; and
      7) Adequate documentation to demonstrate that the completed inspections or tests have met the objectives defined in the inspection and test plan.
6. Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These inspections shall include the following minimum requirements:
   a. During any plant operation for material production, quality control test results and periodic inspections shall be utilized to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment utilized in proportioning and mixing shall be inspected to ensure its proper operating condition. The quality control program shall detail how these and other quality control functions will be accomplished and utilized.

b. During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship. All equipment utilized in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The quality control program shall document how these and other quality control functions will be accomplished and utilized.

3.5 PLANT INSPECTION

A. The Port or its authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work, and to obtain samples required for acceptance of the material or assembly.

B. Should the Port conduct plant inspections, the following conditions shall exist:
   1. The Port shall have the cooperation and assistance of the Contractor and the producer contracted for materials.
   2. The Port shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
   3. If required by the Port, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

C. It is understood and agreed that the Port shall have the right to re-test any material that has been tested and approved at the source of supply after it has been delivered to the site. The Port shall have the right to reject only material that, when re-tested, does not meet the requirements of the contract documents.

3.6 INSPECTION AND TEST PLAN

A. As a part of the overall quality control program, the Contractor shall implement an inspection and test plan, as required by the individual technical specifications. The inspection and test plan shall include the minimum tests and test frequencies required by each technical specification item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

B. The Contractor shall prepare an inspection and test plan that identifies all inspection and test activities required by the specifications. The inspection and test plan shall be included in the CQC plan, and shall include:
   1. An itemized listing of inspection and test requirements.
   2. A reference of documents for each plan.
   3. Inspection and test methods employed in determining compliance.
   4. Documentation requirements necessary to show evidence of compliance.
   5. Identification of the inspection or test status for work in process by using work sequence plans, inspection or test records, tags, markings, or other devices compatible with the item, system, or operation being inspected or tested. Work sequence plans shall identify

hold and witness points for inspections and tests, which shall also be shown on the project schedule.

6. Any other information or verification required to assure compliance with contractual requirements.
7. Verification that material marking is visible and correct material has been used.
8. Specification section number, and the following information:
    a. Item description;
    b. Test standard (e.g., American Society for Testing and Materials [ASTM]);
    c. Test frequency;
    d. Control requirements.

C. The inspection and test plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665. The Port shall be provided the opportunity to witness quality control sampling and testing.

D. All quality control test results shall be documented by the Contractor as specified herein.

3.7 DOCUMENTATION

A. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including the type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, or causes for rejection; proposed remedial action; and corrective actions taken.

B. Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following:
    1. Certified test reports for off-site testing and inspections shall be submitted in accordance with Section 013300 – Submittal Procedures.
    2. Quality control records are those documents that have been reviewed and accepted by the Contractor as complete, correct, and legible. Quality control records shall include documents such as:
        a. Drawings, specifications, procedures used for construction, procurement documents, and inspection and test records;
        b. Submittals;
        c. Personnel and procedure qualification records;
        d. Material, chemical, and physical property test results,
        e. Certificates of compliance and shipment releases;
        f. Supplier surveillance records;
        g. Receiving inspection, storage, cleaning, and cleanliness control records; and
        h. Non-conformance reports and corrective action.

C. All quality control records shall be identified in the CQC plan and maintained in the Contractor's job-site files. The Port shall be provided access to these files when requested. Upon the completion of the Contractor's contractual activities, these files shall be turned over to the Port.

D. Quality control records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full

compliance with the terms of the contract. Legible copies of these records shall be submitted to the Port daily, as specified below. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's program administrator.

E. Weekly CQC Report: The Contractor shall maintain a daily record of CQC activities and report them on a weekly basis. The CQC report shall be attached to the Contractor's construction report, submitted in accordance with Section 013300 – Submittal Procedures. At a minimum, information in this CQC report will include the date, period covered by the report, equipment used, description of activity as identified by stationing and offset, quantity of materials placed that day and to date, downtime and delays to the operation, health and safety status, and other relevant comments concerning conduct of the operation. The CQC report shall include the results of all inspections, surveys, and monitoring activities, and shall be signed by the Contractor's superintendent or CQC supervisor. The CQC report shall include the following elements:

1. Weekly Inspection Reports: Each member of the Contractor's quality control personnel shall maintain a weekly report of all inspections performed for both Contractor and subcontractor operations on a form acceptable to the Port. These inspection reports shall provide factual evidence that continuous quality control inspections have been performed and shall, at a minimum, include the following:
   a. Technical specification item number and description;
   b. Compliance with approved submittals;
   c. Proper storage of materials and equipment;
   d. Proper operation of all equipment;
   e. Adherence to plans and technical specifications; and
   f. Review of quality control tests.
   g. The weekly inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.
   h. The weekly inspection reports shall be signed by the responsible quality control technician and the program administrator, and shall be attached to the Contractor's weekly CQC report.
2. Test Reports: The Contractor shall be responsible for establishing a system that will record all quality control test results. Test reports shall document the following information:
   a. Technical specification item number and description;
   b. Test designation;
   c. Location;
   d. Date of test;
   e. Control requirements;
   f. Test results;
   g. Causes for rejection;
   h. Recommended remedial actions; and
   i. Retests.
   j. The test reports shall be signed by the responsible quality control technician and the CQC supervisor and shall be attached to the Contractor's weekly CQC report. When required by the technical specifications, the Contractor shall maintain statistical quality control charts.

F. Document Control

1. The Contractor's CQC plan shall require that Contractor-generated documents pertaining to quality-related items be controlled. The following types of documents shall be on controlled distribution to ensure that changes to them are transmitted and received when applicable:
   a. Manuals
   b. Instructions
   c. Procedures
   d. Specifications
   e. Drawings
   f. Inspection and test plans
   g. Field change requests
   h. Inspection test and manufacturing procedures

3.8 CORRECTIVE ACTION REQUIREMENTS

A. The CQC plan shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance), and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the quality control program as a whole, and for individual items of work contained in the technical specifications.

B. The CQC plan shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action, and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

C. When applicable or required by the technical specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

3.9 OVERSIGHT BY THE PORT

A. All items of material and equipment shall be subject to oversight by the Port at the point of production, manufacture, or shipment to determine if the Contractor, producer, manufacturer, or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and plans. In addition, all items of materials, equipment, and work in place shall be subject to surveillance by the Port at the site for the same purpose.

B. Oversight by the Port does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

3.10 PORT ACCEPTANCE TESTING AND INSPECTION

A. The Port may perform acceptance testing of all or portions of the work at its discretion.
   1. No work shall commence or be covered until approved by the Port.

2. Prior to requesting acceptance tests, the Contractor shall perform check tests (monitoring of construction products, methods, and progress to assure work acceptability). Include check testing costs in the bid; no separate payment will be made for this work.
3. The Port will have the right to perform various types of tests at any time prior to formal acceptance. This may include evaluation of line, elevation, grade, depth, thickness, compaction, density, material, composition, pressure, or other analyses deemed necessary by the Port.
4. Acceptance tests by the Port will be initiated by the Contractor's request for approval.
5. Acceptance surveys will be performed by the differential leveling method, using a mutually agreed-upon grid not to exceed 25-feet transverse by 50-feet longitudinal.
6. Compaction testing will be conducted in accordance with ASTM D 6938 for subgrade, subbase, and aggregate base.
7. The Contractor shall allow sufficient time in his/her schedule to accommodate Port acceptance testing. No separate payment will be made for delays or standby during this time.
8. Results of the Port's acceptance tests will be made known to the Contractor as soon as practical; however, it remains the responsibility of the Contractor to obtain the specified requirements at all times. Any delay in advising the Contractor of test results shall not act as a waiver of this responsibility.
9. Acceptance tests that fail to meet the specified requirements may be re-checked by the Port after the Contractor takes remedial action. The cost of re-checking shall be borne by the Contractor.
10. The Contractor shall furnish, for approval or evaluation by the Port whenever requested, samples of materials as directed. These samples shall be completely representative of the materials or products proposed to be used in the work. The results will be used as a basis for acceptance or rejection in accordance with the specifications for the particular material(s).
11. Pressure tests called for in the specifications or deemed necessary by the Port shall be performed by the Contractor and witnessed by the Port.
12. Specific testing tasks are specified in individual sections as required.

3.11 NON-COMPLIANCE

A. The Port will notify the Contractor of non-compliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Port or its authorized representative to the Contractor or its authorized representative at the site of the work, shall be considered sufficient notice.

B. In cases where quality control activities do not comply with either the Contractor's quality control program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective quality control program, as determined by the Port, the Port may:
   1. Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.
   2. Carry out the functions and operations of the Contractor's approved quality control program. Costs incurred by the Port to operate the quality control program or to otherwise remedy the Contractor's non-compliance with quality-related provisions of the Contract shall be deducted from the total amount due the Contractor. This deduction shall be based on the actual cost to the Port for operation of the quality control program,

as opposed to the amount that the Contractor may have bid initially for quality control services.

3. Order the Contractor to stop operations until appropriate corrective actions are taken.

C. Any failure by the Port to notify the Contractor of any non-compliance with any of the foregoing requirements shall not be deemed as a waiver of its enforcement rights hereunder, and the Contractor is still bound by the terms and conditions of said requirements.

END OF SECTION 014500

SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 TEMPORARY UTILITIES

A. The Contractor may use water and electric power from Port-owned facilities at no cost, as available.

B. The Contractor shall maintain temporary facilities in a safe and proper manner and completely remove them from the site prior to final acceptance.

C. The Contractor shall provide labor and equipment for temporary lines and services at no added cost to the Port.

1.2 SANITARY FACILITIES

A. The Contractor shall provide and maintain sanitary facilities that meet the requirements of Oregon Revised Statutes (ORS) 654.150 and other applicable state and local health regulations. The Contractor shall bear the costs that may be incurred in complying with ORS 654.150 and the rules adopted pursuant thereto.

1.3 FIRE PROTECTION

A. The Contractor shall provide adequate fire fighting equipment to contain an equipment fire. The fire fighting equipment shall be made available and accessible in the work area.

B. The Contractor shall provide fire protection as required by Oregon Administrative Rules, Division 3, Chapter 437, Subdivision F, for building construction and demolition.

1.4 DUST CONTROL

A. If work includes clearing, grubbing, excavating, grading, hauling, placing, stockpiling, sawing, coring, drilling, general demolition, or other activities that will create dust or blowing soil, the Contractor shall present their methods to control dust with the Port prior to starting the work. The dust control methods shall include all methods required to retain or control dust and soil so that they do not leave the immediate work site, present health hazards, or enter any public areas.

B. If conditions exist that cause dust or soil to become windblown or otherwise entrained in the air by vehicular traffic or equipment activities, the Contractor shall employ methods to control and abate nuisance dust conditions including, but not limited to:
   1. Covering excavated, graded, and disturbed areas or stockpiles with tarps or sheeting until removed from the site or finished in accordance with the contract documents.
   2. Cleaning, sweeping, or vacuuming areas to remove the dust source.

3. Removing or relocating dust-creating materials or activities to other areas that will eliminate the dust problem.
4. Applying dust-control agents, such as water, or water misting, to the dust source. Application of any wetting agents other than water requires the written approval of the Port prior to use.
   a. Application of dust control agents is not acceptable for materials that will dissolve in water or become friable.
   b. Materials that will dissolve in water or become friable when wetted shall be stored only on impervious surfaces, field-installed ground sheeting, or other barriers.
   c. Run-off from wetted materials shall be controlled to prevent contamination of other portions of the site.

1.5 NOISE CONTROL

A. The Contractor shall comply with local noise control regulations.

1.6 SOLID WASTE MANAGEMENT

A. The Contractor shall be solely responsible for determining the proper disposition of all solid waste, including documentation showing that the solid waste and recyclables are not regulated as hazardous waste in accordance with state and federal regulations. Upon request, this documentation shall be made available to the Port.

B. Receptacles:
   1. All drop boxes, bins, totes, and cans located in areas exposed to wind or precipitation shall be equipped with metal, canvas, or plastic covers. Drop boxes, bins, totes, and cans shall be kept closed at all times, except when adding waste material.
   2. Where possible, large receptacles such as drop boxes, bins, and totes shall be placed on impervious areas, such as concrete or asphalt pavement, at locations away from public traffic, storm drain inlets, ditches, and other conveyances.
   3. If any receptacle is observed to be leaking any liquid, it shall be considered a solid waste leachate. The Contractor shall immediately take action to contain the leakage.
   4. Discarding of aerosol cans, used oil, paints, solvents, fluorescent light tubes, or any hazardous waste into a receptacle is strictly prohibited.
   5. Receptacles larger than 33-gallon capacity used for recyclables and general solid waste and portable toilets shall not be located within 50 feet of a storm drain inlet, drainage ditch, surface water, or wetland.
   6. The Contractor shall ensure that all recyclable and solid waste receptacles are kept closed, are not overfilled, are not leaking, and that general housekeeping is performed in the area.
   7. All recyclable and general solid waste hauled from the Port shall be secured prior to leaving the work site so that no waste material blows out, falls out, or leaks out during transportation to the designated off-site location.

1.7 DISPOSAL

A. The Contractor shall dispose of waste material off Port property and in accordance with applicable state, federal, and local regulations.

B. Burning or burying of waste material within Port property is not permitted.

C. Disposal of waste material within the area cleared, or a river, stream, wetland, or other waterway or waterfront is not permitted.

1.8 STAGING, PARKING, AND WORK AREA

A. Access to and from staging, parking, and work areas shall be as shown on the drawings.

B. The Contractor shall perform operations and movement within the staging, parking, and work areas in strict conformance with Port rules and regulations.

C. Employees' vehicles shall be parked in the staging/employee parking area. The Contractor shall be responsible for transporting workers between the parking area and the work area.

D. Only marked Contractor-owned or -operated vehicles required for proper execution of the work will be allowed in the work area. No private passenger vehicles will be admitted.

1.9 STORAGE AND PROTECTION OF MATERIAL AND EQUIPMENT

A. The Port will designate the area in which the Contractor may store material and equipment.

B. The Contractor shall protect materials and equipment from damage, pilfering, etc., and fully relieve the Port of this responsibility.

C. Upon completion of the work, the Contractor shall remove unused materials and equipment and restore the area to original condition, including any grading necessary to restore drainage patterns and surface smoothness.

D. Materials to be salvaged by the Contractor shall be stored in the staging area.

E. Plant material delivered to the work area that cannot be planted within 4 hours shall be stored in the area designated by the Port for the heeling-in of plant material.

F. Materials and equipment shall be stored at least 50 feet from any riverbank.

1.10 WARNING SIGNS AND BARRICADES

A. Before starting work, the Contractor shall provide and install any signs and/or barricades necessary for protection of the work.

B. The Contractor shall install and maintain adequate warning signs and lighted barricades to protect property and personnel in the work area. Barricades shall be weighted or anchored to prevent overturning from wind.

C. The Contractor shall space barricades a maximum of 20 feet apart, unless directed otherwise by the Port.

D. The Contractor shall relocate barricades, at the direction of the Port, whenever required to maintain protection of the work area or when changing work areas.

E. Open trenches, excavations, or obstructions not being actively worked shall be marked with lighted and weighted barricades that can be seen from a reasonable distance.

1.11 TRANSPORTATION OF MATERIAL

A. If shipments of hazardous material (including hazardous debris, contaminated soil or water, and hazardous waste) will be unloaded onto or loaded from Port property, the Contractor shall have a qualified person, who is current with U.S. Department of Transportation (DOT)-approved training for the transportation of hazardous materials, available on site when shipments are received or made. The storage and shipment of hazardous waste shall also comply with the requirements of these specifications.

B. The Contractor shall properly characterize and manifest waste material leaving Port property for disposal.

C. The Contractor shall ensure that hazardous goods and material delivered to or from the construction site meet applicable DOT labeling and placarding requirements.

D. The Contractor shall minimize and abate the creation of nuisance dust conditions during the loading and unloading of vehicles used to haul debris, rubble, soil, trash, or other material that may create dust during loading or unloading operations.

E. Before leaving the loading area, the Contractor shall adequately secure and cover vehicles used to haul debris, rubble, soil, trash, or other material that may be blown off or fall during transportation on site or over public thoroughfares.

F. In areas that may result in the tracking of soil, sediments, or hazardous materials on the wheels of hauling equipment outside areas that are enclosed by erosion and silt or sediment control devices, the Contractor shall provide the means and methods to remove these materials prior to the vehicle exiting the controlled area. If water wash stations are used, the Contractor shall provide systems for the collection, treatment, and disposal of wheel wash water and accumulated sediment.

1.12 TRAFFIC CONTROL

A. Portions of the work may be in areas where there will be traffic involved in terminal activities and cargo handling. The Contractor shall make arrangements for the safe handling of traffic in the work area, and coordinate the work with the Port.

B. The Contractor shall keep pavement surfaces that are available to others for their use during construction of the work, free and clear of dirt, mud, and debris.

1.13 HAUL ROUTE CONSTRUCTION AND MAINTENANCE

A. The term "haul route" applies to any designated paved or unpaved road used by the Contractor for travel of construction equipment.

B. Construction equipment shall follow agreed-upon haul routes.

C. Electrical or communication cables shall not be crossed unless protected by approved means.

D. Equipment operated on haul routes over existing pavement shall conform to legal load limits for public highways unless approved protection is provided.

E. The Contractor shall maintain haul routes over unpaved areas in good, usable condition during the course of the work. Roads shall be sprinkled as necessary to prevent dust.

F. The Contractor shall restore any impacted paved roads to original condition at the conclusion of construction and prior to final acceptance. Haul roads over unpaved areas shall be obliterated by scarifying and smooth grading in conformance with existing drainage patterns.

G. The Contractor shall construct, maintain, and restore haul routes to the satisfaction of the Port. Cost shall be considered an incidental item.

1.14 HARD HATS AND SAFETY CLOTHING

A. Wear hard hats and high visibility clothing that comply with current ANSI requirements. All safety equipment shall be in good repair.

END OF SECTION 015000

SECTION 015639 – TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide temporary fencing, barricades, and guards as necessary or required to protect trees that are to remain, from damage above and below grade.

B. Protect root systems from smothering and compaction. Do not store construction materials or permit vehicles to drive or park within the drip line area of any tree to remain.

C. Protect all plant growth, including root systems of trees from the dumping of refuse or chemically injurious material or liquids, and continual puddling of running water.

D. Trees and vegetation to remain consists of plant materials and grasses installed in 2008 by the Port.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect all trees and document, by written memorandum and photograph, any unusual existing conditions. Submit copies to the Port prior to commencement of work.

3.2 FIELD SUPERVISION

A. The Port must be present during demolition of existing conditions within the drip line of trees to remain.

3.3 GENERAL

A. Protect root systems of trees to remain from damage due to noxious materials in solution caused by runoff or spillage during mixing and placement of construction materials, or drainage from stored materials.

B. Protect root systems of trees to remain from flooding, erosion, or excessive wetting resulting from dewatering operations and compaction.

C. Protect all existing trees to remain against unauthorized cutting, breaking, or skinning roots and branches, and skinning and bruising of bark.

D. Do not allow fires on the project site.

E. Where cutting seems necessary, review conditions with the Port before proceeding, and comply with its directives.

F. All tree pruning or root cutting to be performed with sharp pruning instruments; do not break or chop. Do not prune without explicit approval of the Port.

3.4 GRADING AND FILLING AROUND TREES

A. Maintain the existing grade within the drip line of trees unless otherwise indicated on the drawings and approved by the Port.

3.5 REPAIR AND REPLACEMENT OF TREES

A. Repair trees damaged by construction operations as directed by the Port. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.

B. Remove and replace dead trees and damaged trees that are determined by the Port to be incapable of restoration to a normal growth pattern.
   1. Provide new trees of the same size as those damaged. Plant and maintain as directed. Species shall be selected by the Port.
   2. For trees exceeding replaceable size (over 13-inch caliper), the Port shall be compensated on the basis of an evaluation schedule on the damaged trees by a qualified consulting arborist registered with the American Society of Consulting Arborists.

END OF SECTION 015639

SECTION 015713 – TEMPORARY EROSION, SEDIMENT, AND POLLUTION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes temporary measures and monitoring to control water pollution, soil erosion, and siltation. Erosion, sediment, and pollutant control (ESPC) devices or methods include the use of berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, sediment (filter) fences, grasses, slope drains, and other techniques.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 312000 – Site Clearing, Earthwork, and Shoreline Stabilization

1.3 REFERENCED STANDARDS AND APPLICABLE CODES

A. National Pollutant Discharge Elimination System (NPDES) General Permit 1200-CA dated February 20, 2001

B. City of Portland Erosion Control Manual, current edition

C. City of Portland Title 10, Chapter 10.10 – 10.80

1.4 SUBMITTALS

A. The Contractor shall submit the following supplemental ESPC information at the pre-construction meeting:
   1. Construction start and completion dates.
   2. Dates when ESPC measures will be in place.
   3. Projected date of removal of erosion control structures (after soil is stabilized by vegetation or pavement).
   4. Description of control procedures to prevent the discharge of all wash water from concrete trucks into the storm sewer system.
   5. Description of procedures for prompt maintenance or repair of ESPC measures utilized on-site.
   6. Description of clearing and grading practices, including a schedule of implementation, that will minimize the area of exposed soil throughout the duration of the project. (Whenever practicable, clearing and grading shall be phased to prevent exposed inactive areas from becoming a source of erosion.)
   7. Description of best management practices (BMPs) that will be used to prevent or minimize stormwater from being exposed to pollutants from spills, cleaning and maintenance activities, and waste handling activities. These pollutants include fuel,

hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations.

8. Name, title, and telephone number of designated employee to perform the Contractor's inspection and monitoring of ESPC measures.

B. Any requested changes or modifications to the ESPC measures shown on the drawings shall be submitted to the Port for approval prior to implementation.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 GENERAL

A. The implementation of the ESPC measures and the construction, performance monitoring, maintenance, replacement, and upgrading of the ESPC measures are the responsibility of the Contractor until all construction is completed and accepted and vegetation or landscaping is established.

B. The ESPC measures shown on the drawings shall be constructed in conjunction with all clearing, grading, trenching, and earthwork activities and in a manner that ensures that sediment and sediment-laden water does not enter the drainage system or roadways, or violate applicable water quality standards.

C. The ESPC measures shown on the drawings are the minimum requirements for anticipated site conditions and Contractor methods and sequences. During the construction period, the ESPC measures shall be upgraded as needed for unexpected conditions, storm events, or Contractor methods or sequences and to ensure that sediment and sediment-laden water does not leave the site.

D. The Contractor shall be responsible for implementing temporary erosion control measures during construction to correct unforeseen conditions. The Contractor shall be responsible for additional erosion control due to the Contractor's negligence, carelessness, or failure to install planned controls as a part of the work.

E. Implementation, construction, and maintenance of ESPC measures shall be in accordance with the City of Portland Erosion Control Manual.

F. Soil disturbance activities shall not begin until ESPC measures are in place.

G. The Contractor shall schedule and perform ground disturbance activities in order to minimize impact to the overall project.

H. The erosion control drawings, together with the supplemental ESPC information, constitute the ESPC plan. A copy of the ESPC plan shall be retained on site and made available to the Port upon request.

3.2 CONSTRUCTION DETAILS

A. The Contractor shall install and maintain all site public notification signs as shown on the drawings and keep signs easily readable from the public right-of-way throughout the duration of the ground-disturbing activities. The signs shall be removed and disposed of upon completion of the work.

B. No visible or measurable erosion material or pollutant shall exit the construction site. Visible or measurable is defined as:
   1. Deposits of mud, dirt, sediment, or similar material exceeding 1/2 cubic foot in volume in any area of 100 square feet or less on public or private streets, adjacent property, or into the storm and surface water system, either by direct deposit, dripping, discharge, or as a result of the action of erosion.
   2. Evidence of concentrated flows of water over bare soils; turbid or sediment-laden flows; or evidence of on-site erosion such as rivulets on bare soil slopes, where the flow of water is not filtered or captured on the site.
   3. Earth slides, mud flows, earth sloughing, or other earth movement that leaves the property.

C. All reasonable means and methods to control or divert upslope stormwater runoff away from cleared and grubbed areas, stockpiled materials, and other disturbed areas that will be open or stockpiled for periods longer than 2 weeks shall be employed.

D. Construction entrances, exits, and parking areas shall be graveled or paved to reduce the tracking of sediment onto public or private roads, and maintained for the duration of the project.

E. Unpaved roads on the site shall be graveled or under other effective erosion and sediment control measures, either on the road or down gradient, to prevent sediment and sediment-laden water from leaving the site.

F. Existing vegetation shall be preserved where practicable, and open areas shall be revegetated after grading or construction.

G. Soil stockpiles shall be continuously secured or protected from runoff and erosion with temporary soil stabilization measures or protective cover throughout the project.

H. Ongoing maintenance, repair, and restoration of ESPC measures shall be provided to keep them continually functional.
   1. The following maintenance activities shall be included:
      a. Visual or measurable amounts of sediment and pollutants that leave the site shall be cleaned up immediately and placed back on the site or properly disposed of. Under no conditions shall sediment be intentionally washed into storm sewers or drainage ways.
      b. Clean catch basin protection when design capacity has been reduced by 50 percent.

c. Remove sediment trapped by sediment fences before it reaches one-third of the above-ground fence height.

d. Remove trapped sediments from sediment basins when design capacity has been reduced by 50 percent.

I. If fertilizers are used to establish vegetation, the application rates shall follow manufacturer's guidelines and the application shall be done in a way that minimizes nutrient-laden runoff to receiving waters.

J. If construction activities cease for 30 days or more, the entire site shall be stabilized using vegetation or a heavy mulch layer, temporary seeding, or another method that does not require germination to control erosion.

K. Any use of toxic or other hazardous materials shall include proper storage, application, and disposal.

L. When trucking saturated soils from the site, either watertight trucks shall be used or loads shall be drained on-site until dripping has been reduced to minimize spillage on roads and streets.

M. The Contractor shall clean all catch basins and inlets protected from sediment prior to paving and final acceptance. The cleaning operation shall not flush sediment-laden water into the downstream system.

N. ESPC measures installed during construction shall be removed when construction and site disturbance activities are complete and permanent soil stabilization is in place.

O. The Contractor shall remove and dispose of waste and unused building material.

3.3 MONITORING AND REPORTING REQUIREMENTS

A. The Contractor shall designate an employee to perform inspections of ESPC measures. The employee shall have knowledge and experience in construction stormwater controls and management practices.

B. The designated employee shall inspect erosion control measures daily and maintain as necessary to ensure their continued functioning.

C. For inactive periods of work, the designated employee shall inspect ESPC measures at least once every 14 days and within 24 hours after any storm with precipitation greater than 0.5 inches per 24-hour period.

D. The designated employee shall visibly monitor stormwater runoff to evaluate the effectiveness of the erosion control measures or practices. If visible quantities of sediment are leaving the property, take corrective action immediately. The Contractor shall notify the Port of all corrections and violations.

E. The Contractor shall keep a record of inspections. This record shall be made available to the Port upon request, and be submitted to the Port upon final completion of the work.

F. Visual inspections shall document the following information:

1. Inspection date, inspector's name, weather conditions, and rainfall amount for the past 24 hours (inches). (Rainfall information can be obtained from the nearest weather recording station.)
2. List observations of all BMPs: Erosion and sediment controls, chemical and waste controls, locations where vehicles enter and exit the site, status of areas that employ temporary or final stabilization control, status of soil stockpile area, and non-stormwater controls.
3. At representative discharge location(s) from the construction site, conduct observations and document the quality of the discharge for any turbidity, color, sheen, or floating materials. If possible, in the receiving stream, observe and record color and turbidity or clarity upstream and downstream within 30 feet of the discharge from the site. For example, a sheen or floating material shall be noted as present or absent. If present, it may indicate possible spill and/or leakage from vehicles or materials storage. Observation for turbidity and color shall describe any apparent color, the clarity of the discharge, and apparent differences compared with the receiving stream.
4. If visual or measurable amounts of sediment are leaving the property, briefly explain the corrective measures taken to reduce the discharge and/or clean it up. Describe efforts to prevent future releases. The ESPC shall be amended accordingly.
5. If a site is inaccessible due to inclement weather, the inspection shall include observations at a relevant discharge point or downstream location, if practical.

END OF SECTION 015713

SECTION 015719 – ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section covers preventing environmental pollution and minimizing environmental degradation during and as a result of construction operations. Other technical sections may also contain specific requirements for environmental protection. Those specific requirements are in addition to or modify the requirements in this section, the more stringent requirements shall control. The control of environmental pollution requires consideration of noise levels, air, water, and land.

B. All environmental pollution shall be prevented, abated, and controlled, and environmental degradation arising from construction activities shall be minimized by complying with all applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement, as well as the specific requirement in this contract.

C. The Contractor shall comply with all substantive requirements of permits.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 013300 – Submittal Procedures

1.3 SUBMITTALS

A. Environmental Protection Plan (EPP)
   1. The Contractor shall submit an EPP as one of the Wheeler Bay Shoreline repair submittals. This plan shall specify how the Contractor will adhere to best management practices (BMPs) for near-water construction work, and will describe methods that will be taken to prevent any petroleum products, chemicals, or other toxic or deleterious materials from entering the water.
   2. The EPP shall be submitted in accordance with Section 013300 – Submittal Procedures.
   3. The EPP submitted pursuant to this section presents the procedures by which the Contractor shall establish and maintain quality control for environmental protection of all items of the Wheeler Bay Shoreline repairs. This plan shall address all construction tasks.
   4. The Contractor shall record on daily reports any problems in complying with laws, regulations, and ordinances, and any corrective action taken.
   5. The conservation measures and terms and conditions required by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) shall be implemented to minimize short-term impacts from construction activities.
   6. Conservation measures and terms and conditions listed in the Biological Opinion (Exhibit B) that apply to this work include the following list:

Conservation Measures:

a. All work will occur during the summer in-water work window of July 1 through October 31.
b. The potential for scour will be limited by controlling Contractor vessel draft and movements if the site is accessed from the water.
c. No water will not be created or discharged.
d. Multiple means will be used to verify adequate coverage during and following material placement.
e. Cap materials will be imported, clean granular material.
f. Surface booms, oil-absorbent pads, and similar materials will be on site for any sheens that may occur on the surface of the water during construction.
g. No construction equipment will enter the water during the shoreline stabilization activities in Wheeler Bay, and erosion control measures will be in place.

Terms and Conditions:

a. Before beginning work, all contractors working on site are required to read a complete list of applicable reasonable and prudent measures, and terms and conditions intended to minimize the amount and extent of take resulting from shoreline stabilization activities in Wheeler Bay (Exhibit B; pages 37-41).
b. All covers or caps over contaminated soil or sediment require demarcation of the base of the cap with a demarcation barrier.
c. Contaminated soil or sediment shall be capped in place with a minimum of 12 inches of clean cover material over the demarcation fabric. This includes the Wheeler Bay bankline.
d. Cap material shall be from an approved upland source.
e. Cable and concrete shall not be used to anchor large wood into the bankline in Wheeler Bay.
f. The following notice shall be posted prominently at the work site:
   NOTICE: If a sick, injured, or dead specimen of a threatened or endangered species is found in the project area, the finder must notify NMFS through the contact person identified in the transmittal letter for the Biological Opinion (Exhibit B), or through the NMFS Office of Law Enforcement at 1-800-853-1964, and follow any instructions. If the proposed action may worsen the fish's condition before NMFS can be contacted, the finder should attempt to move the fish to a suitable location near the capture site while keeping the fish in the water and reducing its stress as much as possible. Do not disturb the fish after it has been moved. If the fish is dead, or dies while being captured or moved, report the following information: (1) NMFS consultation number; (2) the date, time, and location of discovery; (3) a brief description of circumstances and any information that may show the cause of death; and (4) photographs of the fish and where it was found. The NMFS also suggests that the finder coordinate with local biologists to recover any tags or other relevant research information. If the specimen is not needed by local biologists for tag recovery or by NMFS for analysis, the specimen should be returned to the water in which it was found, or otherwise discarded.
g. Water quality monitoring will be conducted by the Port to ensure that applicable standards are not exceeded outside compliance boundaries specified by the U.S. Environmental Protection Agency (USEPA) Section 401 Water Quality Monitoring and Compliance Conditions Plan (WQMCCP; see Exhibit C). The

Contractor may be required to modify production rates or construction methods if water quality exceedances occur.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 NOTIFICATION OF NONCOMPLIANCE

A. The Contractor will be notified by the Port of noncompliance with the provisions of this section. Immediate corrective action shall be taken. Such notice, delivered at the site, shall be sufficient for the Contractor to take action. The Port may issue an order stopping all or part of the work for failure to comply until corrective action has been taken. No time lost resulting from such stop orders shall be the subject of a claim for extension of time or for costs or damages. The Contractor is required to comply with all environmental requirements whether or not notified by the Port of noncompliance.

3.2 IMPLEMENTATION

A. EPP: Within 5 calendar days of contract execution the Contractor shall submit an EPP, including proposals for implementing this section for environmental protection. The Port will provide the Contractor with comments on the draft EPP within 2 business days of receiving the draft. The Contractor shall address the Port's comments and issue a revised EPP within 2 business days of receiving Port comments. Additional modifications may be required after USEPA review. No physical work at the site shall be started until this plan has been approved, or until specific authorization is obtained to start a phase of the work. The Port may require preparation and submittal of supplemental plans if additional environmental protection planning is found necessary for later phases of work. At a minimum, the plan shall include the sections indicated below:

1. Contamination Prevention: A contamination prevention section shall list all potentially hazardous products, such as petroleum and toxic materials, on the job site and corresponding provisions to be taken to prevent accidental introduction of such materials into any water body, the air, or the ground. The section shall also include plans for preventing polluted runoff from plant, equipment parking, and maintenance areas from entering local water bodies. Any spillage or leaks shall promptly be cleaned up and placed in the prescribed disposal area.
2. Containment and Cleanup: A containment and cleanup section shall include the procedures, instructions, and reports to be used in the event of an unforeseen incident requiring a containment action. This section shall include, at a minimum:
   a. The name of the individual on each shift who will be responsible for implementing and supervising the containment and cleanup.
   b. A list of materials and equipment to be immediately available. For all work in or adjacent to water, a 200-foot-long, minimum, containment boom, and a cleanup kit consisting of absorptive pads and other materials necessary to remove and dispose

of the spill material safely, shall be available at the job site. Materials and equipment for other cleanup work shall be tailored to the potential hazards involved.

c. The names and locations of suppliers of containment materials and names and locations of additional fuel oil recovery, cleanup, restoration, and disposal equipment available in case of an unforeseen spill emergency.

d. The methods and procedures to be used for expeditious cleanup.

e. The name of the individual on each shift who will report any spills and who will follow-up with complete documentation.

f. The requirements for containment and cleanup measures from spills or leakages or other types of releases shall be included in the plan.

g. Agencies, individuals, and phone numbers of agencies to be contacted on a 24-hour basis.

3. Erosion and Turbidity Control: An erosion and turbidity control section shall include any construction that will disturb upland or intertidal surfaces or introduce turbidity into water bodies. This section shall include the Contractor's plan for controlling erosion and water turbidity as a result of upland soil or intertidal excavation, stockpiling, stabilization, filling and grading, and demolition operations. Temporary erosion and sediment control measures such as booms, silt curtains, ditches, dikes, drains, and sedimentation basins shall be identified. Potential changes to operations that may be implemented if water quality standards are violated shall also be included. These measures and any others that may be necessary to achieve specified water quality shall be included in the plan.

B. Coordination: At the pre-construction meeting, the Port and the Contractor shall discuss the Contractor's operations to develop mutual understandings relative to the administration of the environmental protection program.

C. Supervision: During the work, all activities, including those of subcontractors, shall be supervised to ensure compliance with the intent and details of the plan. Environmental Compliance meetings shall be conducted by the Contractor for employees and subcontractors to ensure that all personnel working at the site are familiar with the environmental protection provisions. All equipment and materials for environmental protection shall be inspected every 2 weeks to ensure that they are in proper order and have not deteriorated. A written inspection report must be provided to the Supervising Contractor, giving the condition of the equipment and materials.

3.3 PROTECTION OF LAND RESOURCES

A. The land resources within the project boundaries and outside the limits of work under this contract shall be preserved in their present condition or be restored to a condition after construction that will appear to be natural, agreeable to the Port, and not detract from the appearance of the project. Activities shall be confined to areas defined by the contract documents. Areas of bare soil exposed at any time shall be held to a minimum.

3.4 PROTECTION OF WATER RESOURCES

A. General: Compliance with state water quality standards and substantive requirements of any permits and clearances obtained for the work is the Contractor's responsibility. The Contractor shall comply with the USEPA WQMCCP (Exhibit C) and the Port's Water Quality Monitoring Plan (Appendix B of the Phase I Removal Action Design Analysis Report [Exhibit A]).

B. Erosion Control: Surface drainage from cuts and fill, whether or not completed, and from borrow and waste disposal areas, shall be held in sedimentation ponds or the areas shall be graded to control erosion within acceptable limits. Temporary erosion and sediment control measures such as partial backfilling, mulching, ditches, dikes, drains, sedimentation basins, or silt fences or curtains shall be provided as needed, and maintained. The area of bare soil exposed at any time by construction shall be held to a minimum.

C. Disposal: Disposal of any wastes, effluents, trash, grease, chemicals, or other contaminants in water bodies shall not be allowed. If any waste material is dumped in unauthorized areas, the material shall be removed and the area restored to a condition approximating the adjacent undisturbed area.

3.5 WATER QUALITY MONITORING

A. Water quality monitoring will be performed by the Port, consistent with the Water Quality Monitoring Plan (Appendix B of the Phase I Removal Action Design Analysis Report [Exhibit A]) and the USEPA WQMCCP (Exhibit C). The Contractor shall familiarize itself with water quality requirements and with the Port's monitoring plans and activities. In the event of a water quality exceedance, the Contractor may be required to modify their procedures, methods, or equipment appropriately so as to remedy the exceedances, at no additional expense to the Port. The purpose of the specified water quality monitoring is to provide ongoing assessment of the water quality impacts of the work activities, as specified in the Water Quality Monitoring Plan.

3.6 PROTECTION OF FISH AND WILDLIFE

A. All work shall be performed and all steps taken to prevent interference or disturbance to fish and wildlife. Water flows or habitat outside the project boundaries that are critical to fish or wildlife shall not be altered or disturbed. The Contractor shall stop all operations if fish kill or distressed fish are observed, and immediately notify the Port, USEPA, and the appropriate permitting agencies.

3.7 PROTECTION OF AIR – EQUIPMENT FUELING AND MAINTENANCE

A. Ultra Low-Sulfur Diesel Fuel
   1. All diesel-powered off-road vehicles and equipment used on the project site for 3 consecutive days or more shall be fueled with ultra low-sulfur diesel (ULSD). This includes, at a minimum, vehicles with engine horsepower (HP) ratings of 50 HP and above, and internal combustion engines used to power generators, compressors, and similar equipment. Where feasible, the Contractor shall use biodiesel fuel.
   2. The ULSD fuel shall contain no more than 15 parts per million sulfur.

3. The Contractor shall submit the following:
   a. Prior to beginning construction, submit a list of the diesel-powered equipment that will use ULSD fuel. The list shall include:
      1) Equipment number, make, model, and contractor/subcontractor name.
      2) Type and source of ULSD fuel to be used.
   b. Submit monthly updates to the list of construction equipment.
   c. Submit monthly reports of hours of operation for all diesel-powered equipment.
4. Submit copies of diesel fuel delivery slips and fuel receipts each month, noting the type of diesel fuel used with each piece of diesel-powered equipment.
5. The Port encourages the use of other diesel emission reduction alternative fuels (e.g., biodiesel).
6. The Port encourages retrofit emission control devices on equipment or use of USEPA Tier II or Tier III equipment.

3.8 MAINTENANCE OF POLLUTION CONTROL FACILITIES

A. The Contractor shall maintain all constructed facilities and portable pollution control devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

END OF SECTION 015719

SECTION 017000 – EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 INSPECTION OF WORK AREA

A. Examine the work area and become satisfied as to the conditions of the work involved and the quantities of materials required for the performance of the work.

1.2 NOTIFICATION TO PORT

A. Notify the Port at least 48 hours before intent to commence work. Do not start work until authorized to do so by the Port.

1.3 LAYOUT OF WORK

A. Survey work performed under this contract shall be performed under the direct supervision of an Oregon-registered professional land surveyor.

B. Lay out the work from reference points shown on the drawings and be responsible for measurements connected therewith.

C. Furnish stakes, templates, platforms, equipment, and labor as required to lay out every part of the work from the established references.

D. Maintain and preserve stakes and monuments established by the Port until authorized to remove them. If such marks are destroyed by the Contractor prior to authorized removal, they may be replaced by the Port at its discretion. The expense of replacement will be deducted from any amounts due, or to become due, to the Contractor.

E. Measuring for pay quantities will be by the Port.

F. Submit a copy of field notes made in connection with layout measurements to the Port, if they are requested. The Port may check field layout measurements at any time.

G. Engage a professional land surveyor licensed in the State of Oregon to replace monuments that are disturbed, damaged, or destroyed during the course of the work, and ensure that a record of survey depicting replaced monuments is filed at the appropriate county survey office, all at no additional cost to the Port.

1.4 VERIFICATION OF MEASUREMENTS

A. Verify elevations and measurements and be responsible that executed dimensions fit actual conditions, regardless of the drawings, and report discrepancies to the Port before proceeding

with the work. The Contractor will not receive extra compensation for verification of measurements or for labor or material expended on account of such differences.

1.5 EXISTING UTILITIES

A. Notify the Oregon Utility Notification Center (OUNC) and owners of underground utilities within the construction area or within affected public rights-of-way or easements, via the "one-call" notification system (1-800-332-2344), in advance of the commencement of excavation activities as prescribed in Oregon Revised Statutes (ORS) 757.541 to 757.571, Excavation Regulations.

B. Notify the Port when the "one-call" request is being initiated.

C. Protect existing utilities and other public and private facilities and improvements that are to remain in place, from damage in the course of the work.

D. Perform any shutdown of utilities only when such shutdown will not interfere with Port or tenant operations. Schedule shutdowns through the Port, allowing time for adequate coordination.

E. In the event of interruption to field-located utility services as a result of the work, promptly notify the Port first, and then the proper authority. Cooperate with said authority in restoring service as promptly as possible. If required, the Contractor shall install suitable temporary service until permanent repair is completed and bear the cost of the repair and temporary service.

F. Unless noted as abandoned, expose utilities only by hand excavation.

G. Notify the Port of all utilities exposed. Do not disrupt or cut utilities until identified and until the Port has approved the cut.

H. Repair damages that result from execution of the work at no cost to the Port. Repairs shall be subject to approval of the Port.

END OF SECTION 017000

SECTION 017700 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 AS-CONSTRUCTED DRAWINGS

A. Upon completion of the work, and as a requirement of final acceptance, submit to the Port two drawing sets showing all as-constructed changes and information. One set will be given to the U.S. Environmental Protection Agency (USEPA) by the Port for their review.

B. See Section 013300, Submittal Procedures, for requirements.

1.2 CONSTRUCTION STAKE AND MARKINGS REMOVAL

A. Remove stakes and painted markings used in construction layout.

1.3 CLEANUP

A. Remove debris from the staging and work area(s).

B. Thoroughly sweep paved areas prior to final acceptance.

1.4 CERTIFICATES OF FINAL APPROVAL

A. Submit originals or clearly readable copies of certificates of approval from the inspection authority prior to application for final payment.

END OF SECTION 017700

SECTION 312000 – SITE CLEARING, EARTHWORK, AND SHORELINE STABILIZATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes site clearing, debris removal, grading, and shoreline stabilization.

1.2 REFERENCED STANDARDS

A. AASHTO: American Association of State Highway and Transportation Officials

B. ASTM: American Society for Testing and Materials

C. ODOT: Oregon Department of Transportation – 2002 Standard Specifications

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 015713 – Temporary Erosion, Sediment, and Pollution Control

B. Section 329119 – Topsoil and Landscape Grading

C. Section 353200 – Anchored Woody Debris Structures

1.4 DEFINITIONS

A. Clearing and mowing: Small trees, shrubs, grass, sod, and other types of vegetation removed in order to access and construct the work. Grubbing out roots and stumps and stripping sod is not including in this work.

B. Clearing of unanchored large woody debris: Temporary removal, salvage, and stockpiling of woody debris that has drifted into the work area.

C. Debris shall include, but is not limited to:
   1. Concrete, asphalt, etc.
   2. Torn geotextiles including coir fabric, etc.
   3. Material dumped within the work areas during the time of the contract.

D. Grading for subgrade: Minor grading to establish subgrade elevations prior to placement of imported materials.

E. Finish grading of imported materials: Establishing final grades for imported materials including select fill, and rock riprap. For installation of topsoil see Section 329119 – Topsoil and Landscape Grading.

PART 2 - PRODUCTS

2.1 GENERAL

A. The Contractor shall provide all required materials for the project. Materials shall be of the quality, size, shape, and gradation as specified in this part.

B. Material shall be from igneous or metamorphic rock.

C. Imported material shall have chemical concentrations less than the chemical concentration goals presented in Table 1 at the end of this section. Armor material does not need to be tested for chemical criteria due to its size.

D. The Contractor shall remove all debris within the work area in the manner specified and as shown on the drawings, and as necessary to complete the work in this contract.

2.2 BORROW SOURCE AND MATERIALS CHARACTERIZATION

A. The following activities shall be performed by the Contractor, as specified below, to ensure that imported materials are natural, native, virgin materials and free of contaminants, including debris or recycled materials, and which meet construction specifications. The Contractor shall provide assurance that imported materials are free of hazardous or otherwise objectionable materials. The Port maintains the right to reject any materials that have been determined to be substandard for any reason. In the event of rejections, it shall be the responsibility of the Contractor to remove all stockpiles of rejected material from the site.

1. A characterization of any and all imported material shall be performed by the Contractor prior to any on-site placement. The characterization will include analysis of a borrow source sample, site inspection, and site characterization. The Contractor shall submit a Borrow Source Characterization report summarizing all the information contained within this section.
2. Source Identification: Prior to borrow source sampling, the Contractor shall provide documentation of the origin of borrow source materials.
3. The Contractor shall provide the Port with a 5-gallon sample of granular material from each borrow source. Note, samples of rock are not required. Each sample should be composed from no less than five sub-samples taken throughout any one source. The Contractor shall ensure that the samples are representative of all materials to be imported. Samples shall be provided to the Port before the materials represented by the samples are delivered to the site.
4. The borrow source shall be inspected by the Contractor. During such inspection, the Contractor shall ensure that the materials to be delivered to the site are likely to meet the appropriate specifications. The Contractor shall provide the Port with 1 weeks' notice of such inspections. At the Port's discretion, the Port or a representative may accompany the Contractor to witness such inspections. This witnessing shall in no way release the Contractor form complying with the specifications and shall in no way be construed as approval of any particular source of material.
5. Testing, Reporting, and Certification: The Contractor will notify the Port when the source(s) of all import materials are known. The Port will work with the Contractor to

collect test samples of the potential import materials. The Port will test samples of materials to be imported for the following:

a. Grain size distribution (ASTM method D422-63)
b. In situ moisture content (ASTM method D2216)
c. Priority pollutant metals (U.S. Environmental Protection Agency [USEPA] publication SW 846, the 6000/7000 method series)
d. Semi-volatile organic compounds (USEPA publication SW 846, method 8270, as modified by the Puget Sound Estuary Program [PSEP])
e. Polychlorinated biphenyls (PCBs) (USEPA publication SW846, method 8082 as modified by PSEP)
f. Pesticides (USEPA publication SW846, method 8081, as modified by PSEP
g. Total organic carbon (Standard Methods [SM] method 5310B)
h. Total petroleum hydrocarbons heavy oil-range and diesel-range (Northwest Total Petroleum Hydrocarbons-DX)

6. The Port will provide the results of such tests to the Contractor within 1 week of sampling.
7. Inspection of Materials at the Site: Truckloads of imported material shall be visually inspected by the Contractor upon delivery. Materials shall be inspected for the presence of foreign, recycled, or reprocessed material. The Port may, at any and all times, perform an independent inspection. Material may be rejected if identified as substandard or if test results show it to be substandard. Materials may be segregated for testing based on appearance or odor. Segregated materials may be tested according to designated procedures at the Port's discretion.
8. The Contractor shall collect certified tickets from the borrow source for each load of material brought to the site. The tickets shall be supplied to the Port.
9. One sample for every 20 percent of the total volume of each material used will be taken and submitted for grain size analysis, chemistry, and total organic carbon.
10. The Port maintains the right to reject any materials that have been determined to be substandard for any reason. In the event of rejections, it shall be the responsibility of the Contractor to remove all stockpiles of rejected material from the site.

2.3 SELECT FILL, "FILTER LAYER"

A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Port.

B. Material shall be graded between the limits specified below:

Sieve Size	Percent Passing (by weight)
4-inch	90 to 100
3/4-inch	50 to 75
U.S. No. 4	35 to 55
U.S. No. 10	25 to 45

U.S. No. 40	10 to 25
U.S. No. 200	0 to 4

2.4 FILL FOR TEMPORARY ACCESS ROAD

A. Fill material used for the temporary access road shall be of sufficient gradation and durability to handle the anticipated construction loads. The material shall also be capable of readily being removed after construction.

2.5 GEOTEXTILE

A. Mirafi 160N, or pre-bid approved equal.

2.6 ROCK RIPRAP

A. Material shall be clean, free-draining material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Port.

B. Material shall meet the requirements of ODOT Class 700 riprap.

2.7 DEMARCATION LAYER REPAIR MATERIALS

A. The intent of the demarcation layer during initial construction was to provide a definable marker of the top of native materials. For this effort, the intent is to repair the existing demarcation layer where it is exposed and if it is damaged. The demarcation layer shall be economy-grade or medium-duty orange construction fencing with minimum 4-foot roll widths. The economy-grade or medium-duty construction fencing requirement will provide a durable material.

PART 3 - EXECUTION

3.1 GENERAL

A. The Port will designate the disposition and determine the suitability of products.

B. The Port reserves the right to make minor adjustments or revisions in lines or grades, if found necessary as the work progresses.

C. No clearing or grading shall be started until the Contractor has staked out the proposed work.

D. The Contractor shall suspend earthwork when satisfactory results cannot be obtained because of rain, freezing weather, or other unsatisfactory conditions.

E. The Contractor shall drag, blade, or slope the grade to provide proper surface drainage. Temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the prosecution or condition of the work.

F. Hauling equipment shall be routed around or away from areas of soft or yielding subgrade.

G. The Contractor shall furnish and maintain earth-moving equipment in satisfactory condition and operate such equipment as necessary to control uniform density, section, and smoothness of grade.

H. Soil or other foreign materials that fall on pavements shall be promptly removed.

I. In-place density and moisture content will be determined by ASTM D 6938. The Contractor shall cooperate with this testing by leveling small test areas as designated.

J. The rail line and structures adjacent to the Wheeler Bay work shall be protected at all times. The Contractor shall follow all rail guidelines while working around an active rail line. Rail foul lines are shown on the drawings.

K. The outfalls shown on the drawings shall be protected at all times from damage.

3.2 CLEARING

A. The Contractor shall remove vegetation to a height of 2 inches above the ground surface in areas of proposed temporary access road construction. Roots of vegetation, including grass and sod, shall not be removed.

B. Vegetation removed from the construction of the proposed access road shall be disposed of off Port property. Vegetation without adhering soil may be disposed of at a composting facility. The placement of rock riprap shall require adjustments to portions of two of the existing anchored large woody debris (LWD) structures prior to placement. Each structure consists of three anchored logs. The log located parallel to the shoreline on the upper bank shall be temporarily removed and reattached after rock riprap placement. The three logs shall be securely reconnected with chain. Additional chain may be required.

C. All unanchored woody debris within the Project limits shall be salvaged and stockpiled during subgrade preparation and placement of imported materials. This material shall be placed at the toe of the rock riprap once installation of this material is approved.

D. Salvage and stockpile separately unanchored woody designated by the Port for use as anchored woody debris (see Section 353200 – Anchored Woody Debris Structures).

E. All logs retained on site shall be free of wood preservatives, including creosote. Logs salvaged from on site containing wood preservatives shall be removed and disposed of offsite at the Contractor's expense.

F. The Contractor shall limit the total areas of disturbance to only those areas necessary for the orderly flow of work.

3.3 SUBGRADE PREPARATION

A. The top of subgrade shall be shaped to the lines and grades shown on the drawings.

B. The Contractor shall remove the existing habitat layer (sand, gravel) to the existing armor rock or to the subgrade shown on the drawings to ensure adequate rock-to-rock contact.

C. Excavated material from the existing habitat layer shall be salvaged and stockpiled at an approved location within the work area until placement of rock riprap has been completed.

D. The top of subgrade shall be maintained in a free-draining condition.

E. Stockpiling materials on top of subgrade will not be permitted unless approved.

F. Vehicles will not be allowed to travel in a single track. If ruts are formed, the Contractor shall reshape and reroll.

G. The top 12 inches of subgrade, where no planting or seeding will occur, shall be compacted to a minimum of 85 percent of AASHTO T-180. In areas where planting or seeding will occur, the subgrade shall have the top 12 inches scarified.

H. The finished top of subgrade shall not vary by more than 0.08-foot from the specified grade and cross section.

3.4 SHORELINE STABILIZATION AND SITE GRADING

A. Shoreline grading shall be constructed to the subgrade lines and grade shown on the drawings.

B. Select Fill, Rock Riprap, and the salvaged Habitat Layer shall be placed to the lines and grades shown on the drawings. The Contractor shall construct in lifts of not more than 12 inches in loose depth. The full width of the cross section shall be brought up uniformly.

C. Material shall be placed in layers and shall be near optimum moisture content before rolling to obtain the prescribed compaction. Wetting or drying of the material and manipulation to secure uniform moisture content throughout the layer may be required. Such an operation shall be incidental to the appropriate bid item. Should the material be too wet to permit proper compaction by rolling, work on portions of the fill thus affected shall be delayed until the material has dried to acceptable moisture content.

D. Frozen material shall not be placed in the embankment, and embankment material shall not be placed on frozen material.

E. The Contractor shall be responsible for the stability of shoreline stabilization and for replacing any portion that has become displaced due to the Contractor's improper operations.

F. Layers shall be started in the deepest portion of the fill and, as placement progresses, constructed approximately parallel to the finished grade line.

G. Equipment, both loaded and empty, shall be routed over the full width of the embankment to ensure uniform distribution and density of material placement.

H. Each lift of fill shall be compacted as follows:
   1. Select Fill: Minimum of 85 percent of AASHTO T-180.
   2. Fill for Temporary Access Road: See article 3.6 of this section.
   3. Rock Riprap: See article 3.7 of this section.
   4. Topsoil: See Section 329119 – Topsoil and Landscape Grading.

I. No upland construction equipment shall enter the water during construction.

J. Erosion control measures shall be selected and implemented according to the Oregon Department of Environmental Quality's (ODEQ's) "Sediment and Erosion Control Manual," and shall remain in place during all of the shoreline activities to prevent material from entering the waterway.

K. If there is excavated material, following grading activities, that requires stockpiling and landfill disposal, proper sediment and erosion control methods shall be implemented to contain the material and prevent any material from entering the waterway.

L. Surfaces shall be graded to drain.

M. Wheel ruts shall be eliminated by regrading.

N. The finished surface of site grading areas shall not be more than 0.08-foot from the specified grade.

3.5 SELECT FILL PLACEMENT

A. Install select fill in one lift following rock riprap installation and prior to topsoil installation to meet the lines and grades shown on the drawings.

3.6 GEOTEXTILE AND FILL FOR TEMPORARY ACCESS ROAD INSTALLATION AND RESTORATION

A. Obtain Port approval of access road alignment.

B. Install geotextile over cleared and approved surfaces to the limits shown on the drawings.

C. Install fill for temporary access road over geotextile fabric in 12-inch lifts to the lines and grades shown on the drawings.

D. For site restoration, remove geotextile and fill for temporary access road and dispose at location shown on T4 2009-500 Reference Sheet C-1. Spread out material as directed to provide storm drainage. Scarify subgrade to a minimum depth of 12 inches by ripping or discing. Compaction of restoration area shall have a maximum compaction rate of 85% per AASHTO T-180.

3.7 ROCK RIPRAP INSTALLATION

A. Rock riprap shall be placed in accordance with ODOT 00390.11.

B. The Port shall be present during rock riprap installation. Place riprap on slopes by starting at the base of the slope and working upwards. Riprap shall be placed to full thickness in one operation and in a manner that will avoid displacement of underlying material. Larger stones shall be well-distributed, and the entire mass of stones shall be graded to conform to gradation specified herein. Finished riprap shall be free of objectionable pockets of small stones and clusters of large stones. Place rock using a trackhoe, excavator, or similar equipment to carefully key stones together. Hand-placing to a limited extent may be necessary, but only to the extent necessary to secure results specified above. A tolerance of 6 inches in excess of the thickness, as shown on the drawings, will be allowed in the finished surface.

C. The Contractor shall reinstall the habitat layer at the toe of the completed rock riprap as shown on the drawings.

END OF SECTION 312000

Table 1
Import Material Chemical Goals

Chemical Name	Proposed Borrow Source Criteria	Rational for Criteria
Metals (mg/kg)		
Arsenic[3]	9.79	1
Cadmium	0.99	1
Chromium	43.4	1
Cobalt	NC	4
Copper	31.6	1
Iron	NC	4
Lead	35.8	1
Mercury	0.18	1
Nickel	22.7	1
Selenium	NC	4
Silver	0.5	2
Zinc	121	1
PCBs (µg/kg)		
Total PCBs	10	2
Pesticides (µg/kg)		
Sum DDD	2	2
Sum DDE	2	2
Sum DDT	2	2
Aldrin	2	2
alpha-BHC	2	2
alpha-Chlordane	2	2
beta-BHC	2	2
beta-Chlordane	2	2
Camphechlor	200	2
cis-Nonachlor	4	2
delta-BHC	2	2
Dieldrin	1.9	1
Endosulfan I	2	2
Endosulfan II	4	2
Endosulfan Sulfate	4	2
Endrin	2.22	1
Endrin aldehyde	4	2
Endrin ketone	4	2
gamma-BHC (Lindane)	2.37	1
Heptachlor	2	2
Heptachlor Epoxide	2.47	1
Hexachlorobenzene	10	2
Hexachlorobutadiene	10	2
Methoxychlor	20	2
Oxychlordane	4	2
trans-Nonachlor	4	2

Chemical Name	Proposed Borrow Source Criteria	Rational for Criteria
SVOC (µg/kg)		
1-Methylnaphthalene	20	2
2-Methylnaphthalene	20	2
Acenaphthene	20	2
Acenaphthylene	20	2
Anthracene	57.2	1
Benzo(a)anthracene	108	1
Benzo(a)pyrene	150	1
Benzo(b)fluoranthene	20	2
Benzo(g,h,i)perylene	20	2
Benzo(k)fluoranthene	20	2
bis(2-Ethylhexyl)phthalate	100	2
Butylbenzylphthalate	20	2
Chrysene	166	1
Dibenzo(a,h)anthracene	33	1
Dibenzofuran	20	2
Diethylphthalate	20	2
Dimethylphthalate	20	2
Di-n-butylphthalate	20	2
Di-n-octylphthalate	20	2
Fluoranthene	423	1
Fluorene	77.4	1
Indeno(1,2,3-cd)pyrene	20	2
Phenanthrene	204	1
Pyrene	195	1
Total PAHs	1610	1
TPH (mg/kg)		
TPH - Residual Range	50	3
TPH - Diesel Range	50	3

Notes:

1. The proposed criteria are Threshold Effects Concentrations (TECs), if available.
2. If TECs are not available, then the criteria for the remaining parameters are based on NW Regional SEF Sample Quantitation Limits (SQLs) from Table 7-2, REST 2006 if available, with consideration of chemical-specific analytical response within the same analytical group.
3. If TECs and SQLs are not available, then the criteria for the remaining parameters are based on the Portland Harbor Proposed Effects Level 2 SQV's (PHL2 SQVs).
4. NC = No criteria proposed. If TECs, SQLs, and PHL2 SQVs are not available, no criteria are proposed.

SECTION 329119 – TOPSOIL AND LANDSCAPE GRADING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes finish grading of imported topsoil.

1.2 REFERENCED STANDARDS

A. AASHTO: American Association of State Highway Transportation Officials

B. ASTM: American Society for Testing and Materials

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 015713 – Temporary Erosion, Sediment, and Pollution Control

B. Section 312000 – Site Clearing, Earthwork, and Shoreline Stabilization

C. Section 329300 – Trees, Shrubs, and Ground Covers

PART 2 - PRODUCTS

2.1 JUTE MATTING

A. Jute matting shall be of a uniform, open, plain weave of unbleached, single just yarn. The yarn shall be of a loosely twisted construction and shall not vary in thickness by more than half of its normal diameter. Jute matting shall be furnished in rolled strips approximately 50 yards in length. Matting width shall be 48 inches with an average weight of 0.92 pounds per square yard. A tolerance of plus or minus 1 inch in width and 5 percent in weight will be allowed.

2.2 COIR FABRIC

A. Geocoir/Deko We900, or pre-bid approved equal, available from Belton Industries, http://www.beltonindustries.com/, Roll size 118 inches, length 55 yards.

2.3 WOOD STAKES

A. Stakes shall be 2-inch x 2-inch Douglas Fir (untreated) with one tapered end. Stakes for securing jute and coir matting shall be 2 feet in length. No split or badly splintered stakes will be accepted.

2.4 TOPSOIL

A. The Contractor shall ensure that topsoil materials are natural materials and free of contaminants in accordance with the requirements of Section 312000(2.2)(A).

B. The planting soil mix (topsoil) is intended for use in landscape planting (tree, shrub, and groundcover bed) areas, shall consist of 67 percent sandy/loam mix component and 33 percent compost amendment by volume, and shall meet or exceed the following requirements:

1. The sandy/loam mix component of the planting soil mix shall be soil, based on U.S. Department of Agriculture (USDA) standards, and shall have the following characteristics:

Class	Particle Size Range
Coarse sand	0.5 – 2.0 millimeters (mm)
All sands	0.05 – 2.0 mm
Silt	0.002 – 0.05 mm
Clay	<0.002 mm

2. The sandy/loam component shall also meet or exceed the following specifications:

Screen Size	Percent Retained	Percent Passing
6.35 mm	5	95
#10	15	85
#30	50	50
#60	60	40
#100	80	20
#200	90	10

3. Composted Soil Amendment
   a. The Contractor shall ensure that topsoil materials are natural materials and free of contaminants in accordance with the requirements of Section 312000(2.2)(A).
   b. Yard debris compost: The compost shall consist of 100 percent decomposed organic yard waste material; shall consist of materials that have been sorted, ground-up, aerated, and aged; and shall be fully composted, stable, and mature (non-aerobic). The composting process shall take place for at least 6 months, and the organic amendment shall have a uniform dark, soil-like appearance and consist of 100 percent recycled content. In addition, the composted amendment shall have the following physical characteristics:
      1) Minimal weed seed present, based on germination testing of representative samples
      2) Less than 100 plant parasitic nematodes per 100 cubic centimeters (cc) of organic matter
      3) Be relatively free of soil-borne plant pathogens
      4) A pH range of 5.5 to 7.5
      5) A sodium extract concentration less than 6.0
      6) A saturation extract concentration of Boron less than 1.0 part per million (ppm)
      7) A minimum of 0.08 percent dilute acid extractable iron, based on dry weight
      8) A maximum carbon-to-nitrogen ratio of 40:1

9) Be certified by the Process to Reduce Pathogens (PFRP) guidelines for composting, as established by the U.S. Environmental Protection Agency (USEPA)

c. Recommended Sources:
   1) Grimms
   2) McFarlanes
   3) Or equal

PART 3 - EXECUTION

3.1 EQUIPMENT

A. The Contractor shall furnish and maintain earth-moving equipment in satisfactory condition and operate such equipment as necessary to control uniform density, section, and smoothness of grade.

3.2 REFERENCE POINTS

A. All reference points shall be located before starting work. The Contractor shall take such steps as are necessary to prevent dislocation or destruction of reference points. If reference points are destroyed or disturbed, they shall be replaced as directed.

3.3 CLEARING

A. The Contractor shall clear the site in accordance with Section 312000.

3.4 GRADING

A. The Contractor shall not place topsoil until subgrade and imported materials specified in Section 312000 have been installed and approved by the Port.

B. The Contractor shall place and shape topsoil to the elevations and grades shown on the drawings.

C. Topsoil material shall be spread in layers not to exceed 6 inches of uncompacted depth. Except as noted otherwise, fill material shall be compacted to 85 percent of maximum density, as measured by AASHTO T-180.

D. Abrupt changes in slopes shall be smoothly rounded to avoid damming of surface drainage.

E. The Contractor shall suspend earthwork when satisfactory results cannot be obtained because of rain, freezing weather, or other unsatisfactory conditions in the field.

F. The Contractor shall drag, blade, or slope the embankment to provide proper surface drainage to prevent ponding of water.

G. The Contractor shall take care not to damage root zones of existing plant material to remain.

3.5 PLACING JUTE MATTING FOR SEEDED AREAS FOLLOWING TEMPORARY ACCESS ROAD REMOVAL

A. Immediately following the removal of the access road, jute matting shall be unrolled parallel to the flow of water. Where more than one strip of jute matting is required to cover the given area, it shall overlap the adjacent mat by a minimum of 4 inches. The upslope end of each jute matting shall be staked and buried in a 6-inch-deep trench with the soil firmly tamped against the mat. Three stakes per width of matting (one stake at each overlap) shall be driven below the finish ground line prior to backfilling of the trench. The Port may require that any other edge exposed to more than normal flow of water or strong prevailing winds be staked and buried in a similar manner.

B. The edges of jute matting shall be buried around the edges of catch basins and other structures. Jute matting and erosion control blanket must be spread evenly and smoothly, and be in contact with the soil at all points.

C. Jute matting shall be held in place by approved wooden stakes driven vertically into the soil. The matting and blanket shall be fastened at intervals not more than 3 feet apart in three rows for each strip of the matting and blanket, with one row along each edge and one row alternately spaced in the middle. All ends of the matting and blanket and check slots shall be fastened at 24-inch intervals across their width. The length of fastening devices shall be sufficient to securely anchor the matting and blanket against the soil, and the fastening devices shall be driven flush with the finished grade.

3.6 COIR FABRIC INSTALLATION AND REPAIR

A. Coir fabric shall be placed in areas where existing coir fabric is torn or damaged immediately after topsoil is placed to final grade to prevent erosion. The Contractor shall install coir erosion control fabric to the limits shown on the drawings and per the manufacturer's instructions. Where more than one strip of coir fabric is required to cover the given area, it shall overlap the adjacent mat by a minimum of 2 feet. The upslope end of each coir mat shall be staked and buried in a 6-inch-deep trench with the soil firmly tamped against the mat.

B. Three stakes per width of matting (one stake at each overlap) shall be driven below the finish ground line prior to backfilling of the trench. The Port may require that any other edge exposed to more than normal flow of water or strong prevailing winds be staked and buried in a similar manner.

C. Coir erosion control fabric shall be held in place by approved wooden stakes driven vertically into the soil. The fabric shall be fastened at intervals not more than 3 feet apart in three rows for each strip of fabric, with one row along each edge and one row alternately spaced in the middle. All ends of the fabric shall be fastened at 24-inch intervals across its width. The length of fastening devices shall be sufficient to securely anchor the fabric against the soil, and the fastening devices shall be driven flush with the finished grade.

3.7 TOLERANCES

A. The finished surface in landscaped areas shall not deviate from the specified grade by more than 0.10 foot, as measured with a 10-foot straightedge.

B. Deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and recompacting by sprinkling and rolling. A 10-foot straightedge for testing shall be furnished by the Contractor.

END OF SECTION 329119

SECTION 329219 – SEEDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes the hydroseeding of the temporary access road once the shoreline repair is complete.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 312000 – Site Clearing, Earthwork, and Shoreline Stabilization

B. Section 329119 – Topsoil and Landscape Grading

1.3 SUBMITTALS

A. Seed certification: Lawn seed shall be blue tag certified grass seed. Prior to delivery of seed, the Contractor shall submit one copy of the grass seed analysis tag. The tag shall state the seed name(s), mixture, blend or variety, lot number, and origin of each variety with its associated purity; germination and test date; percentages of crop, inert, and weed; "use before" date; Agricultural Marketing Service (AMS) number; and net weight. The grass seed analysis tag shall comply with standards established by the Official Seed Analysts of North America.

B. For non-blue tag certified seed, the Contractor shall submit the seed vendor's certified statement of each seed required.

1.4 PROTECTION

A. The Contractor shall provide temporary twine barricades at the perimeter of foot-traffic areas receiving seed.

B. Seeding shall be performed when wind velocity is less than 5 miles per hour.

1.5 QUALITY ASSURANCE

A. Seed shall be furnished in containers that show the following information: seed name, lot number, net weight, percentage of purity, germination, weed seed, and inert material. Seed that has become wet, moldy, or otherwise damaged will not be accepted. Seed shall conform to the requirements of the Oregon State Seed Law and, when applicable, the Federal Seed Act and shall be "certified" grade or better.

PART 2 - PRODUCTS

2.1 GRASS SEED MIX

A. General:
1. Oregon "certified" quality, or better
2. Minimum germination not less than 90 percent
3. Minimum purity at least 98 percent
4. Seed mix shall include the following species:

Botanical Name	Common Name	Percentage (Based on Weight)
Bromus carinatus	California brome	20%
Danthonia californica	California oatgrass	5%
Elymus glaucus	blue wildrye	20%
Festuca occidentalis	Western fescue	20%
Lupinus rivularis	streambank lupine	5%
Wheatgrass x wheat	Regreen, sterile wheat	30%
	Total	100%

2.2 TOPSOIL

A. Refer to Section 329119 – Topsoil and Landscape Grading.

2.3 STARTER FERTILIZER

A. Lawn installation fertilizer 15-22-15 shall be as manufactured by Lilly Miller (or pre-bid approved equal).
1. Guaranteed Fertilizer Analysis:

Total Nitrogen (N)	15 percent
Ammoniacal Nitrogen	4.6 percent
Urea Nitrogen	3.2 percent
Coated Slow Release Urea Nitrogen	3.3 percent
Slowly Available Water Soluble Nitrogen*	2.3 percent
Water Insoluble Nitrogen	1.6 percent
Available Phosphoric Acid (P205)	22 percent
Soluble Potash (K20)	15 percent
Sulfur (S)	4 percent
Boron (B)	0.06 percent
Copper (Cu)	0.06 percent
Iron (Fe)	1 percent
Manganese (Mn)	0.15 percent
Zinc (Zn)	0.14 percent

Note: Derived from Urea, Sulfur-Coated Urea, Methylene Ureas, Ammonium Phosphate, Sulfate of Potash, Muriate of Potash, Iron Sulfate, Calcium and Sodium Borate, Copper Oxide and Sulfate, Iron Oxide Sulfate and Frit, Manganese Oxide and Sulfate, and Zinc Oxide and Sulfate.
* Slowly Available Water Soluble Nitrogen from Methylene Ureas

2.4 WOOD CELLULOSE FIBER CARRIER

A. Wood cellulose fiber carrier shall consist of pure wood fiber products with tackifier, and shall be one of the following:
   1. Pacific Wood Fiber Spray-Mulch X-100
   2. Weyerhaeuser Silva-Fiber
   3. Or equal

2.5 SOIL-BINDING AGENT (TACKIFIER)

A. Soil-binding agent shall consist of non-toxic, biodegradable materials that are environmentally safe, such as ESI – TAK, or approved equivalent. Tackifier shall be applied, at a minimum, in quantities sufficient to equal the retention properties of guar when applied at a rate of 60 gallons per ton of mulch.

2.6 HYDROSEEDER

A. A commercial model hydroseeder with an agitator to mix seed, mulch, and fertilizer into a slurry solution, and capable of spraying the slurry at the desired application rates, shall be used.

B. The Contractor shall give the Port 48 hours notice prior to beginning seeding operations. Equipment shall utilize water as a carrying agent, utilizing a continuous, built-in agitation system.

C. Equipment with a gear pump is not acceptable.

PART 3 - EXECUTION

3.1 PREPARATION

A. Following removal of the temporary access road and geotextile, the Contractor shall obtain approval from the Port to proceed with application of hydroseed. The Contractor shall request inspection of grades. The condition of planting surfaces shall meet approval of the Port prior to commencing seeding.

B. See Section 329119 – Topsoil and Landscape Grading for application of jute erosion control matting prior to seeding and fertilizing.

C. Tracked equipment shall be operated perpendicular to the desired contours in areas to be seeded.

D. The finish grade shall be smoothly blended into adjoining existing grades.

E. Soil shall be lightly irrigated prior to seeding.

3.2 HYDROSEEDING

A. Seasonal restrictions: Seed shall be applied between spring and late summer (April 1-Sept 15). The Contractor shall obtain Port approval for seeding at other times.

B. Hydroseeding mix shall be applied at the rate of 2,950 pounds per acre.

C. Seed shall be applied at the rate of 300 pounds per acre.

D. Fertilizer shall be applied at the rate of 650 pounds per acre.

E. Wood fiber carrier shall be applied at the rate of 2,000 pounds per acre.

F. The Contractor shall pump a continuous, non-fluctuating supply of homogenous slurry to provide a uniform distribution of material over designated areas.

G. Mulch, seed, and fertilizer shall be removed from surfaces not intended for seeding.

H. At the completion of work, the Contractor shall remove all debris, equipment, and surplus materials and leave the work area in a neat and orderly condition.

3.3 TEMPORARY FENCE

A. Upon completion of seeding, the Contractor shall construct a temporary fence at the limits of hydroseeded areas to protect from foot traffic. The Contractor shall use posts that are 4-feet–long, and untreated binder twine, or other approved materials. Posts shall be placed 10 feet apart, maximum. Three separate strands of twine shall be strung between posts, and marked regularly with pieces of bright plastic surveyor's tape.

B. The Contractor shall remove the temporary fence when the seeded area is established.

3.4 ACCEPTANCE REQUIREMENTS

A. For acceptance, seeded areas shall meet the following requirements:
   1. Ninety percent seed germination within 14 days
   2. Ninety-five percent seed mix purity
   3. Minimum of one sprouting seed per 1/4-inch uniformly throughout entire seeded area
   4. Uniform green color throughout entire seeded area

B. The Contractor shall reseed areas failing to meet the above conditions at 5-day intervals until all areas are acceptable.

3.5 ADJUSTMENTS AND MAINTENANCE

A. The seed bed shall be kept moist at all times to ensure seed germination until the date of substantial completion.

B. The Contractor shall repair "washouts" and reseed within 7 days. Bare spots shall be reseeded, fertilized, and raked to an even grade.

C. When grass reaches 3 inches in height, it shall be fertilized with 25-5-15 at the rate of 1 pound of nitrogen per 1,000 square feet.

3.6 SUBSTANTIAL COMPLETION

A. Inspection to determine substantial completion of seeded areas will be made by the Port upon the Contractor's notification of completion. The Contractor may request a specific inspection date, provided that the request is made at least 5 working days before the requested inspection date.

1. Seeded areas will be accepted, provided all requirements, including maintenance, have been complied with and grass is well-established and exhibits a vigorous growing condition.
2. Areas failing to show a uniform stand of grass shall be reseeded at the Contractor's expense.

END OF SECTION 329219

SECTION 329300 – TREES, SHRUBS, AND GROUND COVERS

PART I - GENERAL

1.1 DESCRIPTION

A. This section describes planting native riparian trees and shrubs, and includes fertilizing and mulching.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 312000 – Site Clearing, Earthwork, and Shoreline Stabilization

B. Section 329119 – Topsoil and Landscape Grading

C. Section 329219 – Seeding

1.3 QUALITY ASSURANCE

A. The Contractor shall provide one person who shall:
   1. Direct work performed under this section
   2. Be familiar with the materials and best methods for installation
   3. Be present at all times during execution of work in this section

B. Government inspection: Plants and planting material shall meet or exceed the specifications of federal, state, and county laws requiring inspection for plant disease and control.

C. Industry standards:
   1. Sizes and conditions: Quality definitions, grading tolerances, and caliper-to-height ratios shall be no less than the minimums specified in "American Standards for Nursery Stock," published by the American Association of Nurserymen, Inc., ANSI Z60.1-1996.
   2. Botanical names: American Joint Committee on Horticultural Nomenclature, "Standard Plant Names" or "Hortus Third."

D. The Port may inspect plants and planting materials at a growing or holding site in addition to the work area. Approval of material at a growing or holding site is a qualified endorsement of general quality only, and does not certify compliance with the specifications in all cases. Such approval does not preclude the right of rejection at the work area.

E. Nursery: All plants shall be nursery-grown or collected materials that have been held in a nursery for at least 1 year. Nursery climatic conditions must be similar to those in the locality of the project. All plants shall be weed-free at the time of planting. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable at no additional cost, and providing that the larger plants will not be cut back to the size indicated. The Contractor shall

provide plants indicated by two measurements, so that only a maximum of 25 percent are of the minimum size indicated, and 75 percent are of the maximum size indicated.

F. Unless otherwise approved by the Port, all plants of each type shall be obtained from the same nursery.

1.4 SUBMITTALS

A. Plant nursery sources and photographs:
   1. The Contractor shall certify, in writing, within 5 days of Notice to Proceed, confirmed orders for plants and provide the quantities, locations, telephone numbers, and addresses of the growers who have agreed to supply all plant species shown on the drawings. Representative color, dated photographs of each plant species shall be submitted.

B. The Contractor shall submit the following material samples and certificates:
   1. A sample of bark mulch for review 10 days prior to delivery to the work area.
   2. Fertilizer product information and material certification.
   3. Certificates required by law shall accompany shipments. All certificates shall be delivered to the Port.

1.5 PREPARATION FOR DELIVERY

A. Bare root and balled and burlapped plants shall conform to American National Standards Institute (ANSI) Z60.1-1996.

1.6 DELIVERY

A. Fertilizer shall be delivered to the work area in original, unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, and trademark.

B. The Contractor shall notify the Port of the delivery schedule 24 hours in advance to allow inspection upon arrival at the work area.

C. Unacceptable plant material shall be removed from the work area immediately.

D. The Contractor shall not deliver more plant materials than can be planted in 1 week.

E. Plants shall be protected during delivery to prevent damage to the root ball or desiccation of leaves.

1.7 STORAGE

A. Plants shall be stored in the shade and protected from harmful weather until planted.

B. Stored material shall be watered, maintained, and protected from drying or other injury or damage.

C. Plants shall be stored in an upright position and allowed sufficient ventilation.

1.8 HANDLING

A. Containerized plants shall not be picked up by stems or trunks.

B. Plants shall not be dropped.

1.9 SEQUENCING AND SCHEDULING

A. Plant materials shall be installed between September 1 and April 30.

B. The irrigation system, installed by others, shall be operational prior to any planting.

C. The Contractor shall plant after installation of topsoil and coir fabric has been completed and approved by the Port.

1.10 SITE CONDITIONS

A. Planting conditions: Planting is not permitted under the following conditions, unless otherwise approved:
   1. Cold weather: Less than 35°F
   2. Hot weather: Greater than 80°F
   3. Windy weather: Wind velocity greater than 20 mph

1.11 PROTECTION

A. See Section 015000 – Temporary Facilities and Controls for requirements for location and protection of underground utilities.

B. The Contractor shall barricade or cover excavations as necessary to protect pedestrians, workers, equipment, and adjacent property.

1.12 WARRANTY PERIOD

A. The Contractor will not be held responsible for vandalism, theft, atypical weather conditions, or hidden peculiarities of the work area during the warranty period.

B. Plant materials must be in a healthy condition on the date of final acceptance.

C. The Contractor shall remove dead and rejected material within 5 days of being so directed, and replace as soon as possible.

PART 2 - PRODUCTS

2.1 GENERAL PLANT REQUIREMENTS

A. Quality and size:
   1. The Contractor shall provide healthy nursery stock, well-branched and -rooted, full foliaged when in leaf; healthy; sound; vigorous; and free from insects, diseases, weeds, weed roots, injuries, and defects such as knots, sun-scald, windburn, abrasions, or disfigurement; and equal to or exceeding measurements specified in the plant list.
   2. The Contractor shall provide trees that are well shaped and properly pruned with normal branching configurations. Trees of the same species and size shall be headed to the same height, unless noted otherwise.
   3. Sizes and methods of handling shall be according to the American Standard for Nursery Stock recommended by the American Association of Nurserymen (AAN).

B. Root protection:
   1. Container-grown plants shall be in containers from 6 months to 2 years prior to delivery, with roots filling the container, but not root bound.
   2. Greenhouse plants shall be acclimated outdoors for 30 days prior to delivery.

C. Trees shall be well-branched, with straight single leaders, tops, and trunks; no cross branches, dead or broken leaders, or major branches; no fresh cuts over 1-inch in diameter; and not "topped" or sheared.

2.2 MULCH AND FERTILIZER

A. Bark mulch shall be standard commercial produce, medium-coarse ground bark mulch. Bark shall be ground fir or hemlock; of uniform color; free from weeds, seed, sawdust, and splinters; and shall not contain resin, tannin, wood fiber or other compounds detrimental to plant life. The source shall be from a freshwater mill. Mulch shall be less than 1-inch particle size and greater than No. 35 sieve.

B. Fertilizer shall conform to reference FS O-F-24D, Commercial Fertilizers, and Oregon state laws. Fertilizer for all trees and plantings shall be "BioPaks-16-6-8 plus minors and biostimulants," available from Reforestation Technologies International (RTI), 1-800-784-4769.

BioPak®, or pre-bid approved equal, shall consist of:

Rhizosphere Bacteria	45 billion colony forming units (cfu)/lb
7.5 billion cfu/lb (8.3 million cfu/cc) *Bacillus licheniformis*	
7.5 billion cfu/lb (8.3 million cfu/cc) *Bacillus megaterium*	
7.5 billion cfu/lb (8.3 million cfu/cc) *Bacillus polymyxa*	
7.5 billion cfu/lb (8.3 million cfu/cc) *Bacillus subtilis*	
7.5 billion cfu/lb (8.3 million cfu/cc) *Bacillus thuringiensis*	
7.5 billion cfu/lb (8.3 million cfu/cc) *Paenibacillus azotofixans*	
Humic acids	31 percent
Sea kelp extract	35 percent
Sugar (dextrose)	13.5 percent
Yeast extract	5.5 percent

2.3 COIR FABRIC

A. Refer to Section 329119 – Topsoil and Landscape Grading.

PART 3 - EXECUTION

3.1 PREPARATION

A. Landscape grading and topsoil installation shall be inspected and approved by the Port prior to planting.

B. Coir fabric shall be inspected and approved by the Port prior to planting.

C. Plant material shall be inspected and approved by the Port at the nursery or site prior to installation. Unsatisfactory material shall be removed from the site immediately.

D. The Contractor shall locate plants by staking with stakes and flags as indicated on the drawings, or as approved in the field. If obstructions are encountered that are not shown on the drawings, the Contractor shall not proceed until the Port has selected alternate plant locations.

3.2 PLANT INSTALLATION

A. Plants brought to the planting site for replacement along the access road and installation within the shoreline planting zone shall be in containers, as specified in the planting schedule in the contract for the particular type of planting material. Plants shall not be planted during freezing weather or when the ground is frozen. Plants shall not be planted during excessively wet conditions. Plants shall not be placed on any day in which temperatures are forecast to exceed 80° unless the Port approves otherwise. Plants shall not be placed in areas that are below finished grade.

B. Plants shall be removed from containers in a manner that prevents damage to the root system. Containers may require vertical cuts down the full depth of the container to accommodate removal. All circling roots shall be loosened to ensure natural directional growth after planting.

C. The Contractor shall carefully cut an "x" in the coir fabric using a sharp knife to avoid damage to the coir fabric, other than the minimum necessary to install plant materials. Excessive damage to the coir fabric will require replacement by the Contractor at no cost to the Port.

D. Excavate circular plant pits with scarified vertical sides, except for plants specifically indicated to be planted in beds. Planting pits the diameter of the root system or container shall be provided. The depth of the pits shall accommodate the entire root system. The Contractor shall scarify the bottom and sides of the pit to a depth of 4 inches. If groundwater is encountered upon excavation of planting holes, the Contractor shall promptly notify the Port.

E. The Contractor shall place specified topsoil for use around the balls and roots of the plants.

F. Fertilizer packets shall be installed around plant root balls based on plant size and manufacturer recommendations.

G. The Contractor shall set plant material in the planting pit to the proper grade and alignment. Plants shall be set upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structures. The crown of plant material shall be set at the finish grade. The Contractor shall backfill the planting pit with specified topsoil. Frozen or muddy mixtures shall not be used for backfilling.

3.3 MULCH

A. Following approval of planting by the Port, the Contractor shall apply bark mulch over coir fabric to the depths shown on the drawings.

B. The Contractor shall apply mulch around trees and shrubs within 2 days after planting.

3.4 ADJUSTMENT AND CLEANING

A. The Contractor shall remove and replace plants or materials not meeting specified standards.

B. The Contractor shall reinstall plants not located as indicated on the drawings.

C. The Contractor shall keep the work area clean during progress of the work until completion.

3.5 MAINTENANCE

A. Maintenance shall include cultivating, weeding, watering, pruning (only as directed), and application of appropriate insecticides and fungicides (only as directed) necessary to maintain plants free of insects and disease. The Contractor shall:
   1. Irrigate plants within the first 24 hours of initial planting, and irrigate to avoid drying out of plant materials and to promote healthy growth, until the date of substantial completion.
   2. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
   3. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.

END OF SECTION 329300

SECTION 353200 – ANCHORED WOODY DEBRIS STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This work consists of installing anchored large woody debris (LWD) as indicated on the drawings. Four pieces of LWD are available from on-site for salvage as anchored LWD.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 312000 – Site Clearing, Earthwork, and Shoreline Stabilization

1.3 SCOPE OF WORK

A. The Contractor shall furnish all labor, material, and equipment necessary to furnish and/or salvage specified LWD, transport it to the storage site, and install the LWD.

B. The Contractor shall visit the sites and familiarize himself/herself with existing conditions, including but not limited to, access roads, railroad crossing areas, and storage areas prior to commencing salvage operations.

1.4 APPROVAL AND SELECTION OF MATERIAL AND WORK

A. The collection of LWD and the execution of all operations required under the drawings and/or specifications shall be subject to the approval of the Port. The Port shall have the right to reject any and all salvaged or imported materials and any and all work that, in its opinion, does not meet the requirements of the contract documents during any stage of construction. All rejected materials shall be removed from the site by the Contractor at the Contractor's expense.

1.5 SUBMITTALS

A. Sources of LWD logs: The source of the logs shall be submitted to the Port prior to transport to the site.

B. Anchors and chains: Product literature for anchors and chains shall be submitted to the Port for approval.

1.6 PROTECTION OF ADJACENT PROPERTY

A. For the duration of salvage operations and until the Contractor is released, all adjoining property shall be protected from any disturbance and debris from the work site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. LWD shall be salvaged natural wood. The Port shall identify acceptable pieces of LWD located at the project shoreline that can be used as anchored LWD. LWD shall be washed of soil and debris prior to installation.

B. LWD shall have trunk and root wad intact. The length will be 21 feet, minimum, as measured from the base of the trunk above the roots to the end of the trunk. The trunk diameter shall be a minimum of 12 inches as measured 21 feet above the base of the trunk. The rootwad shall be at least 3 feet in diameter. Logs shall consist of on- or off-site, salvaged natural wood that has not been preservative-treated. Preservative-treated logs are not acceptable. The Contractor shall obtain logs from approved on- or off-site sources. Logs shall be of coniferous species native to Oregon State, such as Western Hemlock, Western Red Cedar, Douglas Fir, or other approved species. Logs shall be washed free of soil and other debris. The Contractor shall trim logs as directed by the Port.

C. Chain, cable, and hardware for anchoring LWD:
   1. Chains shall be 3/4-inch plain steel (ungalvanized) lashing chain.
   2. Cable shall be 1/2-inch diameter stainless steel wire rope. Ends shall be swagged and held in place with two crimped fasteners at each end.
   3. Shackles for chain to cable connection shall be 1/2-inch stainless steel.
   4. The Contractor shall obtain chains from approved sources.

D. Manta Ray anchors
   1. Manta Ray anchors shall be MR-2 Anchors available from Foresight Products, LLC, (800) 325-5360. Include galvanized eyelet at end of each threaded rod.

PART 3 - EXECUTION

3.1 PREPARATION

A. All shoreline materials, such as rock riprap and select fill, shall be installed and approved by the Port prior to installing anchored LWD.

B. All logs for anchored LWD shall be approved by the Port prior to installation.

C. The anchored LWD shall be installed on the shoreline at the elevations shown on the drawings. All log placement shall occur in the dry when river levels are below the elevation range for the logs.

3.2 EQUIPMENT

A. Transportation: Salvaged LWD shall be transported by truck and/or trailer from the approved salvaging site(s) to an approved stockpile site.

3.3 INSTALLING ANCHORED LWD

A. Anchored LWD shall be constructed as shown on the drawings. The Contractor may use colored stakes or other Port-approved means to identify locations of Manta Ray anchors underneath the surface.

B. The Contractor shall alert the Port at least 48 hours before placement of anchored LWD. A Port representative shall be present during placement of anchored LWD.

C. Placement of anchored LWD shall occur at water levels at least 2 feet below the elevation of the working surfaces, throughout the duration of the placement activity. The Contractor shall not prepare placement or place more than one LWD structure at a time, unless directed otherwise by the Port.

D. The Contractor shall identify the location of each Manta Ray anchor prior to placement, for Port approval.

E. Once LWD placement locations are confirmed with the Port, install Manta Ray anchors per manufacturer's instructions. The Contractor shall minimize subgrade disturbance during installation of the Manta Ray anchors. Install Manta Ray anchors so that the end of the threaded rod with eyelet is 12 inches below the bottom surface of the LWD as shown on the drawings. Attach steel cable with swagged end to eyelet as shown on the drawings. Connect steel cable to chain at each LWD with shackle. The Contractor shall install anchored LWD as presented in the contract drawings and securely fasten logs to steel chains and Manta Ray anchors to prevent movement by high water. LWD shall be placed on finish grade of the select fill and rock riprap so that there is no more than a 4-inch gap between bottom surface of LWD and the finish grade.

END OF SECTION 353200

EXHIBIT A – DESIGN ANALYSIS REPORT

(INCORPORATED BY REFERENCE; SEE SECTION 011100 FOR INSTRUCTIONS ON HOW TO OBTAIN AN ELECTRONIC VERSION OF THIS DOCUMENT)

EXHIBIT B – NATIONAL MARINE FISHERIES SERVICES (NMFS) BIOLOGICAL OPINION

(INCORPORATED BY REFERENCE; SEE SECTION 011100 FOR INSTRUCTIONS ON HOW TO OBTAIN AN ELECTRONIC VERSION OF THIS DOCUMENT)

EXHIBIT C – USEPA WATER QUALITY MONITORING AND COMPLIANCE CONDITIONS PLAN

(INCORPORATED BY REFERENCE; SEE SECTION 011100 FOR INSTRUCTIONS ON HOW TO OBTAIN AN ELECTRONIC VERSION OF THIS DOCUMENT)

PORT OF PORTLAND
P.O. Box 3529
Portland, Oregon 97208

TERMINAL 4
WHEELER BAY
BANK REPAIRS

Solicitation No. BT488

Bids Due: August 25, 2010
By: 2 p.m.

ADDENDUM NO. 1

Addendum No. 1 hereby amends the project manual and drawings for the Terminal 4 Wheeler Bay Bank Repairs project dated August 13, 2010. It is essential that prospective bidders note the contents of this addendum and that the Port of Portland be made aware that the addendum has been received. Therefore, acknowledge receipt by inserting the number of this addendum in the space provided on Page 004100-3 of the bid.

Project Manual

Page 312000-7, 3.6, D, first sentence, change to read, in part, "...temporary access road and dispose at location shown on T4 2009-500 Reference Sheet C-1. Spread out material as directed to provide storm drainage."

Page 329300-3, 1.12, B, change to read, in part, "...healthy condition on the date of final acceptance."

Drawings

T4 2010-500.

Sheet C-2, discard and replace with the enclosed revised Sheet C-2.

Add the enclosed T4 2009-500 Reference Sheet C-1 and T4 2008-501A Reference Sheet SU-1.

THE PORT OF PORTLAND

Craig Johnsen, Manager
Contracts and Procurement

August 20, 2010

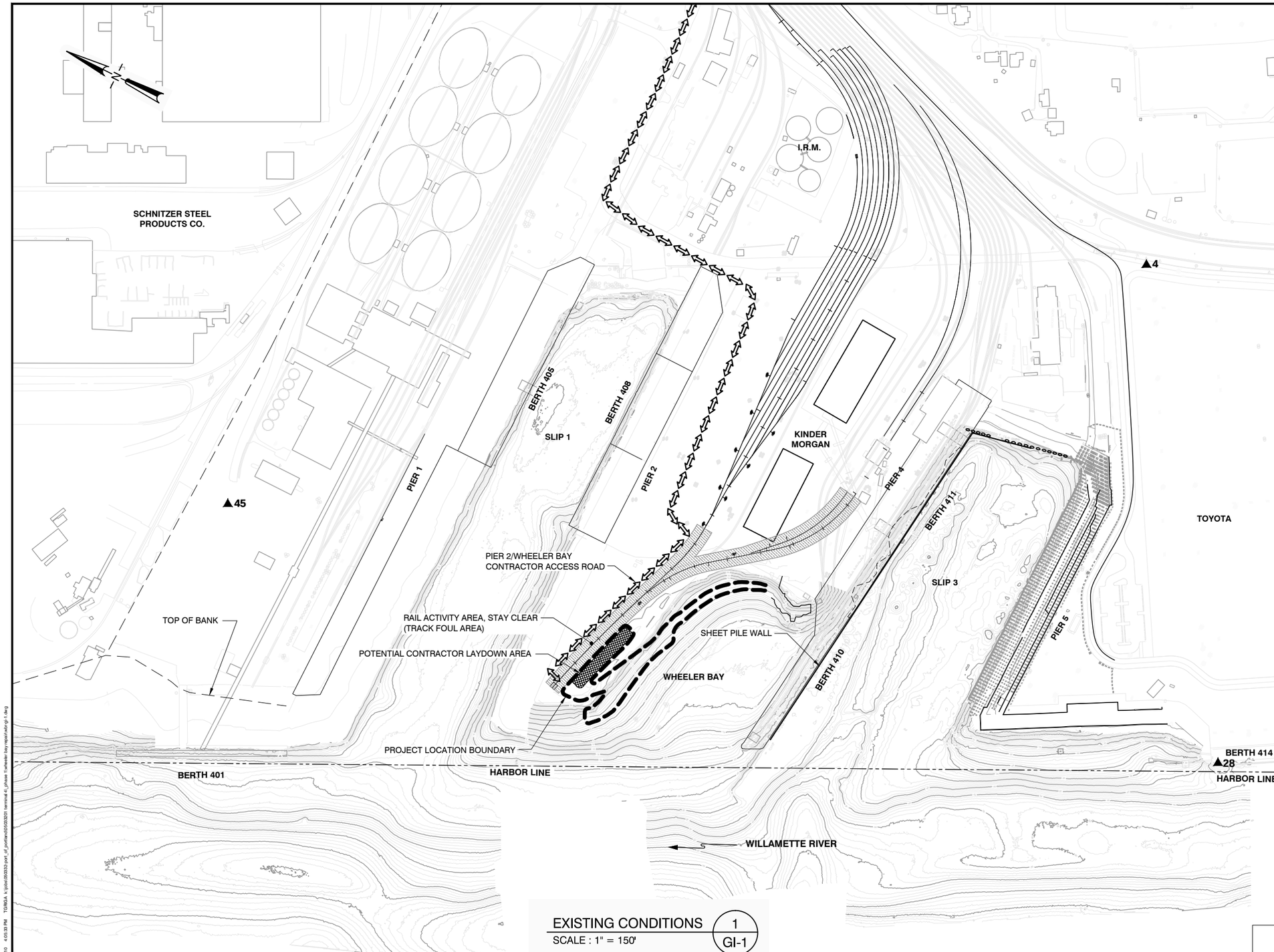
Enclosures: Sheet C-2
T4 2009-500 Reference Sheet C-1
T4 2008-501A Reference Sheet SU-1

FOR PORT USE ONLY

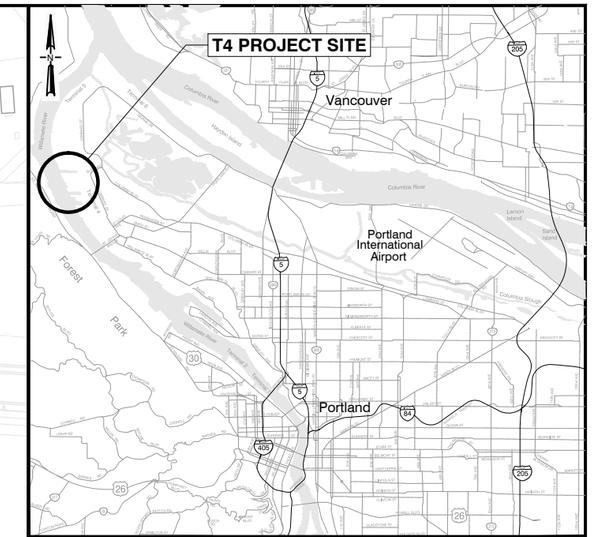
2010D015	**WHEELER BAY BANK REPAIRS**	*06-Aug-10*

Location: T4	**PM: HERMAM** **PE: ANDERO**	**CCM: DURSTJ** **INSP:**	**Type: Cont.**	

Project No.	Status	Title
820027	O	WHEELER BAY BANK REPAIRS



EXISTING CONDITIONS (1 / GI-1)
SCALE : 1" = 150'



VICINITY MAP
SCALE: N.T.S.

LEGEND:

TRACK FOUL AREA

4▲ SURVEY CONTROL POINT

STATION	NORTHING	EASTING	NGVD29 (47) ELEV.	DESCRIPTION
4	67011.054	71927.686	35.18	3" BRASS CAP STAMPED "4-B"
28	66167.751	70697.587	26.148	3" BRASS CAP STAMPED "T-4-28, 1999"
45	69137.290	70087.858	32.790	4" BRASS CAP SW COR. GRATTON DLC

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
   VERTICAL DATUM: NGVD 29-47
   CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 — DESIGN NUMBER
820027 — PROJECT NUMBER

REGISTERED PROFESSIONAL ENGINEER 77473PE OREGON NOV. 8, 2005 JOHN RICHARD VERDUIN
EXPIRATION DATE 6/30/12
8/4/10

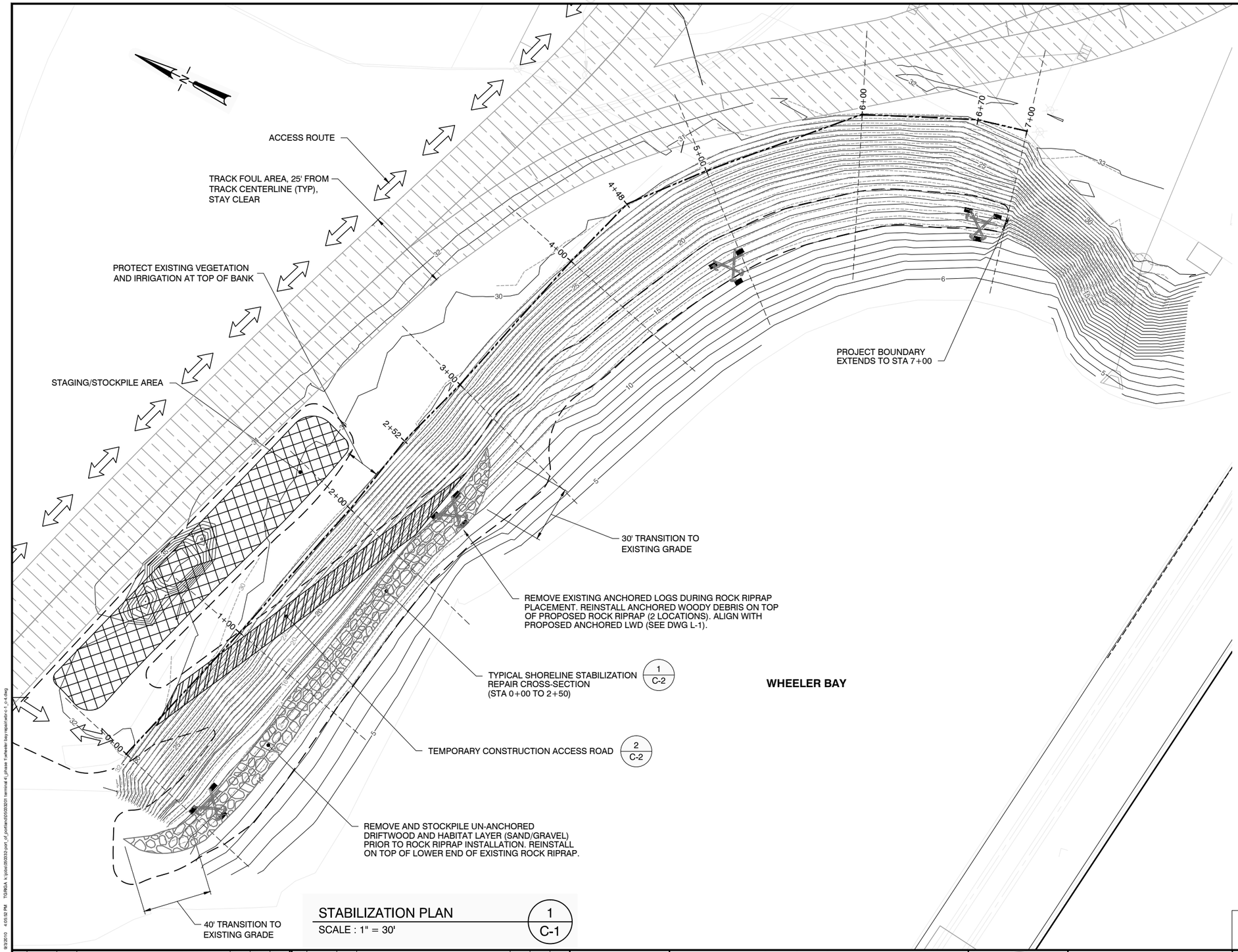
DESIGNED BY P. HUMMEL
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

WHEELER BAY BANK REPAIRS
EXISTING CONDITIONS

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 1/8 (GI-1)

9/3/2010 4:05:33 PM TGRIGA k:\jobs\050333\port_of_portland\05033201 terminal 4_phase 1\wheeler bay repair\wbr-gi-1.dwg



STABILIZATION PLAN

SCALE : 1" = 30'

1 / C-1

LEGEND:

- PROJECT BOUNDARY
- LIMIT OF ROCK RIPRAP AND SELECT FILL (1 / C-2)
- TEMPORARY CONSTRUCTION ACCESS ROAD (2 / C-2)
- EXISTING LWD
- EXISTING ECOLOGY BLOCK LWD ANCHORS
- 25 — POST 2008 CONSTRUCTION CONTOURS (DATE: 10/13/08)
- 30 — CURRENT CONDITION CONTOURS (DATE: 07/29/10)
- 1+00 — STATION LINE
- TRACK FOUL AREA

CONTROL POINTS		
STATION	NORTHING	EASTING
0+00	67930	70047
1+00	67901	70143
2+00	67874	70240
2+52	67863	70291
3+00	67848	70336
4+00	67821	70432
4+48	67806	70478
5+00	67772	70517
6+00	67703	70589
6+70	67639	70617
7+00	67609	70624
7+36	67573	70624
7+38	67570	70624
8+00	67518	70593
8+09	67509	70588
8+20	67475	70608
8+73	67455	70620

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47 CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINISTER-GLAESER DATED OCTOBER 13, 2008 AND PROVIDED BY ASH CREEK.
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.
5. NO EQUIPMENT ALLOWED TO OPERATE IN FOUL AREA. STAY BACK 25 FEET FROM CENTERLINE OF TRACK.

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 — DESIGN NUMBER
820027 — PROJECT NUMBER

REGISTERED PROFESSIONAL ENGINEER 77473PE OREGON NOV. 8, 2005 JOHN RICHARD VERDUIN
EXPIRATION DATE 6/30/12
8/4/10

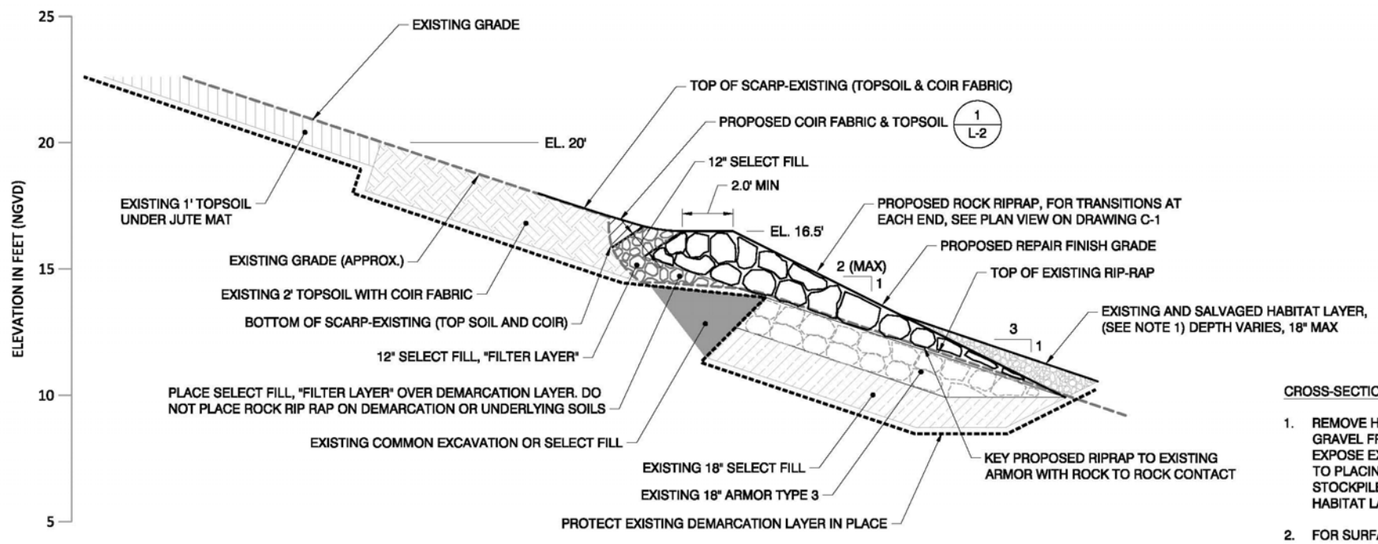
DESIGNED BY P. HUMMEL
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

WHEELER BAY BANK REPAIRS
STABILIZATION REPAIR PLAN

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 2 / 8 (C-1)

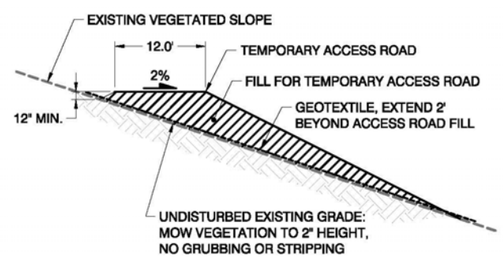
9/3/2010 4:05:52 PM TGRIGA k:\jobs\050332\port_of_portland\050332001 terminal 4_phase 1\wheeler bay repair\wbr-c-1_c-4.dwg



(STA 0+00 TO STA 2+50)
TYPICAL SHORELINE STABILIZATION REPAIR CROSS-SECTION (1 / C-2)
SCALE: 1" = 3'

CROSS-SECTION NOTES:

1. REMOVE HABITAT LAYER SAND AND GRAVEL FROM EXISTING SURFACE TO EXPOSE EXISTING ROCK ARMOR PRIOR TO PLACING PROPOSED ROCK RIPRAP. STOCKPILE AND PLACE SALVAGED HABITAT LAYER AS SHOWN ABOVE.
2. FOR SURFACE STABILIZATION AND PLANTING SEE DRAWING L-1



DETAIL NOTES:

1. FILL FOR TEMPORARY ACCESS ROAD CAN BE KEYED INTO THE TOPSOIL AS NECESSARY FOR ROAD STABILITY. THE BOTTOM OF THE KEY SHALL BE AT LEAST 6 INCHES ABOVE THE DEMARCATION FABRIC. AFTER TEMPORARY ACCESS ROAD REMOVAL THE KEY SHALL BE BACKFILLED WITH TOPSOIL TO MATCH SURROUNDING EXISTING GRADE. (1)
2. FOLLOWING ROAD REMOVAL, SCARIFY SUBGRADE TO A MINIMUM 12-INCH DEPTH PRIOR TO PLACING JUTE AND HYDROSEEDING.

TEMPORARY CONSTRUCTION ACCESS ROAD (2 / C-2)
SCALE: NTS

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47 CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINISTER-GLAESER DATED OCTOBER 13, 2008 AND PROVIDED BY ASH CREEK.
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010
5. SEE DRAWINGS L-1 AND L-2 FOR PLANTINGS.

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
2	9/01/10	RWA	AS BID		
1	8/19/10	JRV	REVISED BY ADDENDUM NO. 1		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 — DESIGN NUMBER
820027 — PROJECT NUMBER

REGISTERED PROFESSIONAL ENGINEER 77473PE OREGON NOV. 8, 2005 JOHN RICHARD VERDUIN
EXPIRATION DATE 6/30/12

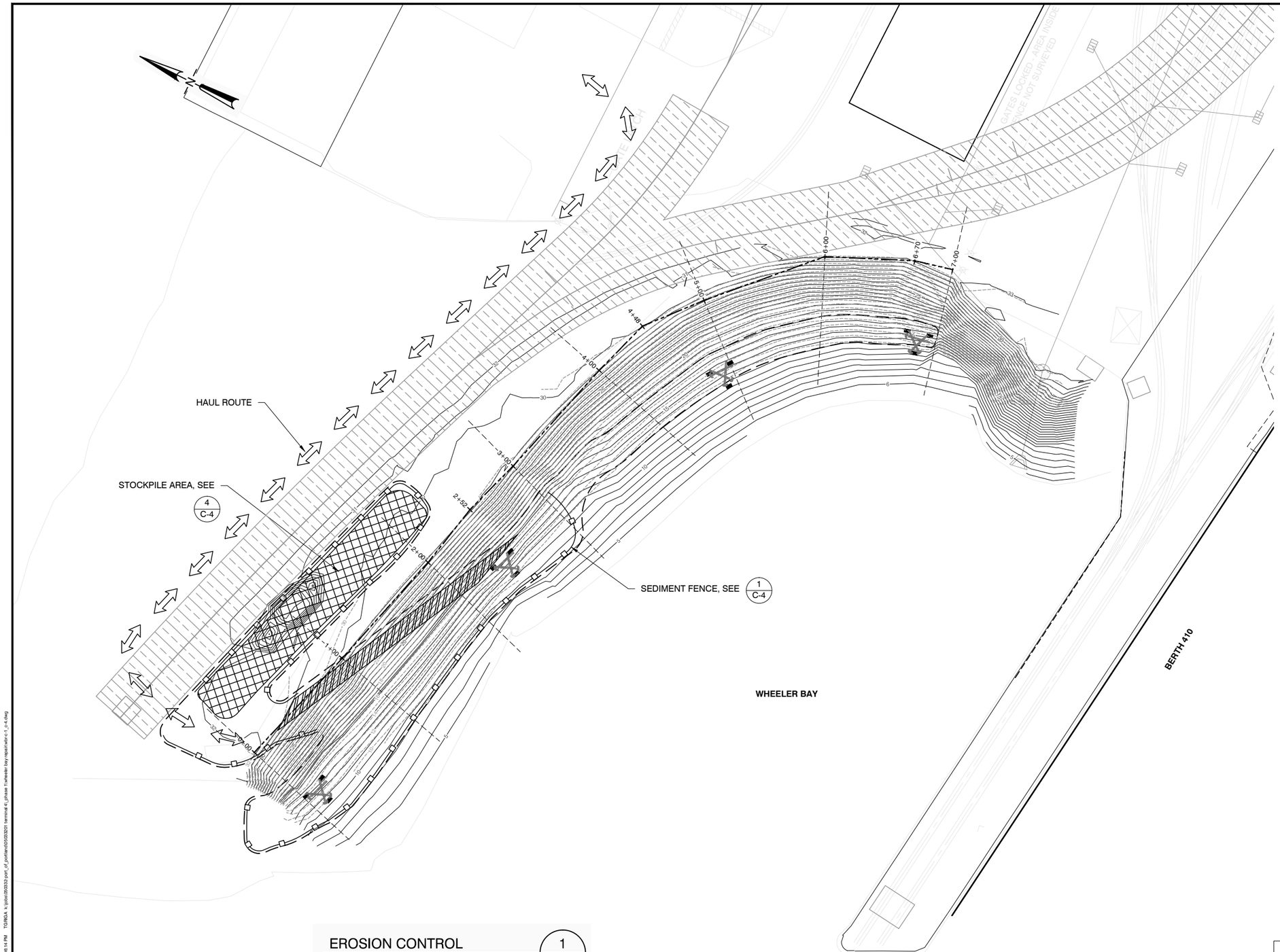
DESIGNED BY P. HUMMEL
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

WHEELER BAY BANK REPAIRS
DETAILS

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER
TYPE CD | DRAWING NO. T4 2010-500 | 3 / 8 | (C-2)

9/3/2010 4:05:57 PM TGRIGA k:\jobs\050532\port_of_portland\050532301 terminal 4_phase 1\wheeler bay repair\wbr-c-1_c-4.dwg



LEGEND:

- PROJECT BOUNDARY
- TRACK FOUL AREA
- TEMPORARY CONSTRUCTION ACCESS ROAD
- EXISTING LWD
- EXISTING ECOLOGY BLOCK LWD ANCHORS
- 25 — POST 2008 CONSTRUCTION CONTOURS (DATE: 10/13/08)
- 30 — CURRENT CONDITION CONTOURS (DATE: 07/29/10)
- SEDIMENT FENCE
- HAUL ROUTE

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47 CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINISTER-GLAESER DATED OCTOBER 13, 2008 AND PROVIDED BY ASH CREEK.
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.
5. NO EQUIPMENT ALLOWED TO OPERATE IN FOUL AREA. STAY BACK 25 FEET FROM CENTERLINE OF TRACK.

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

EROSION CONTROL — 1 / C-3
SCALE : 1" = 40'

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 — DESIGN NUMBER
820027 — PROJECT NUMBER

REGISTERED PROFESSIONAL ENGINEER 77473PE OREGON NOV. 8, 2005 JOHN RICHARD VERDUIN
EXPIRATION DATE 6/30/12
8/4/10

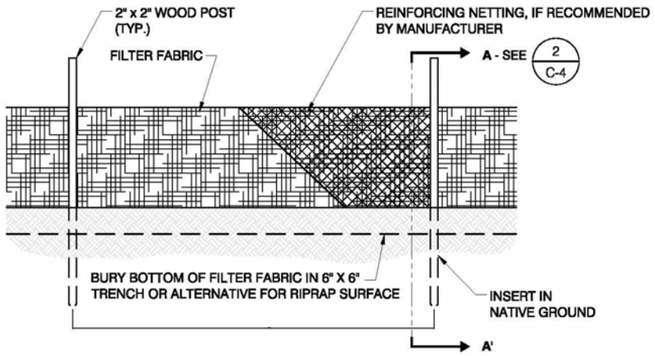
DESIGNED BY J. SCHOENEN
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

WHEELER BAY BANK REPAIRS
EROSION CONTROL PLAN

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 4/8 (C-3)

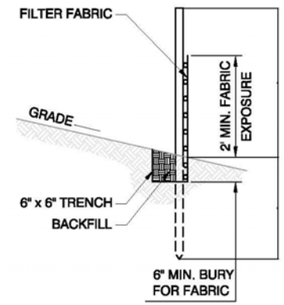
9/3/2010 4:06:14 PM TGRIGA k:\jobs\820332-port_of_portland\05033201 terminal 4_phase 1\wheeler bay repair\wbr-c-1_c-4.dwg



NOTES:

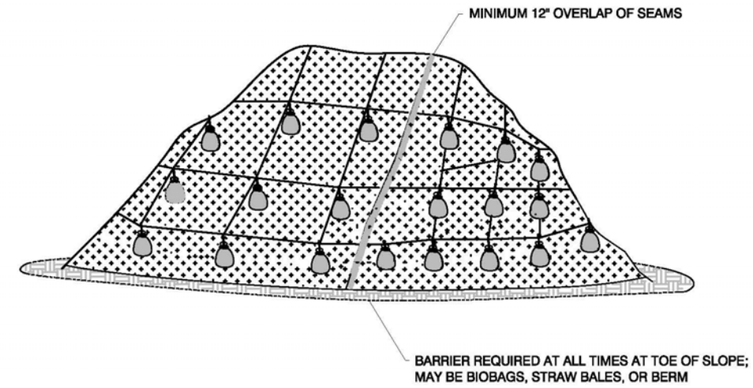
1. INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS 36 IN. WIDE (MIN.) ROLL TO AVOID JOINTS. ATTACH TO STAKES USING STITCHED LOOPS.
3. SPLICE JOINTS AT SUPPORT POSTS ONLY, WITH A MIN. 6 IN. OVERLAP.
4. ANGLE ENDS OF SEDIMENT FENCE UPHILL TO ASSURE SOIL/SEDIMENT IS TRAPPED.

SEDIMENT FENCE DETAIL - ELEVATION (1 / C-4)
SCALE: NTS



SECTION A-A'

SEDIMENT FENCE SECTION A-A' (2 / C-4)
SCALE: NTS



NOTES:

1. COVER STOCKPILE IF NO ACTIVITY FOR 48-HOUR PERIOD.
2. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
3. BARRIER REQUIRED AT TOE OF STOCK PILE.
4. COVERING MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS OR TIRES ON ROPES WITH A MAXIMUM 10' GRID SPACING IN ALL DIRECTIONS.

STOCKPILE PLASTIC SHEETING (3 / C-4)
SCALE: NTS

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 — DESIGN NUMBER
820027 — PROJECT NUMBER

REGISTERED PROFESSIONAL ENGINEER 77473PE OREGON NOV. 8, 2005 JOHN RICHARD VERDUIN
EXPIRATION DATE 6/30/12

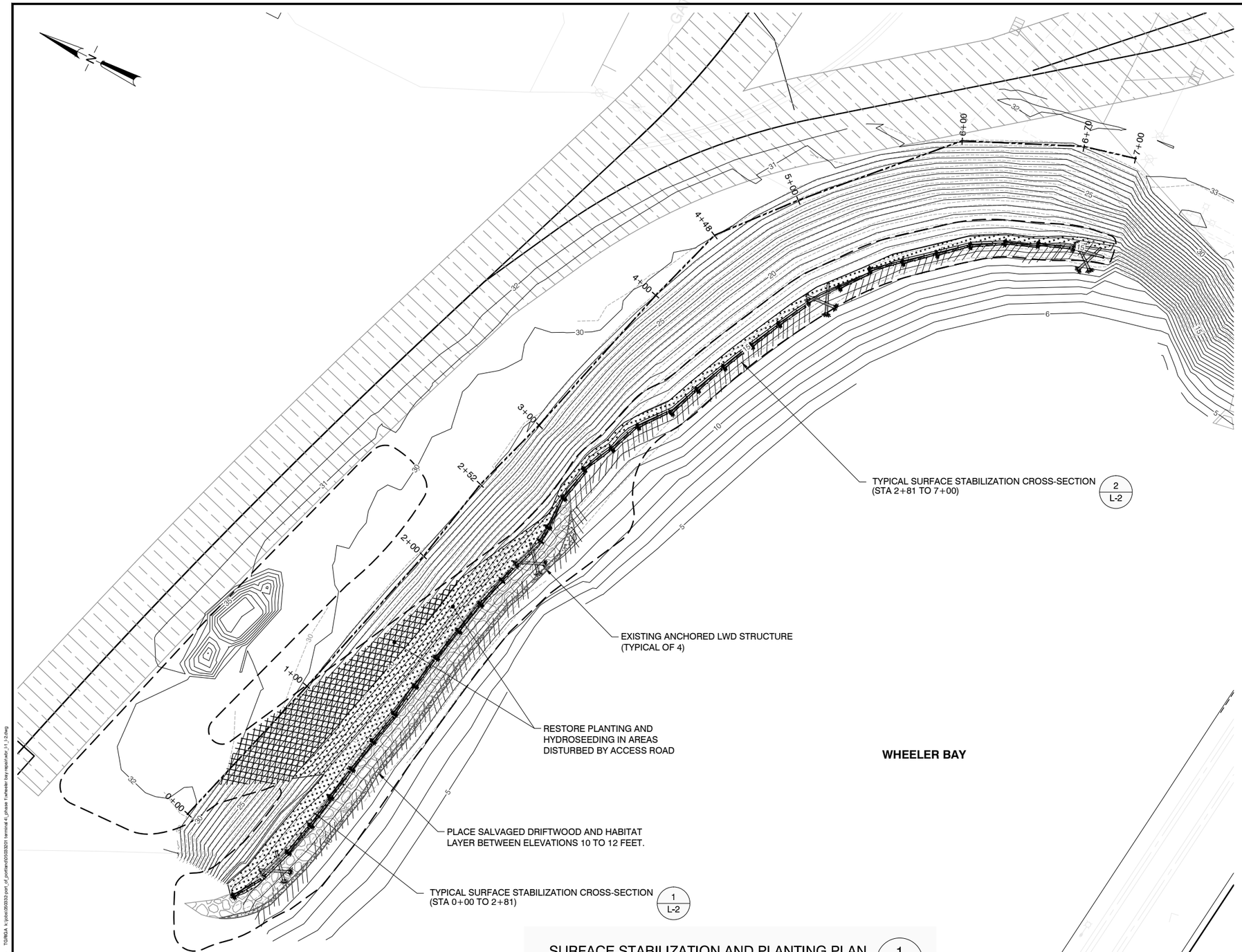
DESIGNED BY J. SCHOENEN
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

WHEELER BAY BANK REPAIRS
EROSION CONTROL DETAILS

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 5 / 8 (C-4)

9/3/2010 4:06:18 PM TGRIGA k:\jobs\050532\port_of_portland\050532\01 terminal 4_phase 1\wheeler bay repair\esc-c-1_c-4.dwg



SURFACE STABILIZATION AND PLANTING PLAN

SCALE : 1" = 30'

1 / L-1

LEGEND:

- PROJECT BOUNDARY
- HYDROSEEDING WITH JUTE MATTING (TEMPORARY ACCESS ROAD RESTORATION) 5 / L-3
- RIPARIAN PLANTING ZONE 3 / L-3
- SALVAGED HABITAT LAYER
- ROCK RIPRAP AND SELECT FILL AREA 1 / C-2
- ANCHORED LWD 1 / L-3 2 / L-3
- UNANCHORED, SALVAGED DRIFTWOOD AT TOE OF ROCK RIPRAP AND DOWNSLOPE OF ANCHORED LWD (TYPICAL SCHEMATIC)
- 25 — PRE-CONSTRUCTION CONTOURS (DATE: 11/07 AND 01/08)
- 30 — CURRENT CONDITION CONTOURS (DATE: 07/29/10)
- TRACK FOUL AREA

PLANT SCHEDULE-RIPARIAN PLANTING ZONE:

COMMON NAME	SCIENTIFIC NAME	% OF AREA	SIZE	SPACING
PLANTING (EL. +16.5' TO +17.5')				
COLUMBIA RIVER WILLOW	*Salix pacifica*	20	1 GALLON	2' O.C. TRIANGULAR
SCOULER WILLOW	*Salix scouleriana*	20	1 GALLON	2' O.C. TRIANGULAR
HOOKER WILLOW	*Salix hookeriana*	20	1 GALLON	2' O.C. TRIANGULAR
RED ALDER	*Alnus Rubra*	20	1 GALLON	2' O.C. TRIANGULAR
OREGON ASH	*Fraxinus Latifolia*	20	1 GALLON	2' O.C. TRIANGULAR
PLANTING (EL. +20', TEMPORARY ACCESS ROAD RESTORATION ONLY)				
BLACK COTTONWOOD	*Populus trichocarpa balsamifera*	NA	1 GALLONS	10' O.C.

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47 CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINISTER-GLAESER DATED OCTOBER 13, 2008 AND PROVIDED BY ASH CREEK.
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.
5. NO EQUIPMENT ALLOWED TO OPERATE IN FOUL AREA. STAY BACK 25 FEET FROM CENTERLINE OF TRACK.
6. THE POINT OF CONNECTION FOR THE IRRIGATION SYSTEM WILL BE THE 2-INCH PVC MAINLINE PIPE FOR THE EXISTING IRRIGATION SYSTEM LOCATED AT THE TOP OF THE BANK.
7. ALL IRRIGATION BY OTHERS.

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 — DESIGN NUMBER
820027 — PROJECT NUMBER

REGISTERED LANDSCAPE ARCHITECT — Peter Hummel — OREGON — 3/24/08 — Expires: 3/31/2011

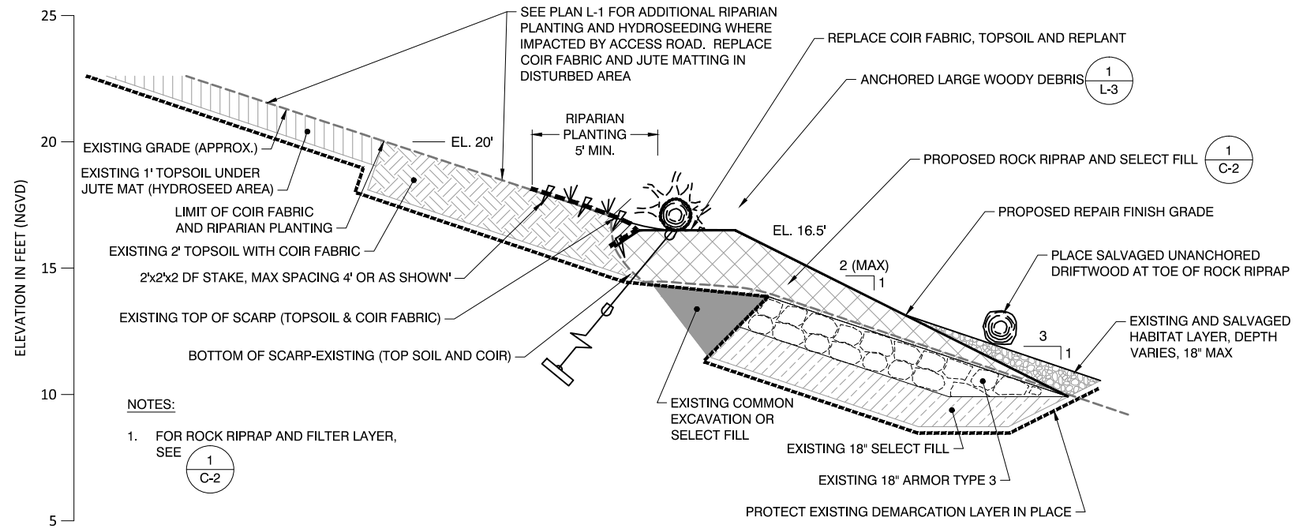
DESIGNED BY J. SCHOENEN
DRAWN BY T. GRIGA
CHECKED BY P. HUMMEL
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

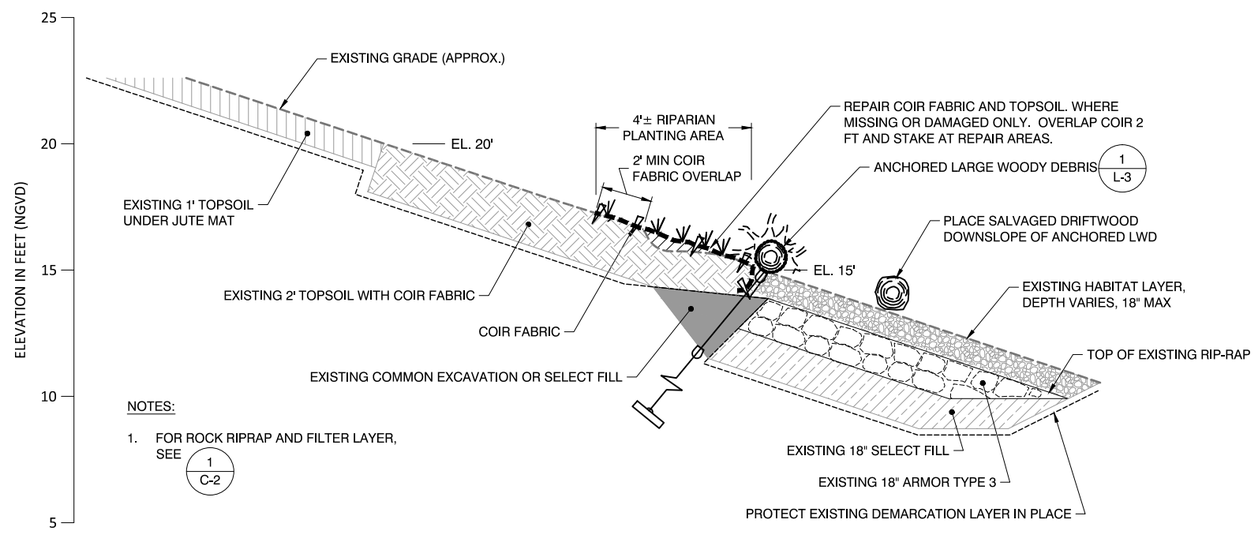
WHEELER BAY BANK REPAIRS
SURFACE STABILIZATION AND PLANTING PLAN

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 6/8 (L-1)

9/3/2010 4:06:39 PM TGRIGA K:\jobs\350332-port_of_portland\05\03201 terminal 4_phase 1\wheeler bay repair\wbp_l-1_l-2.dwg



(STA 0+00 TO STA 2+81)
TYPICAL SURFACE STABILIZATION & PLANTING CROSS-SECTION 1 L-2
SCALE: 1" = 3'



(STA 2+81 TO STA 7+00)
TYPICAL SURFACE STABILIZATION & PLANTING CROSS-SECTION 2 L-2
SCALE: 1" = 3'

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47 CONTOUR INTERVAL = 1 FT
2. FOR NGVD CONTROL POINT, SEE PORT OF PORTLAND DRAWING RG 2006-3024 (NOVEMBER 2006)
3. POST 2008 CONSTRUCTION AS-BUILT UPLAND SURVEY BY MINISTER-GLAESER DATED OCTOBER 13, 2008 AND PROVIDED BY ASH CREEK.
4. CURRENT SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.
5. SEE DRAWINGS L-3 FOR LWD AND PLANTING DETAILS.

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET) VERTICAL DATUM: NGVD 29-47

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 DESIGN NUMBER
820027 PROJECT NUMBER

REGISTERED LANDSCAPE ARCHITECT 659 Peter Hummel OREGON 3/24/06 Expires: 3/31/2011

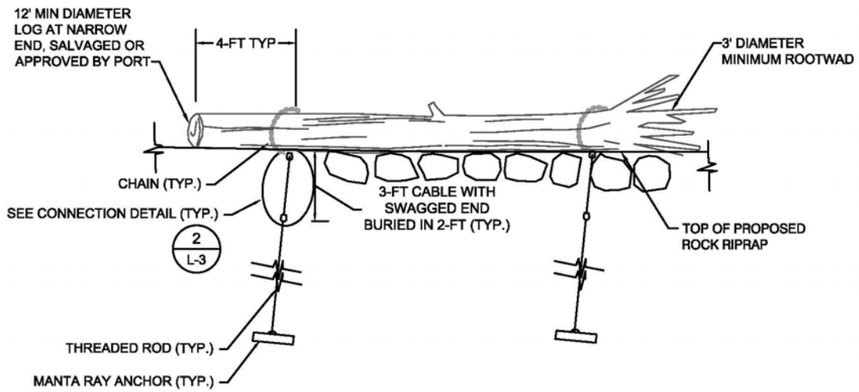
DESIGNED BY J. SCHOENEN
DRAWN BY T. GRIGA
CHECKED BY P. HUMMEL
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

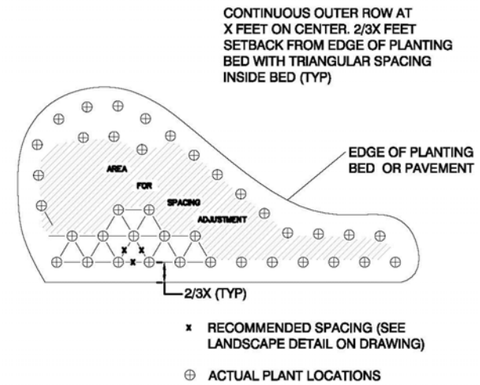
WHEELER BAY BANK REPAIRS
SURFACE STABILIZATION AND PLANTING DETAILS

SUBMITTED BY ROGER ANDERSON PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 7 / 8 (L-2)

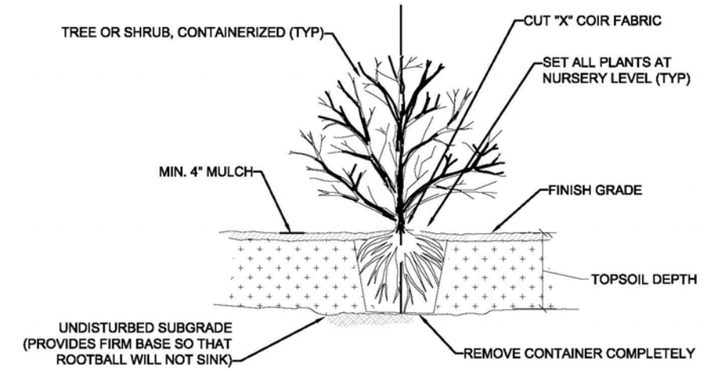
9/3/2010 4:06:33 PM TGRIGA k:\jobs\820\32-port_of_portland\00\2\3201 terminal 4_phase 1\wheeler bay\repair\wbr_l-1_l-2.dwg



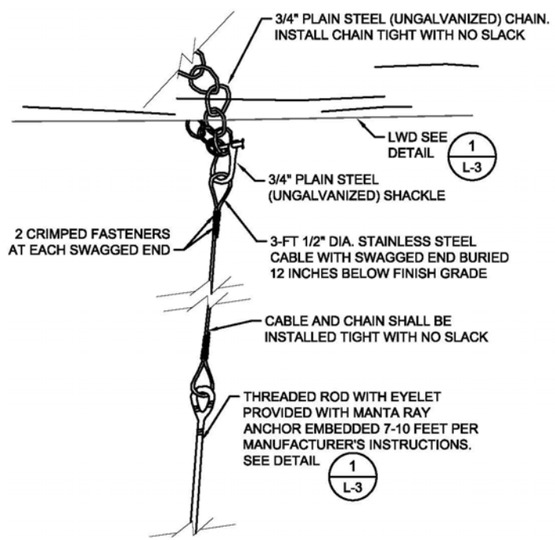
ANCHORED LWD PLACEMENT (1 / L-3)
SCALE: NTS



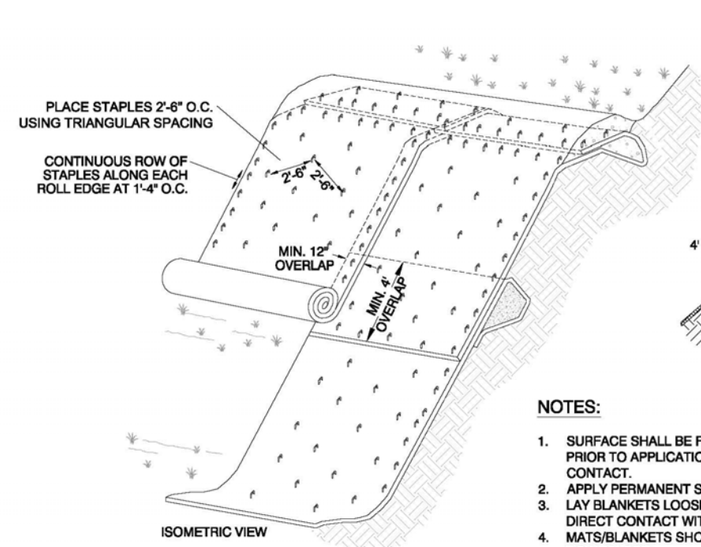
RIPARIAN PLANTING PATTERN (3 / L-3)
NOT TO SCALE



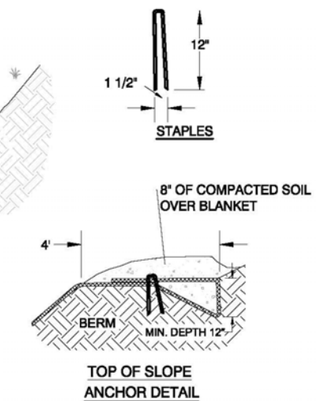
RIPARIAN PLANTING DETAIL (4 / L-3)
SCALE: NTS



TYPICAL MANTA RAY ANCHOR CONNECTION DETAIL (2 / L-3)
SCALE: NTS



TYPICAL SLOPE SOIL STABILIZATION



TOP OF SLOPE ANCHOR DETAIL

NOTES:

1. SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS, PRIOR TO APPLICATION. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. MATS/BLANKETS SHOULD BE INSTALLED VERTICALLY DOWNSLOPE.
5. INSTALL JUTE MAT BETWEEN EL. +20 AND +30 FEET.

JUTE MAT INSTALLATION DETAIL AT TEMP ACCESS ROAD (5 / L-3)
SCALE: NTS

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
VERTICAL DATUM: NGVD 29-47

UNDER REVIEW BY USEPA
THIS DOCUMENT IS BEING REVIEWED BY USEPA AND ITS FEDERAL, STATE, OR TRIBAL PARTNERS AND IS SUBJECT TO CHANGE IN WHOLE OR IN PART

NO.	DATE	BY	REVISIONS	CK'D	APPV'D
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA
1423 3RD AVENUE, SUITE 300 | SEATTLE, WA 98101 | (206) 287-9130

2010D015 — DESIGN NUMBER
820027 — PROJECT NUMBER

REGISTERED LANDSCAPE ARCHITECT 659 Peter Hummel OREGON 3/24/08
Expires: 3/31/2011

DESIGNED BY J. SCHOENEN
DRAWN BY T. GRIGA
CHECKED BY P. HUMMEL
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

WHEELER BAY BANK REPAIRS
SURFACE STABILIZATION AND PLANTING DETAILS

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 8 / 8 (L-3)

9/3/2010 4:06:37 PM TGRIGA k:\jobs\050332\port_of_portland\050332t01 terminal 4_phase 1\wheeler bay repair\wbr_t1_1-2.dwg

APPENDIX E
WATER QUALITY MONITORING PLAN (WQMP)

(Appendix H from Anchor 2008b)

APPENDIX H

WATER QUALITY MONITORING PLAN

TERMINAL 4 PHASE I REMOVAL ACTION
PORT OF PORTLAND, PORTLAND OREGON

Prepared for

Port of Portland

Portland, Oregon

Prepared by

Anchor Environmental, L.L.C.

6650 SW Redwood Lane, Suite 333

Portland, Oregon 97224

August 2008

1 INTRODUCTION 1

2 WATER QUALITY MONITORING PROGRAM 3
2.1 Monitoring Parameters 3
2.2 Background Survey 4
2.2.1 Pre-construction Survey 4
2.2.2 Background Criteria 5
2.3 Compliance Boundaries 5
2.4 Monitoring Station Locations and Depths 7
2.5 Monitoring Tiers and Schedules 8
2.6 Water Quality Monitoring Criteria 8
2.6.1 Turbidity 8
2.6.2 Dissolved Oxygen 9
2.6.3 Chemicals of Concern 9
2.6.4 Metals Criteria 9
2.6.5 PAH Guidance Values 10
2.6.6 Background Criteria 10

3 ACTIVITY-SPECIFIC MONITORING REQUIREMENTS 11
3.1 Berth 411 Plus Dredging in Slip 3 and Berth 414 11
3.1.1 Description 11
3.1.2 Monitoring Parameters 11
3.1.3 Compliance Boundaries 11
3.1.4 Monitoring Schedule 12
3.2 In-water Capping in Slip 3 12
3.2.1 Description 12
3.2.2 Monitoring Parameters 13
3.2.3 Monitoring Schedule 13
3.3 Sand Layer Placement in Slip 3 14
3.3.1 Description 14
3.3.2 Monitoring Parameters 14
3.3.3 Monitoring Schedule 14
3.4 Berth 410 Dredging in Slip 3 15
3.4.1 Description 15
3.4.2 Monitoring Parameters 15
3.4.3 Compliance Boundaries 16
3.4.4 Monitoring Schedule 16
3.5 Upland Transfer Facility Monitoring 17
3.5.1 Description 17
3.5.2 Monitoring Parameters 17
3.5.3 Compliance Boundaries 17
3.5.4 Monitoring Schedule 17
3.6 Wheeler Bay Shoreline Stabilization Monitoring 17

3.6.1 Description ... 17
3.6.2 Monitoring Parameters ... 18
3.6.3 Compliance Boundaries ... 18
3.6.4 Tier I Monitoring Schedule ... 18
3.6.5 Tier II Monitoring Schedule ... 18

4 SAMPLING AND ANALYSIS METHODS ... 19
4.1 Methods and Equipment ... 19
4.2 Sample Location and Depth Control ... 19
4.3 Decontamination Procedures ... 19
4.4 Sample Identification ... 20
4.5 Measurement Documentation ... 21
4.6 Monitoring Equipment Calibration and Maintenance ... 21
4.7 Sample Handling and Custody ... 21
4.8 Analytical Laboratory Parameters and Methods ... 22
4.9 Quality Control and Assurance Procedures ... 22
4.10 Health and Safety Procedures ... 23

5 REPORTING REQUIREMENTS ... 24
5.1 Data Submittals ... 24
5.2 Laboratory Turnaround Times ... 24
5.2.1 Chemical Analysis ... 24
5.3 Removal Action Closure Report ... 27

6 CONTINGENCY PLAN ... 28
6.1 Notification Requirements ... 28
6.2 Contingency Response Actions (If Water Quality Criteria are Exceeded) ... 28
6.2.1 Exceedance of Visual Monitoring Criteria ... 28
6.2.2 Exceedance of Conventional Parameters ... 29
6.2.3 Exceedance of Laboratory Analytical Parameters ... 30
6.3 Construction Best Management Practices ... 30

7 MONITORING PERSONNEL AND KEY CONTACTS ... 31

8 REFERENCES ... 32

List of Tables

Table 1 Water Quality Monitoring Parameters
Table 2 Water Quality Criteria for Terminal 4 Phase I Removal Action Project
Table 3 Water Quality Monitoring Locations and Schedules
Table 4 Analytical Parameters and Methods

List of Figures

Figure 1 Vicinity Map
Figure 2 Proposed Water Quality Background Samples
Figure 3 Proposed Water Quality Monitoring Stations
Figure 4 Contingency Response Action Decision Tree

List of Attachments

Attachment H-1 Water Quality Monitoring Form

1 INTRODUCTION

This document presents a Draft Water Quality Monitoring Plan (WQMP) to address substantive requirements of the Clean Water Act (CWA) Section 401 water quality certification that arise because of activities associated with Phase I Removal Action at the Port of Portland's (Port) Terminal 4 facility in Portland, Oregon (see Figure 1).

This document details the water quality monitoring activities and protections that will be implemented during the Phase I Removal Action to minimize adverse impacts to water quality during Phase I capping and dredging operations. Phase I of the Removal Action includes the following components:

- Dredging and off-site disposal of sediment exhibiting the highest chemical concentration providing a permanent solution of contaminant mass removal
- Placement of a sand layer on a portion of the dredge footprint where full removal is not feasible due to concern over slopes and waterfront structures
- Construction of a nearshore cap to isolate petroleum contaminated sediments from aquatic receptors and control a potential ongoing source to nearby areas
- Stabilization of the Wheeler Bay bank to minimize contaminant migration to the river
- Dredging and off-site disposal of contaminated sediments in Slip 3 at Berth 410 to support water-dependent maritime use in a manner consistent with the Action Memo and in support of overall risk reduction in the Removal Action Area.

The remainder of this document provides the following information related to water quality monitoring during construction:

- **Section 2 – Water Quality Monitoring Program** describes the monitoring objectives, monitoring approach, background survey, compliance boundaries, station locations and depths, and applicable water quality criteria.
- **Section 3 – Activity-Specific Monitoring Requirements** presents specific monitoring activities and schedules for each construction activity.
- **Section 4 – Sampling and Analysis Methods** describes the details of sampling and analysis including station identification, sample location and depth control, monitoring methods and equipment, decontamination procedures, monitoring equipment calibration and maintenance, measurement documentation, sample handling and custody, and analytical laboratory parameters and methods.

- **Section 5 – Reporting Requirements** describes the requirements for water quality data submittals, laboratory turnaround times, and documentation required for the Removal Action Closure Report (RACR).
- **Section 6 – Contingency Plan** describes exceedance notification requirements, contingency response actions, and construction best management practices (BMPs) to be implemented to minimize water quality exceedance potential.
- **Section 7 – Monitoring Personnel and Key Contacts** details the responsibilities of key monitoring personnel.

2 WATER QUALITY MONITORING PROGRAM

The objective of water quality monitoring during Phase I Removal Action construction activities is to confirm that water quality criteria are met or to ensure approval to allow temporary exceedances of water quality standards during any construction activity that may affect the water column (USEPA 2003a). To meet this objective, water quality monitoring will occur during the following in-water construction activities:

- Berth 411 Plus dredging (Slip 3 and Berth 414)
- Berth 411 sand layer placement
- Capping in Slip 3
- Berth 410 dredging
- Transport and transfer of materials from barge to upland transport at an upland transfer facility (transfer facility to be determined)
- Wheeler Bay shoreline stabilization

The details of the water quality monitoring program, including monitoring parameters, background survey, compliance boundary locations, monitoring station locations and depths, monitoring schedules, and applicable water quality criteria are described below.

2.1 Monitoring Parameters

The following parameters will be monitored during Phase I Removal Action construction activities (see Table 1).

- Visual Parameters
  - Ongoing observation for turbidity plumes
- Field Parameters
  - Turbidity (in nephelometric turbidity units [NTU])
  - Dissolved oxygen (DO; in milligrams per liter [mg/L])
  - Temperature (in degrees centigrade)
  - pH (in standard units)
- Laboratory Parameters
  - Total suspended solids (TSS; in mg/L)
  - Dissolved metals (cadmium, lead, and zinc; in micrograms per liter [μg/L])
  - Polycyclic aromatic hydrocarbons (PAHs; priority pollutant list; in μg/L)

Table 1 summarizes the parameters that will be monitored during each construction activity. The monitoring program will include regularly scheduled field measurements and laboratory analyses of the water samples for chemicals of concern (COCs). COCs have been established based on exceedances of PECs in sediment samples from the respective construction areas (cadmium, lead, zinc, PAHs).

2.2 Background Survey

Initial characterization of ambient background conditions for conventional and laboratory parameters in the vicinity of Terminal 4 will be established prior to the start of over-water and in-water work. The objectives of the background survey are:

- To provide baseline conditions for evaluating monitoring data (in particular, turbidity and DO) that are based on maintaining acceptably small changes to background conditions in the river
- To establish ambient background concentrations of metals and organic compounds in the river caused by natural enrichments in regional volcanic soils or upstream urban and agricultural inputs

2.2.1 Pre-construction Survey

The pre-construction background survey will consist of three sampling events completed in the vicinity of Terminal 4 prior to the start of in-water construction work. If possible, at least one storm event will be included in the survey. Four monitoring stations will be sampled during each of the background events, as shown on Figure 2.

Two of the four stations will be monitored only during the background survey to characterize ambient river conditions in the vicinity of the construction areas. These stations include the following (see Figure 2):

- Mouth of Slip 3
- Center of Slip 3

The other two stations will be monitored during the background survey, and in addition, one or both of these stations will continue to be monitored during in-water work activities to characterize background water quality excursions that may occur during the Phase I Removal Action. These stations include the following (see Figure 2):

- 300 meters upstream from Slip 3
- Opposite riverbank from Slip 3

Conventional field parameters (turbidity, DO, temperature, and pH) will be measured at each sampling station at three different depths (surface, middle, and bottom). In addition, a sample will be collected from the depth with the highest turbidity reading and submitted for laboratory analysis of project COCs (TSS, PAHs, cadmium, lead, and zinc). With three events and four monitoring stations, the pre-construction background survey will generate 36 measurements of field parameters and 12 analyses of water samples for project COCs.

2.2.2 Background Criteria

Background criteria will be established at the 90th percentile concentration of the background dataset. The 90th percentile concentration is calculated from the following equation:

Rank of Sample that corresponds to 90th percentile = (N+1) X 0.9

Initial estimates of 90th percentile background concentrations for turbidity, TSS, and dissolved metals are provided by U.S. Geologic Survey (USGS) monitoring station No. 14211720 (Willamette River at Portland). These values are summarized in Table 2. The USGS background dataset will be updated with pre-construction survey data, and 90th percentile values will be recalculated.

2.3 Compliance Boundaries

The proposed compliance boundaries for this project are (see Figure 3):

- Slip 3 Construction Activities
  - Turbidity: 100 meters (328 feet) from the mouth of Slip 3
  - COCs: 100 meters from the center of the construction activity
- Berth 414 Construction Activities
  - Turbidity and COCs: 100 meters from the center of the construction activity

- Berth 410 Construction Activities
  - Turbidity: 100 meters from the mouth of Slip 3. Note that a small portion of the construction activities at Berth 410 occur outside of the Harbor Line. When construction activities at Berth 410 are being conducted outside of the Harbor Line, the compliance boundary for turbidity will be 100 meters from the center of the construction activity.
  - COCs: 100 meters from the center of the construction activity.
- Wheeler Bay Construction Activities
  - Contingent field parameter monitoring: 100 meters from the center of the construction activity is specified, in the event construction extends into the water. Note that Wheeler Bay monitoring is not depicted on Figure 3.
- Upland Transfer Facility Activities
  - Field Parameters: 100 meters downstream from upland transfer location

Detailed analysis of the rationale behind proposing 100 meters from the mouth of Slip 3 for the turbidity compliance boundary is provided in the Technical Memorandum, *Supplemental Analysis and Rationale for the Proposed Turbidity Point of Compliance (100 Meters from the Mouth of Slip 3) Port of Portland—Terminal 4 Phase I Removal Action* (Anchor 2008a).

The rationale behind the proposed point of compliance for turbidity included:

- Computer model dilution analysis results indicating that turbidity criteria will likely be exceeded based on a more typical point of compliance of 100 meters from the center of the construction activity;
- The expectation, based on computer model dilution analysis, that in order to enable the implementation of this project, the proposed compliance boundary for turbidity would need to be at 100 meters from the mouth of Slip 3 instead of 100 meters from the center of the construction activity;
- The fact that dredging elutriate testing chemical concentration data indicate that turbidity in this particular case is indicative of coloration and not representative of toxicity to aquatic life;
- The fact that turbidity standard allows for exceedances to be authorized within the vicinity of the construction site (Slip 3 is substantially bounded on three sides and

dredging is occurring throughout the Slip) provided all practicable turbidity control techniques will be applied; and,

- The fact that turbidity control techniques specified for the project include all of the BMPs that have been shown to be effective in controlling turbidity for similar projects and that, in addition, as an added measure of protectiveness, a fish diversion technique will be utilized to divert fish from entering the slip.

2.4 Monitoring Station Locations and Depths

Three monitoring stations will be symmetrically placed around the compliance boundary as shown on Figure 3. These stations are configured to capture flow reversals when they occur. Therefore, the field crew will not be required to determine the exact current direction during each monitoring event. Determining the current direction may be difficult in the field due to the slow current speeds in the slips, wind generated surface flow, eddy effects, propwash, and other complicating factors. In addition to the monitoring stations along the compliance boundary, an "early warning" station will be placed at the midpoint of the compliance zone, 50 meters from the mouth of the slip or the center of the construction activity. Two stations will be available for ongoing monitoring as background stations, one located 300 meters upstream of all construction activities along the same (east) riverbank, and the other located on the opposite (west) riverbank across from Terminal 4. One monitoring station will be located 100 meters downstream from the upland transfer facility location. In addition, a background station will be located 50 meters upstream from the upland transfer location. Although pre-determined stations will be targeted for sampling, if there is a visual plume, stations will be adjusted to sample within the plume.

At each station, monitoring will occur at three depths:

- Surface – 3 feet below the water surface
- Middle – Center of the water column
- Bottom – 3 feet above the sediment bottom

For conventional field parameters (turbidity, DO, temperature, and pH), samples will be collected at three compliance boundary stations, one early warning station, and one background station. At these locations, field parameters will be measured at the surface, middle, and bottom depths. For chemistry monitoring, discrete samples will be collected at

one compliance boundary station (the station with the highest turbidity readings) and a background station. During Tier I events (see Section 2.5 for a description of the tiered sampling approach), chemistry samples will be collected at the surface, middle, and bottom depths, and during Tier II events, a single sample will be composited from the surface, middle, and bottom depths at the selected station. Tier II samples are considered routine samples and would be implemented after intensive Tier I sampling results showed no elevated levels of turbidity or COCs during the associated construction activity.

2.5 Monitoring Tiers and Schedules

Water quality monitoring schedules are divided into two tiers, as summarized in Table 3. Tier I reflects "intensive monitoring" that will be performed at the beginning of a new construction activity or when there is a significant change in construction methods. Tier II reflects "routine monitoring" that will occur after an activity has been underway for a period of time and no water quality exceedances have been detected in several rounds of monitoring, contingent on USEPA approval. Monitoring will revert back to a Tier I schedule if an exceedance occurs during Tier II monitoring. Additional information on monitoring schedules that will apply to specific construction activities is provided in Section 3 and Table 3.

2.6 Water Quality Monitoring Criteria

Water quality monitoring criteria are summarized in Table 2 and discussed below. These criteria will form the basis for evaluating water quality at the compliance boundary.

2.6.1 Turbidity

Consistent with state water quality standards [OAR 340-041-036], the following turbidity criteria will apply at the compliance boundary:

- Turbidity should not exceed 5 NTUs above background if background is less than 50 NTUs.
- Turbidity should not exceed 10 percent above background if background is greater than 50 NTUs.

Turbidity exceedances at the compliance boundary will trigger contingency response actions as specified in Section 6.2.

If turbidity exceedances are observed, TSS results may be considered as part of the weight of evidence when evaluating the environmental significance of the exceedances. TSS data are relevant, and TSS samples will be collected for the following reasons:

- TSS is measured in concentration units and is therefore relevant for contaminant transport and mass balance calculations; in contrast, turbidity is a measure of light transmission and does not have a direct relation with, and is not a direct measure of concentration.
- TSS has greater ecological relevance, and literature studies have investigated the biological effects of high TSS concentrations on fish and other organisms actually use TSS as a metric.
- In a remedial dredging project, migration of contaminated sediments outside the project area is a key concern. TSS is a more direct measure of sediment resuspension and transport processes.

2.6.2 Dissolved Oxygen

At the compliance boundary, DO will not be less than 6.5 mg/L.

2.6.3 Chemicals of Concern

For laboratory analysis of COCs at the Phase I Removal Action project, state and federal aquatic life criteria will be used to evaluate water quality at the compliance boundary. Acute criteria will be the compliance criteria for water quality monitoring during all construction activities (i.e., dredging and capping) because such activities are migratory, intermittent, and ephemeral in nature. Chronic criteria will be used as action levels to trigger evaluation of additional construction BMPs, but will not be used for compliance purposes.

2.6.4 Metals Criteria

Water quality criteria for metals (cadmium, lead, and zinc) are derived from current USEPA Nationally Recommended Water Quality Criteria (USEPA 2006), which are the same criteria that have been adopted by the State of Oregon. Metals criteria have been adjusted to a hardness value of 25 mg/L based on ambient measurements in the Lower Willamette River (USGS 2006). Metals criteria for cadmium, lead, and zinc are evaluated on a dissolved basis (USEPA 2006)

2.6.5 PAH Guidance Values

Aquatic life criteria for PAHs are not available in either federal or state standards. However, estimated acute and chronic values for PAHs have been developed by USEPA for use in deriving sediment quality benchmarks (USEPA 2003b). These PAH values, listed in Table 2, will be used as decision threshold values during the monitoring program to determine the use and effectiveness of construction BMPs for controlling the releases of PAHs.

2.6.6 Background Criteria

Background criteria will be set at the 90th percentile value of the background dataset, which includes data from the pre-construction background survey, ongoing monitoring of background stations during construction, and existing data from USGS monitoring station #14211720 (Willamette River at Portland). Turbidity criteria are based on direct comparisons to background values. In addition, ambient concentrations of certain COCs in the Willamette River may be at or above aquatic life criteria/guidelines due to natural occurrences in regional volcanic soils or due to contributions from urban or agricultural runoff or other upstream sources. In such cases, the background criteria will supersede aquatic life criteria/guidelines as the basis for evaluating water quality that may be related to Phase I Removal Action activities. During short-term monitoring activities, concentrations must be shown to be below aquatic life criteria/guidelines or ambient background concentrations, whichever is greater.

Initial estimates of 90th percentile background criteria for turbidity and dissolved metals based on USGS monitoring data are presented in Table 2. These background criteria will be updated and recalculated with the results of the pre-construction survey.

3 ACTIVITY-SPECIFIC MONITORING REQUIREMENTS

In this section, specific monitoring requirements and schedules are described for each construction activity that will be implemented during the Phase I Removal Action. General monitoring schedules are outlined in Table 3. To the extent construction activities overlap, the monitoring station locations and criteria may overlap and be coordinated to achieve efficiencies as appropriate.

Turbidity may be a reliable "real time" surrogate for chemical monitoring to evaluate the extent to which sediments and their associated contaminants may be resuspended in the Phase I construction areas. As directed by USEPA, chemical testing will be performed at the start of each in-water construction activity (as detailed below) to confirm the reliability of using turbidity as a surrogate for environmental monitoring based on actual field data.

3.1 Berth 411 Plus Dredging in Slip 3 and Berth 414

3.1.1 Description

Approximately 5,200 (neatline volume) to 7,300 (neatline with overdredge allowance volumes) cubic yards (cy) of contaminated sediment with varying degrees of contamination levels covering 1.3 acres will be removed from Slip 3 and Berth 414 using mechanical dredging equipment, as described in the Design Analysis Report (DAR; Anchor 2008b). Figure 5 of the DAR shows the dredge prism. The sediment will be disposed at an upland landfill. The footprints of the Phase I Removal Action areas are shown on Figure 3.

3.1.2 Monitoring Parameters

Monitoring requirements during all dredging activities will include conventional field parameters (turbidity, DO, temperature, and pH) and laboratory parameters (TSS and COCs) at the compliance boundary and early warning boundary.

3.1.3 Compliance Boundaries

The compliance boundary for turbidity during Berth 411 "Plus" dredging and transport activities in Slip 3 will be 100 meters from the mouth of Slip 3. The compliance boundary for COCs during Berth 411 "Plus" dredging and transport activities in Slip 3 will be 100 meters from the center of the construction activity within Slip 3 (see

Figure 3). For dredging and transport activities occurring at Berth 414, the compliance boundary for both turbidity and COCs will be 100 meters from the center of the construction activity.

3.1.4 Monitoring Schedule

Conventional parameters (turbidity, DO, temperature, pH) will be measured once every 4 hours (Tier I) at the start of dredging activities (i.e., beginning 1 hour after dredging begins) or if construction methods drastically change. If no results above regulatory criteria are observed after 3 consecutive days of monitoring, the sampling frequency may be reduced to once per day (Tier II), subject to USEPA approval.

Chemical monitoring during initial startup will occur once per day for 3 consecutive days (Tier I), and results will be compared to acute and chronic water quality criteria. If no results above chronic or acute criteria are observed, chemical monitoring may be scaled back to once per week (Tier II), subject to USEPA approval, unless a significant construction modification is made. Chemistry samples will be collected for 3 consecutive days and submitted each day to the laboratory for a 3-day turnaround (based on when the sample arrives at the laboratory; see Section 5.2 for more details on turnaround times). Results for the samples collected on Day 1 will be received on Day 4 to determine if additional sampling and/or implementation of construction BMPs are necessary.

If any monitoring results are reported that are above of water quality criteria (e.g., narrative, acute, or chronic criteria) at the compliance boundary during Tier II monitoring, or if a significant construction modification is made; monitoring will revert back to Tier I requirements.

3.2 In-water Capping in Slip 3

3.2.1 Description

In-water capping will occur at the head of Slip 3 as described in the DAR (Anchor 2008b) and shown on Figure 2 of the DAR. The cap consists of two components. Below the timber bulkhead, the cap consists of approximately 12 inches of fine/medium sand or gravel with low fines content and free of large organic or other debris. Cap materials

will be placed mechanically from a barge. A riprap wedge will be placed on top of the sand or gravel and against the timber bulkhead for stability. The second component of the cap is above the timber bulkhead. A sand and gravel material mixed with organoclay will be placed below an armor layer. A majority of the work above the timber bulkhead should occur above the water surface. Sorbent booms will be deployed around the area under construction when work is taking place in water.

3.2.2 Monitoring Parameters

During capping activities, monitoring of field parameters (turbidity, DO, temperature, and pH) and laboratory analytical parameters (TSS and COCs) will be performed at the compliance boundary and early warning boundary.

3.2.3 Monitoring Schedule

Field parameters (turbidity, DO, temperature, and pH) will be measured once every 4 hours (Tier I) at the start of capping activities (i.e., beginning one hour after capping begins) or if construction methods drastically change . There will be a minimum of one field parameter monitoring event for each 4-hour period of activity. If no results above regulatory criteria are observed at the compliance boundary following 3 consecutive days of monitoring, the sampling frequency may be reduced to once per day (Tier II) subject to USEPA approval.

Chemical monitoring during initial startup will occur once per day for 3 consecutive days (Tier I), and results will be compared to acute and chronic water quality criteria. If no results above chronic or acute criteria are observed at the compliance boundary during this period, chemical monitoring may be scaled back to once per week (Tier II), subject to USEPA approval, unless a significant construction modification is made (e.g., switch from placement using a mechanical bucket to placement using a conveyor). Chemistry samples will be collected for 3 consecutive days and submitted each day to the laboratory for a 3-day turnaround (see Section 5.2 for more details on turnaround times) based on when the sample is received by the laboratory. Results for the sample collected on Day 1 will be received on Day 4 to determine if additional sampling and/or implementation of construction BMPs is necessary.

If any results above chronic or acute criteria of (e.g., narrative, acute, or chronic) are detected at the compliance boundary during Tier II monitoring, or if a significant construction modification is made (e.g., switch from placement using a mechanical bucket to placement using a conveyor), monitoring will revert back to Tier I requirements.

3.3 Sand Layer Placement in Slip 3

3.3.1 Description

Sand layer placement will occur at the head of Slip 3 as described in the DAR (Anchor 2008b) and shown on Figure 5 of the DAR. A portion of the dredge footprint will not have full removal down to a PEC exceedance ratio of 10 due to the concern over slopes and waterfront structures. After dredging is completed these select areas will have a sand layer placed. The specifications require the Contractor to place the 600 tons evenly over the 13,300-square-foot target area. The specifications require the Contractor to place the material from the slope toe upward and in a manner to minimize mixing with underlying sediments. The sand material will be a gravelly sand to sandy gravel; this gradation will allow the material to be more stable on the 3 horizontal to 1 vertical (3H:1V) slope.

3.3.2 Monitoring Parameters

During sand layer placement activities, monitoring of field parameters (turbidity, DO, temperature, and pH) and laboratory analytical parameters (TSS and COCs) will be performed at the compliance boundary and early warning boundary.

3.3.3 Monitoring Schedule

Field parameters (turbidity, DO, temperature, and pH) will be measured once every 4 hours (Tier I) at the start of sand layer placement activities (i.e., beginning 1 hour after sand layer placement begins) or if construction methods drastically change . There will be a minimum of one field parameter monitoring event for each 4-hour period of activity. If no results above regulatory criteria are observed at the compliance boundary following 3 consecutive days of monitoring, the sampling frequency may be reduced to once per day (Tier II) subject to USEPA approval.

Chemical monitoring during initial startup will occur once per day for 3 consecutive days (Tier I), and results will be compared to acute and chronic water quality criteria. If no results above chronic or acute criteria are observed at the compliance boundary during this period, chemical monitoring may be scaled back to once per week (Tier II), subject to USEPA approval, unless a significant construction modification is made (e.g., switch from placement using a mechanical bucket to placement using a conveyor). Chemistry samples will be collected for 3 consecutive days and submitted each day to the laboratory for a 3-day turnaround (see Section 5.2 for more details on turnaround times) based on when the sample is received by the laboratory. Results for the sample collected on Day 1 will be received on Day 4 to determine if additional sampling and/or implementation of construction BMPs is necessary.

If any results above chronic or acute criteria of (e.g., narrative, acute, or chronic) are detected at the compliance boundary during Tier II monitoring, or if a significant construction modification is made (e.g., switch from placement using a mechanical bucket to placement using a conveyor), monitoring will revert back to Tier I requirements.

3.4 Berth 410 Dredging in Slip 3

3.4.1 Description

Approximately 3,700 (neatline volume) to 9,200 (maximum allowed volume) cy of contaminated sediment with varying degrees of contamination covering 1.9 acres will be removed from the Berth 410 area using mechanical dredging equipment, as described in the DAR (Anchor 2008b). Figure 5 of the DAR shows the dredge prism. The material will be disposed at an upland landfill.

3.4.2 Monitoring Parameters

Monitoring requirements during all dredging activities will include conventional field parameters (turbidity, DO, temperature, and pH) and laboratory parameters (TSS and COCs) at the compliance boundary and early warning boundary.

3.4.3 Compliance Boundaries

The compliance boundary for turbidity during Berth 410 dredging and transport activities in Slip 3 will be 100 meters from the mouth of Slip 3. Note that a small portion of the construction activities at Berth 410 occur outside of the Harbor Line. When construction activities at Berth 410 are being conducted outside of the Harbor Line, the compliance boundary for turbidity will be 100 meters from the center of the construction activity. The compliance boundary for COCs during Berth 410 dredging and transport activities in Slip 3 will be 100 meters from the center of the construction activity (see Figure 3).

3.4.4 Monitoring Schedule

Conventional parameters (turbidity, DO, temperature, pH) will be measured once every 4 hours (Tier I) at the start of dredging activities (i.e., beginning 1 hour after dredging begins) or if construction methods drastically change. There will be a minimum of one field parameter monitoring event for each 4-hour period of activity. If no results above regulatory criteria are observed after 3 consecutive days of monitoring, the sampling frequency may be reduced to once per day (Tier II), subject to USEPA approval.

Chemical monitoring during initial startup will occur once per day for 3 consecutive days (Tier I), and results will be compared to acute and chronic water quality criteria. If no results above chronic or acute criteria are observed, chemical monitoring may be scaled back to once per week (Tier II), subject to USEPA approval, unless a significant construction modification is made. Chemistry samples will be collected for 3 consecutive days and submitted each day to the laboratory for a 3-day turnaround (based on when the sample arrives at the laboratory; see Section 5.2 for more details on turnaround times). Results for the samples collected on Day 1 will be received on Day 4 to determine if additional sampling and/or implementation of construction BMPs are necessary.

If any results above chronic or acute criteria (e.g., narrative, acute, or chronic criteria) are detected at the compliance boundary during Tier II monitoring, or if a significant construction modification is made, monitoring will revert back to Tier I requirements.

3.5 Upland Transfer Facility Monitoring

3.5.1 Description

Approximately 16,500 cy of contaminated sediment with varying degrees of contamination will be transferred from barges to trucks using mechanical equipment, as described in the DAR (Anchor 2008b). The material will be disposed at an upland landfill.

3.5.2 Monitoring Parameters

Monitoring requirements during all sediment transfer activities will include conventional field parameters (turbidity, DO, temperature, and pH) at the compliance boundary.

3.5.3 Compliance Boundaries

The compliance boundary for conventional field parameters will be 100 meters downstream from the upland transfer facility.

3.5.4 Monitoring Schedule

Conventional parameters (turbidity, DO, temperature, pH) will be measured once every 4 hours (Tier I) at the start of transfer activities (i.e., beginning 1 hour after transfer begins). There will be a minimum of one field parameter monitoring event for each 4-hour period of activity. If no results above regulatory criteria are observed after 3 consecutive days of monitoring, the sampling frequency may be reduced to once per day, or further reduced to once per week (Tier II), subject to USEPA approval.

If any results above chronic or acute criteria (e.g., narrative, acute, or chronic criteria) are detected at the compliance boundary during Tier II monitoring, or if a significant construction modification is made, monitoring will revert back to Tier I requirements.

3.6 Wheeler Bay Shoreline Stabilization Monitoring

3.6.1 Description

The Wheeler Bay Shoreline will regraded to a more stabile configuration as described in the DAR (Anchor 2008b). Once the slope is graded to the design grade, a final surface treatment of riprap, jute mat, or other materials will be constructed to eliminate erosion.

Most of the work will be performed above elevation 10 feet National Geodetic Vertical Datum (NGVD) and will not take place in or over the water (see Drawing C-7 in Appendix D to the DAR, Anchor 2008b).

3.6.2 Monitoring Parameters

Monitoring requirements during Wheeler Bay Shoreline Stabilization will include visual monitoring (Tier I). In the event that construction occurs in the water, conventional field parameters (turbidity, DO, temperature, and pH) will be monitored at the compliance boundary (Tier II).

3.6.3 Compliance Boundaries

The compliance boundary for conventional field parameters will be 100 meters from the center of the construction activity.

3.6.4 Tier I Monitoring Schedule

The monitoring schedule is designed to ensure that any stormwater flow through the construction area to the river weather will be detected and addressed. Visual monitoring will take place once every hour at the start of stabilization activities (i.e., beginning 1 hour after construction begins) in the event that it is raining at the construction site. Visual monitoring will take place once every 4 hours at the start of stabilization activities (i.e., beginning 1 hour after construction begins) in the event that it is not raining at the construction site.

3.6.5 Tier II Monitoring Schedule

Conventional parameters (turbidity, DO, temperature, and pH) will be measured once every 4 hours (Tier I) at the start of stabilization activities (i.e., beginning 1 hour after stabilization activities begin). There will be a minimum of one field parameter monitoring event for each 4-hour period of activity.

4 SAMPLING AND ANALYSIS METHODS

4.1 Methods and Equipment

Water column samples will be collected in accordance with *Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual* (USEPA 2001). Samples will be collected from a self-propelled vessel. Field parameters will be measured with a calibrated field probe. Water chemistry grab samples will be collected using a decontaminated van Dorn bottle or similar device. Recovered water from the appropriate depth will be transferred immediately to appropriate laboratory-provided, pre-labeled, pre-cleaned sample containers.

Turbidity and other field parameters will be measured using a calibrated field probe deployed to the appropriate depth (surface, middle, and deep intervals) as described in Section 2.4.

4.2 Sample Location and Depth Control

A differential global positioning system (DGPS) will be used to navigate to and verify station locations. Sampling will take place within 3 meters of the target sampling locations. Depth to the bottom will be determined using a lead line or depth sounder. From this measurement, the appropriate sampling depths will be determined. Both the depth to the bottom and the sampling depths will be recorded at each location sampled.

4.3 Decontamination Procedures

Sample containers, instruments, working surfaces, technician protective gear, and other items that may come into contact with the water sample must meet high standards of cleanliness. A van Dorn water sampler will be used to collect grab samples for chemical and TSS analyses. The van Dorn sampler (or equivalent) will be decontaminated prior to each day's use and between sampling locations. The decontamination procedure is as follows:

- Pre-wash rinse with site water
- Wash with solution of laboratory grade non-phosphate based soap (brush)
- Rinse with site water
- Rinse three times with laboratory grade distilled water
- Store in clean, closed container for next use

Additionally, the laboratory will provide pre-cleaned and labeled sample containers.

4.4 Sample Identification

All grab samples will be properly identified on their attached labels as well as in any forms or other documentation. All sample identifications will be consistent with the following identification scheme consisting of 13 alphanumeric characters:

1. The first two characters will be "T4" to identify the samples as Port of Portland Terminal 4 samples. For the Background Survey, "BG" will be used rather than "T4."
2. The next three characters will be used to identify each water quality monitoring location as listed below:
   - S3A = Head of Slip 3 Dredging Area
   - S3B = Head of Slip 3 Capping Area
   - S3C = Middle of Slip 3 Dredging Area
   - S3M = Mouth of Slip 3 (turbidity compliance boundary)
   - 414 = Dredging Area North of Berth 414
   - WHB = Wheeler Bay Slope Stabilization Area
3. The next character will be a letter (N, M, or S) indicating the position along the compliance boundary arc as follows:
   - N = the station on the north side of the compliance boundary arc
   - M = the middle station along the compliance boundary arc
   - S = the station on the south side of the compliance boundary arc
   - E = the "early warning" station at the mid-point of the compliance zone
4. The next character will indicate the sampled water depth category as described below:
   - A = surface sample collected within 3 feet of the surface
   - B = sample collected at mid-depth
   - C = bottom sample collected 3 feet from the sediment surface
   - D = sample composited from the surface, mid-, and bottom depths
5. The last 6 characters will indicate the sample date by YYMMDD.

For example, following this identification scheme, T4-411-NA-080808 indicates a surface sample collected at Terminal 4 during dredging in the vicinity of Berth 414 at the station on the north side of the compliance boundary arc on August 8, 2008.

4.5 Measurement Documentation

The water quality monitoring data (e.g., station coordinates, water depths sampled, date, time, parameter results, and other observations) will be recorded on water quality monitoring forms.

4.6 Monitoring Equipment Calibration and Maintenance

Monitoring equipment will be calibrated prior to its use in the monitoring program following manufacturers' instructions. The calibration will be conducted once at the beginning of each sampling day for all equipment. Where not covered by manufacturers' instructions, calibration procedures will follow Standard Methods 2130-b (turbidity), 4500-O (DO), 2550 (temperature), and 4500-H^+ (pH; AWWA 1998).

For the turbidity meter, at the end of each day of monitoring, a post-calibration procedure will be performed by measuring one of the calibration standards (preferably the standard whose value is closest to the river turbidity during that day). In addition, standards may be measured to check the calibration throughout the day, especially if higher or lower than expected turbidity values occur.

All calibration information will be recorded in the field notebook. Equipment that does not properly calibrate will not be used.

Instruments and equipment will be tested and inspected before each monitoring event. Any field equipment that is faulty or not functioning properly will not be used for monitoring.

4.7 Sample Handling and Custody

After the water grab sample is collected, it will be immediately transferred to a pre-cleaned container provided by the analytical laboratory and placed in a cooler with ice. All containerized water samples will be transported to the analytical laboratory. Specific sample shipping procedures will be as follows:

1. Each cooler or container containing the sediment samples for analysis will be shipped to the laboratory within 24 hours of being sealed.
2. The shipping containers will be clearly labeled with sufficient information (name of project, time and date container was sealed, person sealing the container, and consultant's office name and address) to enable positive identification.
3. Glass jars will be separated in the shipping container by shock absorbent material (e.g., bubble wrap) to prevent breakage.
4. A generous amount of ice will be sealed in separate plastic bags and placed into the cooler.
5. A sealed envelope containing chain-of-custody forms will be enclosed in a plastic bag and taped to the inside lid of the cooler.
6. If sending via Fed Ex, the cooler lids will be secured by wrapping the coolers in strapping tape.
7. Signed and dated chain-of-custody seals will be placed on all coolers prior to shipping.

Upon transfer of sample possession to the analytical laboratory, the persons transferring custody of the sample container will sign the chain-of-custody form. Upon receipt of samples at the laboratory, the shipping container seal will be broken and the condition of the samples recorded by the recipient. Chain-of-custody forms will be used internally in the lab to track sample handling and final disposition.

4.8 Analytical Laboratory Parameters and Methods

Grab samples collected for analytical parameters (including TSS, cadmium, copper, lead, zinc, PAHs, DDTs, and PCBs) will be submitted to Analytical Resources Incorporated in Tukwila, Washington, for laboratory analysis on a 72-hour turnaround time. The laboratory methods, criteria, and reporting limits are summarized in Table 4.

4.9 Quality Control and Assurance Procedures

Field and laboratory quality control and assurance procedures are discussed in detail in the Removal Action Quality Assurance Project Plan (QAPP) provided as Appendix J. If there are any inconsistencies between the procedures specified in the QAPP and those specified in this WQMP, the WQMP will take precedence.

4.10 Health and Safety Procedures

Health and safety procedures for water quality monitoring activities are provided in the Removal Action Health and Safety Plan provided as Appendix J to the DAR (Anchor 2008b).

5 REPORTING REQUIREMENTS

5.1 Data Submittals

Data will be collected and recorded in the field on the water quality monitoring forms. These data will be reported to USEPA in the following communications and submittals:

- **Daily Reporting** – Any exceedances of the water quality criteria specified in Section 2.6 and Table 2 will be reported verbally or by email to USEPA on a daily basis.
- **Weekly Reporting** – Results from each week's Water Quality Monitoring Forms will be compiled into a summary table with a comparison to criteria values and provided to USEPA on a weekly basis.
- **Final Reporting –** Once all construction is complete, results for the entire construction period will be compiled and reported to USEPA along with supporting documentation in a Draft and Final RACR, as described in Section 5.3 below.

Daily and weekly reporting will be conducted by the Water Quality Monitoring Field Leader. All reporting will include both regularly scheduled monitoring and any additional monitoring results that may have been triggered by exceedances of water quality criteria.

5.2 Laboratory Turnaround Times

5.2.1 Chemical Analysis

Preliminary, unvalidated laboratory chemical analytical results (TSS, target metals, and PAHs) will be reported to USEPA no more than 3 days (72 hours) following sample receipt by the laboratory. Any change between preliminary results and final results will be reported as soon as possible. These reporting timelines will apply to samples collected on both weekdays and weekends.

The Port will report to USEPA when detections have been made, as well as information on calibrations that have been exceeded. This information can be useful in approximating a chemistry "hit" that can be used to begin to trigger low cost BMPs while awaiting quantitative laboratory confirmation. The laboratory must be instructed to notify the Port at the earliest possible time of identification of significant high concentration results in water quality samples that are expected to be clean. The Port must provide a copy of the Water Quality Monitoring and Compliance Conditions Plan to the laboratory to aid in their understanding of the actions thresholds for the project,

and to aid in their early reporting regarding whether sample concentrations are above these thresholds.

Prior to release, data will be reviewed by the analyst to verify initial calibration, continuing calibrations, tunes, internal standards, surrogates, and compliance of the Method Blank and Laboratory Control sample. If all quality control (QC) requirements pass and the Laboratory Manager or Laboratory Supervisor is in attendance, the data will be reviewed by the Manager or Supervisor, released to the Laboratory Information Management System (LIMS), printed, and signed before distribution to USEPA.

There may be occasions where a data reviewer may not always be available within a reasonable timeframe. In those circumstances, assuming the QC requirements pass, USEPA will occasionally accept receiving the data in a preliminary format with information that the QC requirements were met and that a final review is still required and will be forwarded as soon as reasonably practical.

To ensure that laboratory turnaround times (TATs) are met, the selected laboratory will be required to dedicate one primary and one back-up instrument and chemist to perform each analysis type. In addition, a back-up laboratory or a sister laboratory will be identified prior to the start of the project. The back-up laboratory will be involved in the kick-off meeting and kept up to date with daily project changes. This process will prevent last-minute issues with coordination should the lab need to be utilized. Any instrument malfunctions must be communicated to the Anchor Environmental, L.L.C., (Anchor) project manager or their designee the day they occur. This will allow for the back-up facility to receive samples the same day they are taken.

The laboratory will identify a lab designee (usually the project manager or project chemist) along with a back-up person. The primary laboratory project manager will communicate with the Anchor designee daily in a status phone call as to sample status, issues encountered, and sample loading concerns, as well as any other pertinent project concerns. The time of the daily status call will be determined in the kick-off meeting. If project samples become problematic for the laboratory and processing time increases or sample volumes increase due to increased sampling requirements, daily samples will be

diverted to a back-up lab so that the primary lab does not become too affected and delay sample results.

Between 72 and 144 chemistry samples are estimated during the anticipated 4-week duration of the in-water portion of the project, assuming, at a minimum, that chemical analysis will follow the Tier I schedule for the entire 4 weeks (i.e., three discrete samples from the compliance boundary station with the highest turbidity readings and three discrete samples from the background station, for a total of six analyses per day). The expected number of samples that may be generated each day following the Tier I schedule would be six, assuming only one construction activity will be occurring at any one time.

Any quality assurance or quality control (QA/QC) issues will be brought to the attention of the Anchor designee the day they occur so that resolution can be made the same day, preventing delay of sample processing. The Anchor designee will contact the lab project manager daily by 3 p.m. to communicate the number of samples to be picked up by the laboratory at the field site. All sample data will be sent to the project manager by 3 p.m. on the day they are due via e-mail (PDF format) or fax.

The primary laboratory and back-up laboratory will identify their routine and contingency clean-up procedures prior to the start of the project, which will allow the chemist to perform the approved clean-up procedures as they occur under normal foreseeable circumstances (e.g., internal standard problems, matrix effects) rather than wait. Issues that are more complex will be handled as described above through the lab and Anchor designees on the day they occur.

For evening and weekend communications, the lab project manager, designated lab QA/QC reviewer, and primary chemist performing the work will be required to communicate with the Anchor designee at the prescribed timelines set-up in the kick-off meeting. For weekend sample receipt, the laboratory will identify a phone number and person(s) responsible for receiving the samples, logging in samples, and communicating any log-in issues. This will prevent log-in delays during the off-hour shifts. The

Anchor designee will be responsible for following up with the laboratory on the daily sample receipts.

The Anchor designee and the Anchor project manager will meet daily after the laboratory status meeting and receipt of sample data for that day. The status meeting will review current sampling status to laboratories, data status, and on-time or QA/QC issues. If during the meeting it is determined that the primary laboratory is not meeting its goals, the back-up laboratory will be utilized until the primary laboratory is on track again. The Anchor designee will contact both labs as to the decisions made in the project status meeting.

5.3 Removal Action Closure Report

After all construction is complete, the results of water quality monitoring will be provided to USEPA in the draft RACR. The RACR will be revised to address USEPA comments, if applicable, and submitted as a final report. The results section of the RACR will include:

- Any deviations from this WQMP and reasons for deviations
- Tabular summaries of all water quality monitoring data with comparisons to compliance criteria and trigger values
- Narrative text on results of water quality monitoring related to each operation and removal action area (e.g., dredging and capping in Slip 3, Berth 414)
- Discussion of water quality criteria exceedances and any additional monitoring that may have resulted, or additional construction BMPs that may have been implemented
- An appendix containing all completed water quality monitoring forms
- An appendix containing all calibration information

6 CONTINGENCY PLAN

6.1 Notification Requirements

The primary purpose of water quality monitoring during construction is to determine when water quality impacts may be occurring so that additional contingency actions can be implemented, if necessary, as described in this document. Consequently, immediate notification of water quality measurements that exceed triggers described in this plan is necessary. Upon obtaining results that exceed any trigger, the Water Quality Monitoring Field Leader will notify the Construction Quality Assurance Officer (CQAO) as quickly as possible. The CQAO will notify the Port Project Coordinator, who in turn will immediately notify the USEPA Remedial Project Manager (Sean Sheldrake) and USEPA Water Quality Specialist (Jonathan Freedman) by telephone. Contact information for the USEPA Remedial Project Manager and Water Quality Specialist are provided below:

Mr. Sean Sheldrake
USEPA, Region 10
Environmental Cleanup Office
1200 Sixth Avenue
Mailstop: ECL-115
Seattle, WA 98101-1128
(206) 553-1220 Telephone
(206) 553-0124 Fax
Sheldrake.sean@epa.gov

Mr. Jonathan Freedman
USEPA, Region 10
Aquatic Resources Unit
1200 Sixth Avenue
Mailstop: ETPA-083
Seattle, WA 98101-1128
(206) 553-0266 Telephone
(206) 553-1775 Fax
Freedman.jonathan@epa.gov

6.2 Contingency Response Actions (If Water Quality Criteria are Exceeded)

The following sections describe the contingency response actions for exceedances of visual monitoring criteria, conventional parameters, and laboratory analytical parameters. A contingency response action decision tree that depicts how water quality monitoring data would be used given potential outcomes is provided in Figure 4. The contingency response decision tree also incorporates realistic contingency planning and identifies the specific BMPs to be implemented during normal operations, as well as contingency measures that may be implemented in the event of water quality exceedances.

6.2.1 Exceedance of Visual Monitoring Criteria

If visual monitoring criteria are exceeded, the following contingency actions will be implemented.

- Determine if the turbidity plume is attributed to the construction activity or other activities occurring within the river (e.g., wind waves, boat wakes, etc.).
- Determine if the turbidity plume is of sufficient extent (i.e., width of the compliance zone) and sufficient duration (i.e., 1 hour or more) to trigger a response action.
- If the turbidity plume is attributed to the construction activity, and is of sufficient extent and duration, begin turbidity monitoring to determine if the visual exceedance is also an exceedance of turbidity criteria.
- If turbidity criteria are exceeded, inform the CQAO.
- Immediately retake measurements at all depths at the station. If no exceedance occurs, retake measurements within 45 minutes of initial reading to confirm the pass. If the pass is confirmed, inform USEPA of resolved exceedance.
- If exceedance is confirmed, inform USEPA of exceedance and identify plan for implementing BMPs. BMPs for specific construction activities are listed in Section 6.3.
- Monitoring will revert to Tier I schedule.

6.2.2 Exceedance of Conventional Parameters

If conventional parameters (turbidity and DO) are exceeded at the compliance boundary during construction activities at Terminal 4, the following actions will occur:

- Determine if exceedance is attributed to the construction activity or other activities occurring within the river (e.g., wind waves, boat wakes, barge/ship traffic, etc.).
- If determined that the exceedance is attributed to the construction activity, inform the CQAO.
- Immediately retake measurements at all depths at the station. If no exceedance occurs, retake measurements within 45 minutes of initial reading to confirm the pass. If the pass is confirmed, inform USEPA of resolved exceedance.
- If exceedance is confirmed, inform USEPA of exceedance and identify plan for implementing BMPs. BMPs for specific construction activities are described in Section 6.3.
- Monitoring will revert to a Tier I schedule.

6.2.3 Exceedance of Laboratory Analytical Parameters

If chemical criteria are exceeded, USEPA will be notified as soon as possible upon receipt of the analytical data. The Port and USEPA will discuss if and what additional BMPs may need to be implemented to minimize the potential for any future exceedances of chemical criteria. Because laboratory analytical results require a 72-hour turnaround time, it will be difficult to use such results to manage the construction operations in "real time," but these results can be used to help manage construction activities through the duration of the Phase I project. "Real time" management decisions will by necessity rely primarily on field parameter measurements. Based on the results of elutriate tests conducted on sediments at Terminal 4 (see DAR, Section 7.3, Anchor 2008b), it is expected that turbidity will be the most sensitive monitoring parameter. Therefore, controlling turbidity impacts through the implementation of appropriate construction BMPs should implicitly control for sediment-associated COCs as well.

6.3 Construction Best Management Practices

The Contractor shall implement the following best management practices (BMPs) construction operations:

- The Contractor shall begin dredging at the highest elevation of material to be removed and work toward the lowest elevation. "Glory holing" will not be allowed.
- The Contractor shall pause the dredge bucket as it breaks the surface of the water and allow the bucket to drain free water prior to swinging and placing dredge material on the haul barge.
- No bottom stockpiling or multiple bites of the clamshell bucket is allowed
- The Contractor shall seal off barge scuppers on haul barges, repair any holes in fences to prevent sediment to drain off a haul barge.
- Barges shall not be overfilled.
- No grounding of construction barges is allowed.
- Overdredging at the base of a slope shall not occur.
- Dragging of dredged surface to level the mudline is not allowed.
- Overfilling of the bucket is not allowed.

7 MONITORING PERSONNEL AND KEY CONTACTS

Personnel to fulfill the following roles will be designated at least 1 week prior to the start of the first monitoring events:

- Water Quality Monitoring Field Leader
- Monitoring personnel
- CQAO
- USEPA Project Coordinator – Sean Sheldrake (for receipt of reports)

Contact information for key personnel will be provided once personnel assignments have been made. All monitoring personnel in these roles will be experienced in the collection and measurement of water quality parameters.

The Water Quality Monitoring Field Leader is responsible for:

- Oversight of all water monitoring activities
- Verification that results are properly recorded and forms are completely filled out
- Verification that appropriate calibration and quality control and assurance procedures are conducted
- Notification to CQAO in the event that water quality triggers are exceeded
- Daily and weekly reporting of water quality results to USEPA's designated contact

Monitoring personnel are responsible for conducting the field activities, necessary calibrations, quality assurance and quality control procedures, and recording of results as directed by the Water Quality Monitoring Field Leader.

The CQAO is responsible for acting upon water quality information as provided by the Water Quality Monitoring Field Leader as necessary.

8 REFERENCES

American Water Works Association (AWWA). 1998. Standard Methods for the Examination of Water and Wastewater. 20th edition. American Public Health Association, Water Pollution Control Federation, Washington, DC, U.S.

Anchor Environmental, L.L.C. (Anchor). 2008a. Technical Memorandum re: *Supplemental Analysis and Rationale for the Proposed Turbidity Point of Compliance (100 Meters from the Mouth of Slip 3) Port of Portland—Terminal 4 Phase I Removal Action*. Submitted to Sean Sheldrake, USEPA; and John Malek and Ken Fellows, Parametrix. March 21, 2007.

Anchor. 2008b. Final Design Analysis Report: Terminal 4 Phase I Removal Action. Prepared for the Port of Portland by Anchor Environmental, L.L.C. June 2008.

U.S. Environmental Protection Agency (USEPA). 2001. Methods for Collection, Storage and Manipulation of Sediment for Chemical and Toxicological Analyses: Technical Manual. U.S. Environmental Protection Agency Office of Water, EPA-823-B-01-002, October 2001.

USEPA. 2003a. Administrative Order on Consent for Removal Action in the Matter of Portland Harbor Superfund Site, Terminal 4, Removal Action Area, Portland, Oregon.

USEPA. 2003b. Procedures for Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. Office of Research and Development, USEPA-600-R-02-013.

USEPA. 2006. National Recommended Water Quality Criteria. Office of Water. (http://www.epa.gov/waterscience/criteria/wqcriteria.html).

U.S. Geological Survey (USGS). 2006. National Water Information System Online Database, Station No. 14211720, Willamette River at Portland Oregon. (http://waterdata.usgs.gov/nwis/sw).

TABLES

Table 1
Water Quality Monitoring Parameters

Subarea	Construction Activity	Visual	Field Parameters				Analytical Lab Parameters[1]				
			Turbidity	Temperature	pH	Dissolved Oxygen (DO)	Total Suspended Solids (TSS)	Cadmium	Lead	Zinc	Polycyclic Aromatic Hydrocarbons (PAHs)
Slip 3	Dredging	X	X	X	X	X	X	X	X	X	X
	Capping	X	X	X	X	X	X	X	X	X	X
	Sand Layer Placement	X	X	X	X	X	X	X	X	X	X
Berth 414	Dredging	X	X	X	X	X	X				X
Berth 410	Dredging	X	X	X	X	X	X				X
Upland Transfer Location	Transport and transfer of Mechanically Dredged Sediment to Upland transfer location	X	X	X	X	X					
Wheeler Bay	Shoreline Stabilization	X	X[2]	X[2]	X[2]	X[2]					

Notes:

1 = Analytical lab parameters are based on Probable Effects Concentration (PEC) exceedances in sediment at depths that could be exposed during Terminal 4 Phase I Removal Action construction activities, plus additional parameters as directed by USEPA.

2 = Monitoring of field parameters in the Wheeler Bay subarea is specified in the event that construction extends into the water.

Table 2
Water Quality Criteria for Terminal 4 Phase I Removal Action Project

Parameter	Units	Narrative Standard[1]	Acute WQC[2]	Chronic WQC[3]	Willamette River BG[4]	Acute Guidance Value[5]	Chronic Guidance Value[5]
Conventional Parameters							
Turbidity	NTU	BG <50 NTU: BG + 5 NTU BG >50 NTU: BG + 5%	--	--	27	--	--
Total Suspended Solids (TSS)	mg/L	--	--	--	49	--	--
Dissolved Oxygen (DO)	mg/L	> 6.5	--	--	TBD	--	--
Metals[6]							
Cadmium	µg/L	--	0.5	0.09	0.05	--	--
Lead	µg/L	--	14	0.54	0.14	--	--
Zinc	µg/L	--	36	36	TBD	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)							
Naphthalene	µg/L	--	--	--	TBD	807	194
Acenaphthylene	µg/L	--	--	--	TBD	1277	307
Acenaphthene	µg/L	--	--	--	TBD	233	56
Fluorene	µg/L	--	--	--	TBD	162	39
Phenanthrene	µg/L	--	--	--	TBD	79	19
Anthracene	µg/L	--	--	--	TBD	87	21
Fluoranthene	µg/L	--	--	--	TBD	30	7.1
Pyrene	µg/L	--	--	--	TBD	42	10
Benzo(a)anthracene	µg/L	--	--	--	TBD	9.2	2.2
Chrysene	µg/L	--	--	--	TBD	8.3	2.0
Benzo(b)fluoranthene	µg/L	--	--	--	TBD	2.8	0.68
Benzo(k)fluoranthene	µg/L	--	--	--	TBD	2.7	0.64
Benzo(a)pyrene	µg/L	--	--	--	TBD	4.0	0.96
Indeno(1,2,3-cd)pyrene	µg/L	--	--	--	TBD	1.2	0.28
Dibenzo(a,h)anthracene	µg/L	--	--	--	TBD	1.2	0.28
Benzo(g,h,i)perylene	µg/L	--	--	--	TBD	1.8	0.44

Notes:

[1] Applies to all construction activities

[2] Compliance criterion during dredging and capping activities

[3] Trigger for construction BMPs during dredging and capping activities

[4] Initial values determined from USGS Station #14211720; to be updated with pre-construction measurements at Terminal 4

[5] Final Acute Values and Final Chronic Values from USEPA 2003

[6] Based on Willamette River hardness of 25 mg/L

TBD = To be determined based on results of background monitoring program

Table 3
Water Quality Monitoring Locations and Schedules

Construction Activity	Compliance Boundary	Standards for Compliance	Monitoring Activity and Frequency						Trigger to Switch from Tier I to Tier II
			Tier I (Intensive Schedule)			Tier II (Routine Schedule)			
			Visual	Field	Chemistry	Visual	Field	Chemistry	
Slip 3 Dredging	Turbidity: 100 meters from mouth of Slip Other Analytes: 100 meters from the construction activity	Acute Water Quality Criteria (Chronic critieria will be used as action levels for additional BMPs, not compliance)	1/ hr	1/hr; 1/ 4 hr[4]	1/ day[1]	1/ hr	1/ day[2, 3]	1/ week[1]	If results indicate no exceedances of chronic or acute criteria for 3 consecutive days, Port will propose reduction to USEPA.[5]
Slip 3 Capping	Turbidity: 100 meters from mouth of Slip Other Analytes: 100 meters from the construction activity	Acute Water Quality Criteria (Chronic critieria will be used as action levels for additional BMPs, not compliance)	1/ hr	1/hr; 1/ 4 hr[4]	1/ day[1]	1/ hr	1/ day[2, 3]	1/ week[1]	If results indicate no exceedances of chronic or acute criteria for 3 consecutive days, Port will propose reduction to USEPA.
Slip 3 Sand Layer Placement	Turbidity: 100 meters from mouth of Slip Other Analytes: 100 meters from the construction activity	Acute Water Quality Criteria (Chronic critieria will be used as action levels for additional BMPs, not compliance)	1/ hr	1/hr; 1/ 4 hr[4]	1/ day[1]	1/ hr	1/ day[2, 3]	1/ week[1]	If results indicate no exceedances of chronic or acute criteria for 3 consecutive days, Port will propose reduction to USEPA.
Berth 414 Dredging	Turbidity and Other Analytes: 100 meters from the construction activity	Acute Water Quality Criteria (Chronic critieria will be used as action levels for additional BMPs, not compliance)	1/ hr	1/hr; 1/ 4 hr[4]	1/ day[1]	1/ hr	1/ day[2, 3]	1/ week[1]	If results indicate no exceedances of chronic or acute criteria for 3 consecutive days, Port will propose reduction to USEPA.
Slip 3 B410 Dredging	Turbidity: 100 meters from mouth of Slip[6] Other Analytes: 100 meters from construction activity	Acute Water Quality Criteria (Chronic critieria will be used as action levels for additional BMPs, not compliance)	1/ hr	1/hr; 1/ 4 hr[4]	1/ day[1]	1/ hr	1/ day[2, 3]	1/ week[1]	If results indicate no exceedances of chronic or acute criteria for 3 consecutive days, Port will propose reduction to USEPA.
Transport and Transfer of Mechanically Dredged Sediment at Upland Transfer Location	100 meters downstream from transfer location	Field Parameter Standards	1/ hr	1/hr; 1/ 4 hr[4]	--	1/ hr	1/ day[2, 3]	--	If results indicate no exceedances of field parameter standards for 3 consecutive days, Port will propose reduction to USEPA.

Table 3
Water Quality Monitoring Locations and Schedules

Construction Activity	Compliance Boundary	Standards for Compliance	Monitoring Activity and Frequency						Trigger to Switch from Tier I to Tier II
			Tier I (Intensive Schedule)			Tier II (Routine Schedule)			
			Visual	Field	Chemistry	Visual	Field	Chemistry	
Wheeler Bay Shoreline Stabilization	Field Parameters: 100 meters from construction activity	Field Parameter Standards	1/ hr	--	--	1/ 4 hr	1/hr; 1/ 4 hr	--	Tier I monitoring will be performed throughout construction. Tier II monitoring will be performed in the event that construction occurs in the water.

Notes:

1. Tier I samples will be taken at the surface, middle, and bottom depths at the compliance station with the highest turbidity readings.
2. Contingent monitoring for field parameters is implemented if visual plume observed.
3. May be reduced to 1 per week with USEPA approval.
4. Field parameters will be measured at the start of each new activity at least once every hour beginning 1 hour after active in-water work begins. This frequency will continue until four consecutive hourly events indicate no exceedance of any parameters. If no exceedance is identified following four consecutive hourly events, the sampling frequency will be reduced to once every 4 hours.
5. The Port will continue to take samples of COC's, but these samples will not be analyzed until the results from Days 1-3 are available (starting on Day 4).
6. When dredging occurs outside of the Harbor Line, the compliance boundary for turbidity will be 100 meters from the construction activity.

Table 4
Analytical Parameters and Methods

Parameter	Method	Criteria	Target Detection Limit	Target Reporting Limit	Units
Field Parameters					
Turbidity	Field Probe	BG+5%, BG+5 NTU	0.05	1.0	NTU
Dissolved Oxygen (DO)	Field Probe	>6.5 mg/L	0.1	1.0	mg/L
Chemical Analytical Parameters					
Total suspended solids	USEPA 160.2	N/C	1.0	-	mg/L
Cadmium	USEPA 200.8	0.09[1]	0.02	0.2	µg/L
Lead	USEPA 200.8	0.54[1]	0.15	1.0	µg/L
Zinc	USEPA 200.8	36[1]	1.05	4.0	µg/L
Polycyclic Aromatic Hydrocarbons (PAHs)	USEPA 8270C	0.3 - 300[2]	Varies	0.1	µg/L

Notes:

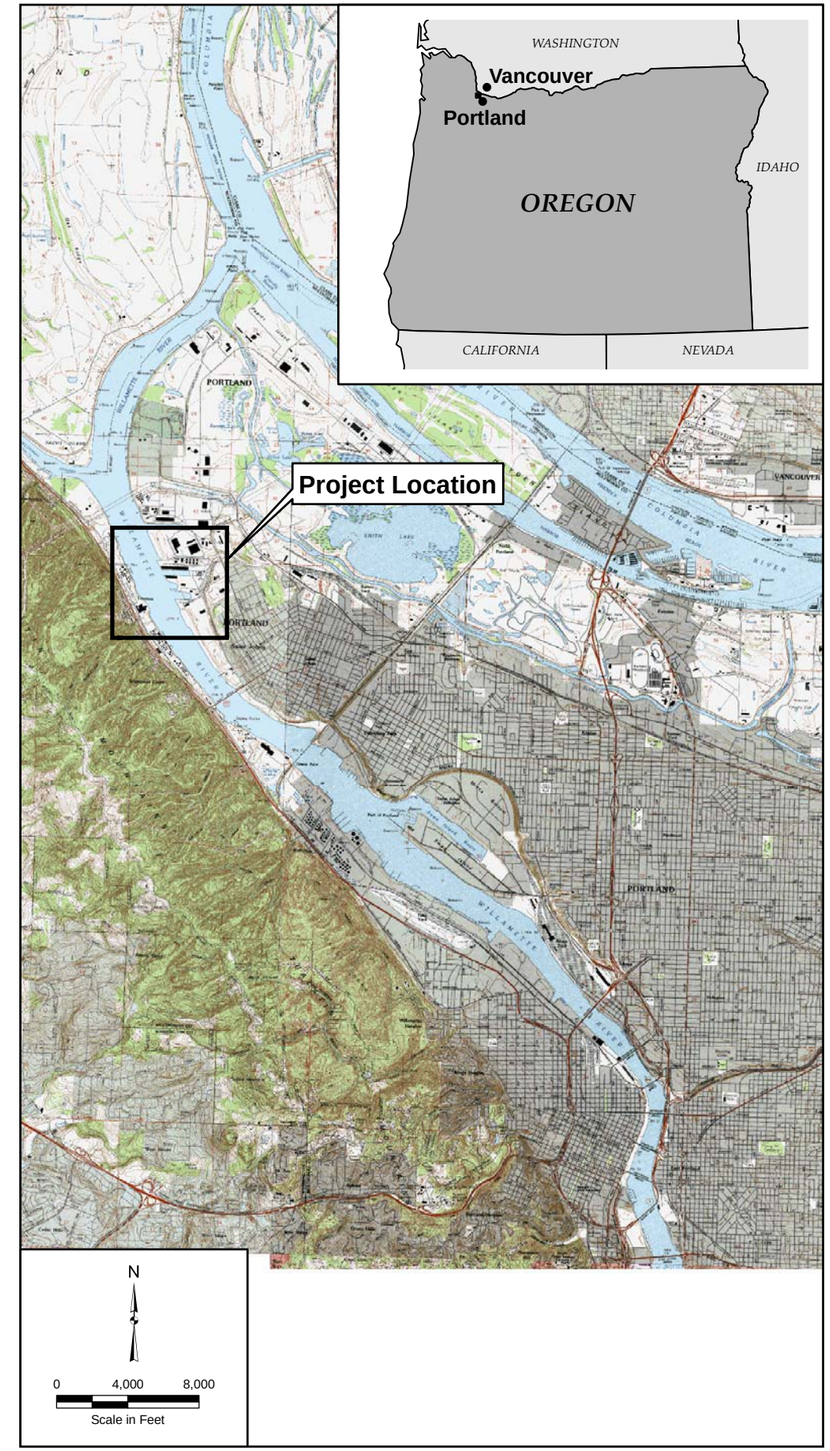
N/C = No Criterion

NTU = Nephelometric Turbidity Units

[1] Chronic ambient water quality criteria (used for BMP evaluation trigger)

[2] Chronic water quality guidance value

FIGURES

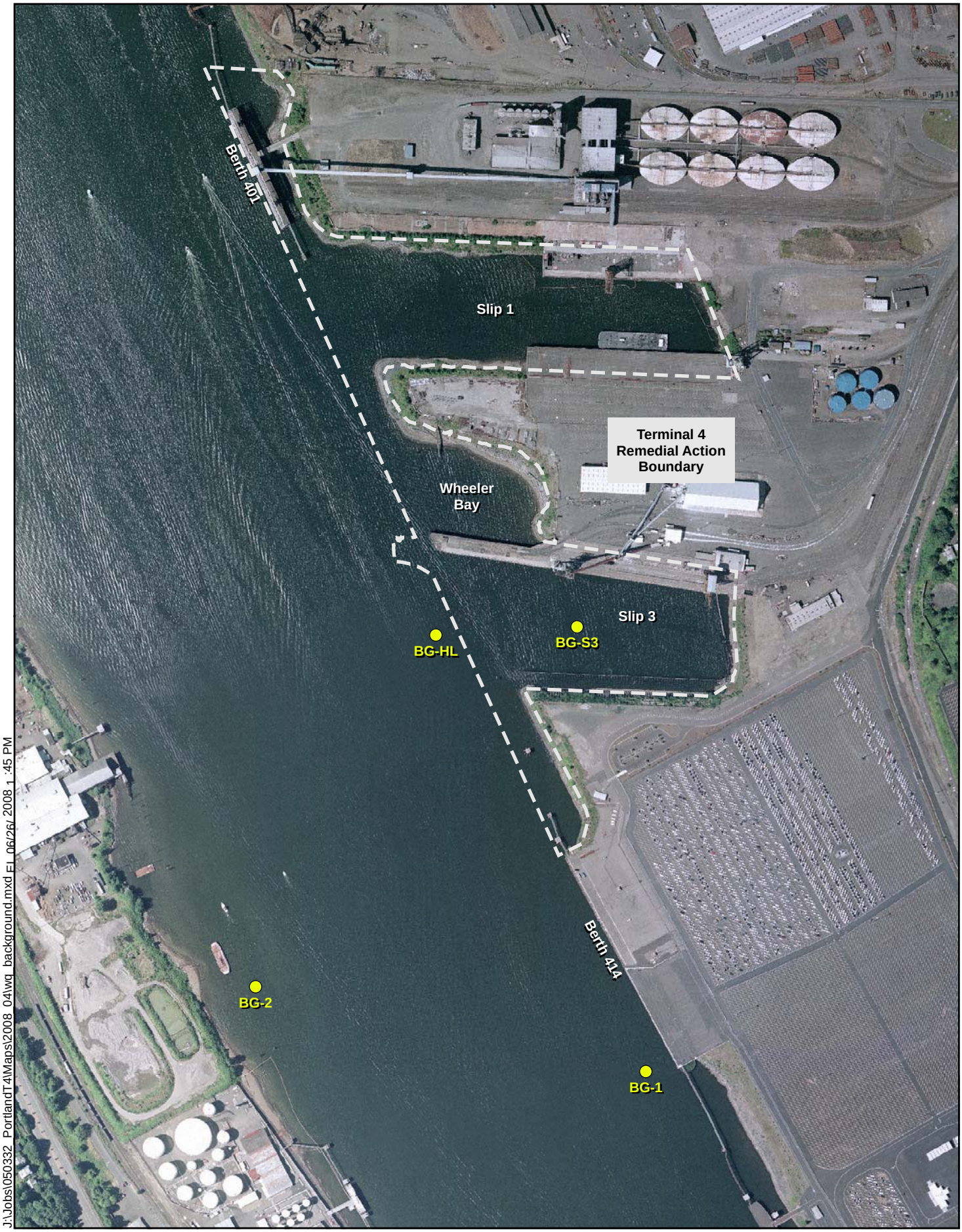


J:\Jobs\050332_Portland\T4\Maps\2008_04\wq_vicinity_map.mxd EI 06/26/2008 1:45 PM

ANCHOR ENVIRONMENTAL, L.L.C.

Notes:
1. High resolution imagery dated July 2005.

Figure 1
Vicinity Map
Terminal 4 Phase I Removal Action
Portland, Oregon



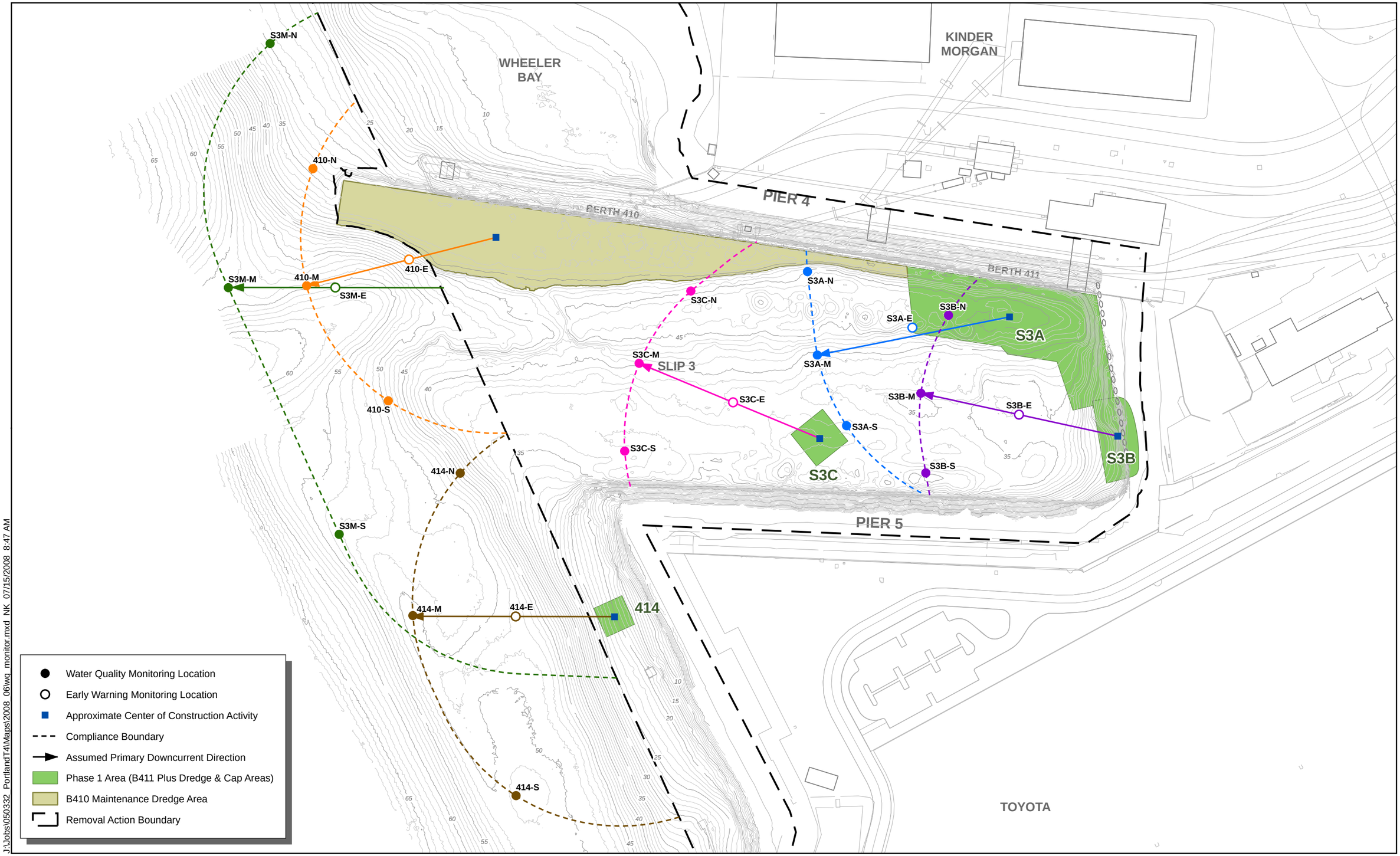
J:\Jobs\050332_PortlandT4\Maps\2008_04\wq_background.mxd FL 06/26/2008 1:45 PM

ANCHOR ENVIRONMENTAL, L.L.C.

0 250
Scale in Feet

Bathymetry and base map from
Port of Portland, 2006.
Bathymetric elevations in feet NGVD.

Figure
Proposed Water Quality Background Samples
Terminal 4 Phase I Removal Action
Portland, Oregon



ANCHOR ENVIRONMENTAL, L.L.C.

0 150
Scale in Feet

Notes:
Slip 3 water quality monitoring (except for turbidity) will occur 100 meters from the actual location of construction activities. Compliance boundaries shown may not be representative of the actual location.
The point of compliance is 100 meters from the center of the construction activities (except for turbidity).

Bathymetry and base map from Port of Portland, 2007.
Bathymetric elevations in feet NGVD.

Figure 3
Proposed Water Quality Monitoring Stations
Terminal 4 Phase I Removal Action
Portland, Oregon

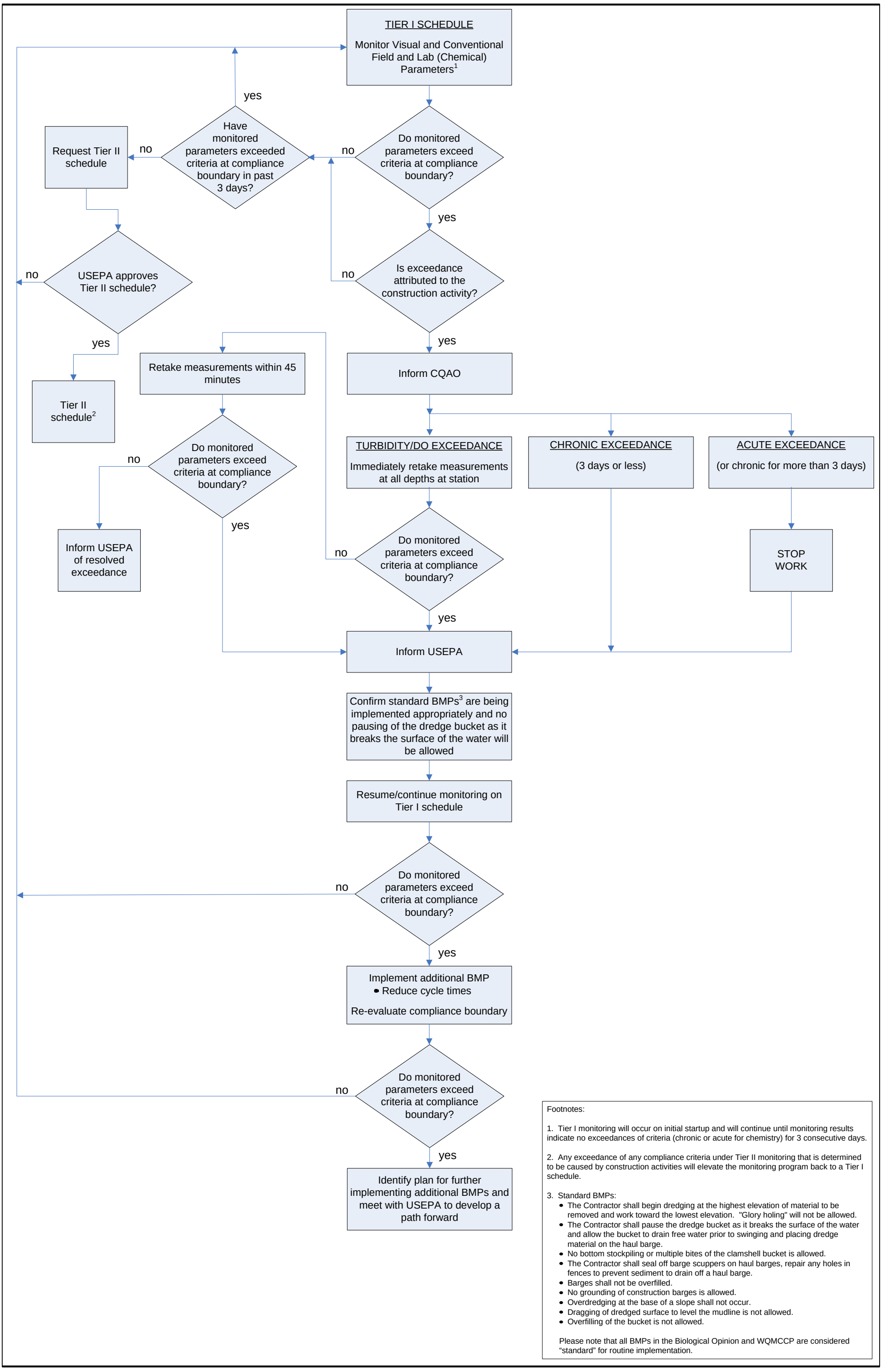


Figure 4
Contingency Response Action Decision Tree
Terminal 4 Phase I Removal Action
Portland, Oregon

ATTACHMENT H-1

WATER QUALITY MONITORING FORM

ANCHOR ENVIRONMENTAL, L.L.C.

1423 3rd Ave., Suite 300
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287-9131
www.anchorenv.com

Water Quality Monitoring Form

Station ID:		**Date:**	**Time:**
Project Name:		**Project Number:**	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	
Weather/River Stage/Flow Observations: Status/Description of Operation at Time of Sampling:			
Depth to Bottom: _____ (m)			
	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: ____ (m)			
Depth 2: ____ (m)			
Depth 3: ____ (m)			
Other:			
Evidence of floating or suspended materials:			
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)			
Discoloration and Turbidity:			
Velocity at stated depth:			
Color:			
Odor:			
Other Observations:			
Comments:			
Recorded by:		Other Monitoring Personnel:	

APPENDIX F
QUALITY ASSURANCE PROJECT PLAN (QAPP)

(Appendix I from Anchor 2008a)

APPENDIX I

QUALITY ASSURANCE PROJECT PLAN

TERMINAL 4 PHASE I REMOVAL ACTION
PORT OF PORTLAND, PORTLAND OREGON

Prepared for

Port of Portland

Portland, Oregon

Prepared by

Anchor Environmental, L.L.C.

6650 SW Redwood Lane, Suite 333

Portland, Oregon 97224-7192

June 30, 2008

Table of Contents

1 INTRODUCTION 1

2 PROJECT ORGANIZATION AND RESPONSIBILITIES 2
2.1 Technical Project Manager 2
2.2 Project Quality Assurance Manager 2
2.3 Project Chemist 2
2.4 Chemistry Laboratory Project Manager 3
2.5 Distribution List 4
2.6 Special Training Requirements/Certification 4

3 DATA QUALITY OBJECTIVES 5
3.1 Data Use and Type 5
3.1.1 Data Use 5
3.2 Measurement Quality Objectives for Chemical Data 6

4 ANALYTICAL METHODS 7
4.1 Reporting Limits 8

5 SAMPLE HANDLING, CHAIN-OF-CUSTODY, AND RECEIPT 9
5.1 Sample Containers, Preservation, and Holding Time Requirements 9
5.2 Sample Packing, Handling, and Shipping 9
5.3 Sample Receipt 10

6 QUALITY ASSURANCE PROCEDURES 12
6.1 Preventive Maintenance 12
6.2 Calibration Procedures and Frequency 12
6.3 Laboratory Quality Control Requirements 13
6.3.1 Quality Assurance Indicators 13
6.3.2 Precision 13
6.3.3 Accuracy 14
6.3.4 Representativeness 15
6.3.5 Comparability 15
6.3.6 Completeness 16
6.4 Field Quality Control Checks 16
6.4.1 Field Equipment Blanks 16
6.4.2 Field Duplicates 16
6.5 Analytical Laboratory Quality Control Checks 16
6.5.1 Method Blanks 17
6.5.2 Laboratory Control Samples 17
6.5.3 Matrix Spike/Matrix Spike Duplicate 18
6.5.4 Surrogate Spikes 18
6.5.5 Laboratory Duplicates 18
6.5.6 Calibration Standards 19

6.5.7 Reference Standards/Control Samples 19

7 DATA MANAGEMENT 20
7.1 Sample Management 20
7.2 Data Reporting 20
7.3 Data Management Procedures 21
7.3.1 Laboratory Turnaround Time 22
7.3.2 Archival/Retention Requirements 22

8 DATA ASSESSMENT PROCEDURES 23
8.1 Data Quality Control Review 23
8.2 Data Evaluation and Verification 23

9 LABORATORY AUDITS AND CORRECTIVE ACTIONS 26
9.1 Laboratory and Field Performance Audits 26
9.2 Corrective Action Procedures 26
9.2.1 Corrective Action for Field Sampling 26
9.2.2 Corrective Action for Laboratory Analyses 26

10 REFERENCES 28

List of Tables

Table 1 Analytical Extraction/Cleanup Methods, Test Methods, and Reporting Limit Goals for Soil and Sediment Samples
Table 2 Analytical Test Methods and Reporting Limit Goals for Borrow Source Samples
Table 3 Analytical Test Methods and Reporting Limit Goals for Water Samples
Table 4 Soil, Sediment, and Water Sample Container, Preservation, and Holding Times

1 INTRODUCTION

This quality assurance project plan (QAPP) describes the quality assurance and quality control (QA/QC) procedures that will be implemented as part of the construction phase for the Port of Portland's (Port's) Terminal 4 Phase I Removal Action. The purpose of the QAPP is to ensure that the data generated are of sufficient quality to meet the sampling objectives as described in the Design Analysis Report (DAR) and Construction Quality Assurance Plan (CQAP; Appendix A to the DAR). This QAPP was prepared in accordance with the U.S. Environmental Protection Agency's (USEPA's) Requirements for Quality Assurance Project Plans (USEPA 2001a), USEPA Guidance for Quality Assurance Project Plans (USEPA 1998), and USEPA Requirements for Quality Management Plans (USEPA 2001b). Chemistry analytical laboratory work will be performed in accordance with the specified analytical methods, the data quality objectives (DQOs), and this QAPP. The QAPP should be reviewed with the sampling and analysis plan (SAP; Appendix H to the DAR).

2 PROJECT ORGANIZATION AND RESPONSIBILITIES

2.1 Technical Project Manager

Mr. Tom Schadt is the Technical Project Manager and will work in conjunction with the Port's overall Project Manager, Ms. Anne Summers. Mr. Schadt will be responsible for overall project coordination, including review of procedures and documents relative to contractual commitments. Mr. Schadt will also be responsible for coordinating these tasks with the Project QA Manager, Project Chemist, Field Manager, and Health and Safety Officer. Mr. Schadt can be reached at:

Anchor Environmental, L.L.C.
1423 Third Avenue, Suite 300
Seattle, WA 98101
(206) 287-9130
tschadt@anchorenv.com

2.2 Project Quality Assurance Manager

Ms. Susan Snyder is the Project QA Manager. Ms. Snyder will be responsible for ensuring data quality for all sample collection efforts and supervising project quality assurance coordination. Ms. Snyder's responsibilities and duties include:

- Ensuring data of known and acceptable quality are generated
- Supervising the group that reviews and inspects all project-related laboratory activities
- Conducting audits of all laboratory activities

Ms. Snyder can be reached at:

Anchor Environmental, L.L.C.
1423 Third Avenue, Suite 300
Seattle, WA 98101
(206) 287-9130
ssnyder@anchorenv.com

2.3 Project Chemist

Dr. Todd Thornburg is the Project Chemist. Dr. Thornburg will be responsible for ensuring that all chemistry-related goals are attained and that sample collection and analytical

activities are implemented in accordance with the SAP and QAPP. Dr. Thornburg can be reached at:

Anchor Environmental, L.L.C.
6650 SW Redwood Lane, Suite 333
Portland, OR 97224
(503) 670-1108 X18
tthornburg@anchorenv.com

2.4 Chemistry Laboratory Project Manager

The contract chemistry laboratory for this project will be a qualified analytical laboratory with demonstrated expert capability in sediment and water chemistry analysis. Final selection of the laboratory and laboratory personnel is subject to the approval of the Project QA Manager and the Port. A back-up laboratory may be identified once the Phase I Removal Action construction sequencing is finalized. If additional analytical capacity is needed, this QAPP will be revised to include the requirements, responsibilities, and duties of the back-up laboratory.

The contract laboratory is expected to meet the following minimum requirements:

- Adhere to the methods outlined in the QAPP, including methods referenced for each analytical procedure
- Deliver fax, hard copy, and electronic data as specified
- Meet reporting requirements for deliverables
- Meet turnaround times for deliverables
- Implement QA/QC procedures, including the QAPP data quality requirements, laboratory analysis plan requirements, and performance evaluation testing requirements
- Allow laboratory and data audits to be performed, if deemed necessary
- Follow documentation, chain-of-custody (COC), and sample logbook procedures

Once the analytical laboratory is chosen, a Chemistry Laboratory Project Manager will be named. The Chemistry Laboratory Project Manager will provide analytical support to this project and will be responsible for ensuring that all laboratory analyses meet the project

DQOs and other specifications detailed in the SAP/QAPP. The Chemistry Laboratory Project Manager's responsibilities and duties include:

- Serving as primary communication link between Anchor and laboratory technical staff
- Monitoring workloads and ensuring availability of resources
- Overseeing preparation of analytical reports
- Supervising in-house COC

The Chemistry Laboratory Project Manager's contact information will be provided after the analytical laboratory has been selected.

2.5 Distribution List

The SAP and QAPP will be distributed to the USEPA and its team members as required in the Administrative Order on Consent (AOC). The SAP and QAPP will also be distributed to the Port, the Project Manager, Project QA Manager, Project Chemist, Chemistry Laboratory Project Manager, all field team members, and subcontractors.

2.6 Special Training Requirements/Certification

Training requirements are presented in Section 7 of the Health and Safety Plan (Appendix J to the DAR).

3 DATA QUALITY OBJECTIVES

DQOs (USEPA 2000) provide a qualitative and quantitative framework and series of planning steps based on the scientific method around which data collection programs can be designed. The use of DQOs ensures that:

- The objectives of the investigation are clearly defined.
- The type, quantity, and quality of environmental data used in decision making are appropriate for their intended application.
- Acceptable levels of decision error and performance goals are specified, such that the quantity and quality of data needed to support management decisions are provided.

The DQOs are further described below.

3.1 Data Use and Type

3.1.1 Data Use

Data collected for the construction phase will be used to assess and document the implementation of construction activities. The most important data needs for evaluating the construction activities are listed below.

For dredging:

- Confirm compliance with water quality standards during dredging
- Confirm post-dredge surface concentrations in the Berth 411 "Plus" dredge areas

For capping:

- Confirm that the thickness of each cap area meets project specifications
- Confirm compliance with water quality standards during placement of cap material

For the transloading facility:

- Confirm compliance with Transportation and Disposal Plan (Appendix F to the DAR) specifications

3.2 Measurement Quality Objectives for Chemical Data

Reporting limit goals for sediment and water are presented in Tables 1 and 3, respectively.

The measurement of quality objectives for the chemistry data will assess precision, accuracy, representativeness, comparability, and completeness of the data (as detailed in Section 6.3 of this document). Laboratory-generated control limits will be used to assess analytical performance with regard to precision and accuracy. Data representativeness will be addressed by the sample quantities and locations identified in the DAR, Water Quality Monitoring Plan (Appendix B to the DAR), and SAP (Appendix H to the DAR). Data comparability will be achieved through the use of standard USEPA-approved methods. Data completeness will be assessed at the conclusion of analytical activities.

4 ANALYTICAL METHODS

Sampling will be performed in accordance with the methods presented in the SAP (Appendix H to the DAR). Soil samples will be submitted for chemical analysis of Terminal 4 constituents of potential concern (COPCs) including:

- Total metals (cadmium, lead and zinc) by USEPA Method 6000/7000
- Semivolatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs) and phthalates, by USEPA Method 8270C–selected ion monitoring (SIM)
- Total petroleum hydrocarbons (diesel-range and heavy oil-range) by NWTPH-D

Sediment samples will be submitted for chemical analysis of COPCs including:

- Total metals (cadmium, lead, and zinc) by USEPA Method 6000/7000
- SVOCs, including PAHs and phthalates, by USEPA Method 8270C–SIM
- Total petroleum hydrocarbons (diesel-range and heavy oil-range) by NWTPH-D
- Polychlorinated biphenyls (PCBs) by USEPA Method 8082
- Pesticides by USEPA Method 8081A
- Total solids be USEPA 160.3

Borrow source samples will be submitted for chemical analysis of:

- Total organic carbon (TOC) by SM 5310B
- Grain size by ASTM D422-63
- Moisture content by ASTM D2216
- Metals by USEPA Methods 6020 and 7471A
- Total petroleum hydrocarbons – heavy oil-range by NWTPH-DX
- Total petroleum hydrocarbons – diesel-range by NWTPH-DX
- SVOCs by USEPA Method 8270
- PCBs by USEPA Method 8082
- Pesticides by USEPA Method 8081

Surface water samples will be submitted for chemical analysis of COPCs including:

- Dissolved metals (cadmium, lead and zinc) by USEPA Method 200.8
- Priority PAHs by USEPA Method 8270C–SIM
- Total suspended solids (TSS) by USEPA Method 160.2

Table 1 presents the methods of analysis and reporting limit goals for soil and sediment samples. Table 2 presents the methods of analysis and reporting limit goals for borrow source samples. Table 3 presents the methods of analysis and reporting limit goals for water samples. The laboratory standard operating procedure (SOP) provided by the contracted analytical laboratory will describe the chemical analytical procedures in detail. These SOPs will be maintained in the analytical laboratory's file.

Based on the project DQOs, the level of support requested of the laboratory will be Level IV, as described by USEPA (1987). Level IV consists of using standard and modified standard methods with sufficient documentation to enable full validation of the data.

4.1 Reporting Limits

In general, reporting limit goals for sediment are based on dry weight and assume 50 percent total solids content in the sediment samples. If the total solids content is less than 50 percent, sample reporting limits will increase. Interferences in individual samples may also result in increased reporting limits. To achieve the required low reporting limits, some modifications to the methods may be necessary. These modifications from standard SW846 methodology protocol will be provided by the laboratory at the time of sample submittal, and any modifications to the methods will be documented in the case narrative that accompanies the final report.

5 SAMPLE HANDLING, CHAIN-OF-CUSTODY, AND RECEIPT

Sample documentation is a critical aspect of environmental investigations. Sample possession and handling must be traceable from the time of sample collection, through laboratory and data analysis, to the time sample results are potentially introduced as evidence. A sample log form and field logbook entries will be completed for each location occupied and each sample collected. Documentation procedures for sampling are provided in greater detail in the SAP (Appendix H to the DAR).

5.1 Sample Containers, Preservation, and Holding Time Requirements

Pre-cleaned, certified sample containers, which will be provided by the contract analytical laboratory, must be used for all sediment and water samples that will be analyzed by the laboratory. Specific types and sizes of containers for each parameter, as well as holding time and preservation requirements, are listed in Table 4.

Sample containers for conventional parameters, metals, and organics will be cleaned to USEPA protocols. Certifications attesting to the cleanliness of pre-cleaned containers are required for containers used for organic analyses and will be maintained in the project file.

Sample custody seals and packing materials for filled sample containers will be provided by the analytical laboratory. The filled, labeled, and sealed containers will be placed in a cooler on ice (see below) and carefully packed to eliminate the possibility of container breakage.

5.2 Sample Packing, Handling, and Shipping

Sample packaging and shipment procedures are designed to ensure that the samples will arrive at the laboratory with the COC intact.

Samples will be packaged for shipment as outlined below:

1. Ensure that sample labels are securely affixed to sample containers with clear packing tape.
2. Check the caps on the sample containers to ensure that they are properly sealed.
3. Wrap sample container caps with clear packing tape to prevent them from loosening.
4. Complete the COC form with the required sampling information and ensure that the recorded information matches the sample labels. NOTE: If the designated sampler

relinquishes the samples to other sampling or field personnel for packing or other purposes, the sampler will complete the COC prior to this transfer. The appropriate personnel will sign and date the COC form to document the sample custody transfer. If multiple coolers are shipped at one time, a separate COC should be prepared for each cooler.

5. Using duct tape, secure the outside drain plug at the bottom of the cooler.
6. Wrap sample containers in bubble wrap or other cushioning material.
7. Place 1 to 2 inches of cushioning material at the bottom of the cooler.
8. Place the sealed sample containers and a temperature blank in the cooler.
9. Place ice in plastic bags and seal. Place the ice-filled bags loosely in the cooler.
10. Fill the remaining space in the cooler with cushioning material.
11. Place COC forms in plastic bags and seal. Tape the forms to the inside of the appropriate cooler lid.
12. Close, lock, and secure the cooler lid with duct tape.
13. Wrap strapping tape around both ends of the cooler at least twice.
14. Mark the cooler on the outside with the following information: shipping address, return address, "Fragile" labels, and arrows indicating “this side up.” Cover the labels with clear plastic tape. Place a signed custody seal over the cooler lid.

Samples will be packaged by the field personnel and transported as low-concentration environmental samples. The samples will either be delivered by an express carrier or will be picked up by a laboratory courier. Shipments will be accompanied by the COC form identifying the contents. The original form will accompany the shipment; copies will be retained by the sampler for the sampling office records. If the samples are sent by common carrier, a bill of lading will be used. Receipts or bills of lading will be retained as part of the permanent project documentation. Commercial carriers are not required to sign off on the COC form as long as the forms are sealed inside the sample coolers and the custody seals remain intact.

5.3 Sample Receipt

All samples received at the laboratory will be carefully checked for label identification and complete, accurate COC documentation. The condition of the samples will be checked, and the temperature blank will be measured and recorded (with a calibrated digital thermometer) immediately after the cooler is opened. These results, along with any

questions or comments regarding sample integrity, will be recorded on the COC form (or the appropriate laboratory cooler receipt form). The laboratory will contact Anchor immediately if discrepancies between the samples and COC records are found upon receipt. If it is necessary for the receiving laboratory to ship samples to other laboratories, the COC form will be completed and will accompany the samples. A copy of the COC form (and cooler receipt form) will be faxed to Anchor on the day the samples were received and included in the final analytical data report.

Once received at the laboratory, the samples will be maintained at 4 ± 2°C, unless it is required that the samples be held at a lower temperature (not less than -20 ± 10°C) to extend their holding time.

If a sample container is received broken, a sample is received in an inappropriate container, or a sample has not been preserved by appropriate means, the laboratory will notify Anchor as soon as possible on the day of sample receipt. The laboratory sample custodian will be responsible for logging the samples in, assigning a unique laboratory identification number to each sample, labeling each sample bottle with its laboratory identification number, and moving the samples to appropriate storage locations to await analysis. The project name, field sample code, date sampled, date received, analysis required, storage location and date, and action for final disposition will be recorded in the laboratory tracking system. Relevant custody documentation will be placed in the project file.

6 QUALITY ASSURANCE PROCEDURES

6.1 Preventive Maintenance

Preventive maintenance of laboratory equipment generally will follow the guidelines recommended by the manufacturer. A malfunctioning instrument will be repaired immediately by in-house staff or through a service call to the manufacturer. If the instrument malfunction is of a nature to impact the project's turnaround time, this must be communicated to the Anchor Project QA Manager as soon as the malfunction is discovered so that contingencies for analysis can be coordinated.

Maintenance schedules for laboratory equipment will adhere to the manufacturers' recommendations. Records will reflect the complete history of each instrument and specify the time frame for future maintenance. Major repairs or maintenance procedures will be performed through service contracts with manufacturers or qualified contractors. Paperwork associated with service calls and preventive maintenance calls will be kept on file by the laboratory.

Laboratory systems managers are responsible for the routine maintenance of instruments used in a particular laboratory. Any routine preventive maintenance carried out is logged into the appropriate logbooks. Routine and non-routine maintenance schedules and procedures will be performed in accordance with the laboratory's quality assurance manual.

All major instruments will be backed up by comparable (if not equivalent) instrument systems in the event of unscheduled downtime. An inventory of spare parts will also be available to minimize equipment/instrument downtime.

6.2 Calibration Procedures and Frequency

When analyses are conducted according to USEPA methods, the calibration procedures and frequencies specified in the applicable method will be followed. For analyses governed by SOPs, see the appropriate laboratory SOP for the required calibration procedures and frequencies. Records of calibrations will be filed and maintained by the laboratory. These records will be subject to QA audit. For all instruments, the laboratory will maintain trained repair staff and in-house spare parts or will maintain service contracts with vendors.

All standards used in the calibration of equipment will be traceable, directly or indirectly, to the National Institute of Standards and Technology, Environmental Resource Associates, National Research Council of Canada, or other documented, reliable, commercial sources. All standards received shall be logged into standard receipt logs maintained by the individual analytical groups. Each group shall maintain a standards log that tracks the preparation of standards used for calibration and QC purposes.

6.3 Laboratory Quality Control Requirements

6.3.1 Quality Assurance Indicators

The overall QA objective of this QAPP is to develop and implement procedures for sampling, COC, laboratory analysis, instrument calibration, data reduction and reporting, internal quality control, audits, preventive maintenance, and corrective action such that valid data will be generated. These procedures are presented or referenced in the following sections of the QAPP. Specific QC checks are discussed in Section 6.5 of this document.

Quality assurance indicators are generally defined in terms of five parameters:

- Precision
- Accuracy
- Representativeness
- Comparability
- Completeness

Each parameter is defined below. Specific sampling objectives for the Phase I Removal Action are set forth in other sections of this QAPP as referenced below.

6.3.2 Precision

Precision is a measure of the reproducibility of sample results. The goal is to maintain a level of analytical precision consistent with the objectives of the action. To maximize precision, sampling and analytical procedures will be followed. All work for this project will adhere to established protocols as presented in the QAPP. Analytical precision will be measured through matrix spike/matrix spike duplicates (MS/MSDs) and laboratory control sample/laboratory control sample duplicates (LCS/LCSDs) for organic analyses

and through laboratory duplicate samples and MS for inorganic analyses. Analytical precision measurements will be carried out on project-specific samples at a minimum frequency of one per laboratory analysis group or one in 20 samples, whichever is more frequent, per matrix analyzed. Laboratory precision will be evaluated against laboratory control limits established under the USEPA method for that analysis.

Field precision will be evaluated by the collection of blind field duplicates at a frequency of 10 percent. Field duplicate precision will be screened against a relative percent difference (RPD) of 50 percent for water samples and 75 percent for sediment samples.

The equation used to express precision is:

$$RPD = \frac{(A-B)}{(A+B)\ /2} \times 100$$

Where:

A = Analytical result from one of two duplicate measurements

B = Analytical result from the second measurement

Precision will generally be evaluated against laboratory control limits. Precision measurements can be affected by how close a chemical concentration is to the reporting limit, which can increase the percent error (expressed as RPD). When a sample or duplicate concentration is within five times the reporting limit, alternative control limits recommended by the USEPA (1999, 2002) of +/- the reporting limit for water samples and two times +/- the reporting limit for sediment samples will be used.

6.3.3 Accuracy

Accuracy is a measure of how close a measured result is to the true value. Both field and analytical accuracy will be monitored through initial and continuing calibration of instruments. In addition, reference standards, MS, blank spikes, LCS, and surrogate standards will be used to assess the accuracy of the analytical data. Accuracy measurements on MS samples will be carried out at a minimum frequency of one in 20 samples per matrix analyzed. Because MS/MSDs measure the effects of potential matrix interferences for a specific matrix, the laboratory will perform MS/MSDs only on project-

specific samples. Surrogate recoveries will be determined for every sample analyzed for organics.

Laboratory accuracy will be evaluated against laboratory control limits established under the USEPA method for that analysis. Accuracy can be expressed as a percentage of the true or reference value, or as a percent recovery in those analyses where reference materials are not available and spiked samples are analyzed. The equation used to express accuracy is:

$$\text{Percent Recovery} = \frac{A-X}{B} \times 100$$

Where:

A = Value measured in spiked sample or standard

X = Value measured in original sample

B = True value of amount added to sample or true value of standard

6.3.4 Representativeness

Representativeness is the degree to which sampling data accurately and precisely represent conditions in, for this project, the Removal Action Area. Representativeness is dependent on sampling and analytical variability and the variability of environmental media. The SAP (Appendix H to the DAR) has been designed to assess the presence of the chemical constituents at the time of sampling and presents the rationale for sample quantities and sampling locations. In addition, the use of the prescribed field and laboratory analytical methods, with their associated holding times and preservation requirements, is intended to provide representative data.

6.3.5 Comparability

Comparability is the degree of confidence with which one data set can be compared to another. Comparability will be maintained through consistent use of the sampling and analytical methodologies set forth in this QAPP and through the use of established QA/QC procedures and appropriately trained personnel.

6.3.6 Completeness

Completeness is defined as a measure of the amount of valid data obtained from an event or investigation compared to the total amount that was obtained. Completeness will be calculated as follows:

C = [(number of acceptable data points) x 100]/(total number of data points collected)

The DQO for completeness for all components of this project is 90 percent. Data qualified as estimated because the QC criteria were not met will be considered valid for the purpose of assessing completeness. Data that have been qualified as rejected will not be considered valid for the purpose of assessing completeness.

6.4 Field Quality Control Checks

Field QC samples will be analyzed to identify possible problems resulting from sample collection or sample processing in the field. All field QC samples will be documented in the field logbook and verified by the Project QA Manager or designee.

6.4.1 Field Equipment Blanks

Field equipment blanks are used to determine whether cross contamination has occurred during sampling. A minimum of one rinsate blank of the coring or grab sample device will be submitted for each 20 cores or grabs collected. No rinsate blank will be required for surface water samples because dedicated equipment will be used.

6.4.2 Field Duplicates

For sediment samples, a minimum of one field duplicate will be collected per 20 samples submitted for analysis. Field duplicates for surface water samples will be collected at the same frequency.

6.5 Analytical Laboratory Quality Control Checks

Internal laboratory QC checks will be used to monitor data integrity. These checks will include method blanks, MSs (and MSDs), LCSs (and LCSDs), spike blanks, internal standards, surrogate samples, calibration standards, and reference standards. Laboratory

control limits will be used to evaluate MS/MSD, LCS/LCSD, and surrogate recoveries. Laboratory control charts will be used to determine long-term instrument trends.

Results of QC samples from each sample group will be reviewed by the analyst immediately after a sample group has been analyzed. The QC sample results will then be evaluated to determine whether control limits have been exceeded. If control limits are exceeded in the sample group, the Project QA Manager will be contacted immediately, and corrective action (e.g., method modifications followed by reprocessing of the affected samples) will be initiated prior to processing a subsequent group of samples.

All primary chemical standards and standard solutions used in this project will be traceable to the National Institute of Standards and Technology, Environmental Resource Associates, National Research Council of Canada, or other documented, reliable, commercial sources. Standards will be validated to determine their accuracy by comparison with an independent standard. Any impurities found in a standard will be documented.

6.5.1 Method Blanks

Sources of contamination in the analytical process, whether specific analyses or interferences, need to be identified, isolated, and corrected. The method blank is useful in identifying possible sources of contamination within the analytical process. For this reason, it is necessary that the method blank be initiated at the beginning of the analytical process and encompass all aspects of the analytical work so that the method blank can assist in accounting for any potential contamination attributable to glassware, reagents, instrumentation, or other sources. One method blank will be analyzed with each analytical series associated with no more than 20 samples.

6.5.2 Laboratory Control Samples

LCS will be used; they will either be developed and spiked by the laboratory, or laboratory standards will be used.

6.5.3 Matrix Spike/Matrix Spike Duplicate

Site-specific MS/MSDs will be used to measure the accuracy of analyte recovery from the sample matrices. Matrix spike duplicate pairs will be analyzed at a frequency of 5 percent (every 20 samples or once every week, whichever comes first).

When MS recoveries are outside QC limits, associated control sample and surrogate spike recoveries will be evaluated, as applicable, to attempt to verify the reason for the deviation and determine the effect on the reported sample results.

6.5.4 Surrogate Spikes

Surrogates are compounds that are unlikely to occur under natural conditions and that have properties similar to the analytes of interest. Surrogates are added to the samples prior to purging or extraction and are primarily used for organic samples analyzed by gas chromatography/mass spectrometry and gas chromatography methods. The surrogate spike provides broader insight into the proficiency and efficiency of an analytical method on a sample-specific basis. This control reflects analytical conditions that may not be attributable to the sample matrix. All project samples analyzed for organic compounds will be spiked with appropriate surrogate compounds as defined in the analytical methods.

If surrogate spike recoveries exceed specified QC limits, then the analytical results will be evaluated thoroughly in conjunction with other control measures. In the absence of other control measures, the integrity of the data may not be verifiable and reanalysis of the samples with additional control may be necessary.

Surrogate spike compounds will be selected on the basis of guidance provided in the analytical methods.

6.5.5 Laboratory Duplicates

For inorganic analyses, laboratory duplicates will be analyzed to assess laboratory precision. A laboratory duplicate is defined as a separate aliquot of an individual sample that is analyzed as a separate sample.

6.5.6 Calibration Standards

Calibration check standards analyzed within a particular analytical series provide insight regarding instrument stability. A calibration check standard will be analyzed at the beginning and end of an analytical series and periodically throughout a series that contains a large number of samples.

In general, calibration check standards will be analyzed after every 12 hours, or more frequently as specified in the applicable analytical method. If results of the calibration check standard exceed specified tolerances, then samples analyzed since the last acceptable calibration check standard will be reanalyzed.

6.5.7 Reference Standards/Control Samples

Reference standards are standards of known concentration and are independent in origin from the calibration standards. Reference standard analysis provides insight into analytical proficiency within an analytical series, including the preparation of calibration standards, the validity of calibration, sample preparation, instrument setup, and the premises inherent in quantitation. Reference standards will be analyzed at the frequencies specified within the analytical methods.

For samples that are analyzed for metals by graphite furnace, an analytical spike will be analyzed after each sample analysis.

7 DATA MANAGEMENT

All data will undergo two levels of QA/QC evaluation: one at the laboratory and one by a qualified independent data validator. Initial data reduction, evaluation, and reporting at the laboratory will be carried out as described in the appropriate analytical protocols and the laboratory's QA manual. QC data resulting from methods and procedures described in this document will also be reported.

7.1 Sample Management

All laboratory analytical batches will be assigned a unique number and tracking identifier at the laboratory. All data reports will include this tracking number. The laboratory will use a laboratory information management system to track all samples throughout the analytical stream.

7.2 Data Reporting

Analytical chemistry results will be provided by the laboratory in both digital and hard-copy formats. Upon receipt of each analytical package, the original COC form will be placed in the project files. The data packages will be examined to ensure that the correct analyses were performed for each sample submitted and that all of the analyses requested on the COC form were performed. If discrepancies are noted, the Project QA Manager will be notified and will promptly follow up with the laboratory to resolve any issues.

Any data that does not meet the specified standards will be flagged pending resolution of the issue. The flag will not be removed from the data until the issue associated with the sample results is resolved. Although flags may remain for certain data, the use of that data may not necessarily be restricted.

Following completion of data validation, the digital files will be used to generate the appropriate report tables. The format for the electronic data deliverable (EDD) specifies one data record for each constituent for each sample analyzed. Specific fields include:

- Sample identification number
- Date sampled
- Date analyzed
- Parameter name

- Analytical result
- Units
- Detection limit
- Qualifiers

The individual EDDs will be supplied by the laboratory in the EQuIS electronic format. Laboratory data, which is electronically provided and loaded into the database, will undergo a 10 percent check against the laboratory hard-copy data. Data will be validated or reviewed manually, and qualifiers, if assigned, will be entered manually. All manually entered data will be backchecked by a second party. Data tables and reports are exported from EQuIS to Microsoft Excel tables.

Any analytical data that cannot be provided by the laboratory in electronic format will be entered manually. After entry into the database, the EDD data will be compared to the field information previously entered into the database to confirm that all requested analytical data have been received.

7.3 Data Management Procedures

A record of all field documentation, as well as analytical and QA/QC results, will be maintained to ensure the validity of the data. To effectively execute such documentation, carefully constructed sample tracking and data management procedures will be used throughout the sampling program.

Sample tracking will begin with the completion of COC forms, as described in the SAP (Appendix H to the DAR) and summarized in Section 5 of this QAPP. Copies of all completed COC forms will be maintained in the field office. The laboratory shall verify receipt of the samples electronically (via fax) on the following day.

When analytical data are received from the laboratory, the Project Chemist will review the incoming analytical data packages against the information on the COCs to confirm that the correct analyses were performed for each sample, and that results were received for all samples submitted for analysis. Any discrepancies noted will be promptly followed up by the Project Chemist.

7.3.1 Laboratory Turnaround Time

Laboratory turnaround time for water quality monitoring samples is described in detail in the Water Quality Monitoring Plan (Appendix B to the DAR). Turnaround times for dredge confirmation sampling will be determined during the next phase of design.

7.3.2 Archival/Retention Requirements

Archival sediment samples will be stored in the dark at -20 ± 10°C. After analysis is performed and prior to the 14 days from the time of collection, samples will be frozen for possible reanalysis. Samples will be frozen at -20 ± 10°C. Samples will be retained for one year after collection date. The laboratory will notify the Project QA Manager prior to disposing of any samples.

8 DATA ASSESSMENT PROCEDURES

Once the data are received from the laboratory, a number of QC procedures will be followed to accurately evaluate data quality and assess data precision, accuracy, and completeness.

8.1 Data Quality Control Review

Chemistry data will be subject to multilevel review by the selected analytical laboratory. The group leader will review all data reports prior to their release for final data report generation. The laboratory QA manager will review the final data reports, and the laboratory project manager will review a cross section of the final data reports prior to shipment to Anchor.

If discrepancies or deficiencies exist in the analytical results, then corrective action will be taken, as discussed in Section 9.

8.2 Data Evaluation and Verification

Ten to 20 percent of the data will undergo Level IV data validation, and the remainder of the data will undergo Level III data validation, in accordance with the USEPA's Functional Guidelines (USEPA 1999 and 2002). The data validation classifications of Level III and Level IV are derived from the USEPA Contract Laboratory Program (CLP; USEPA 1987). Level III data validation consists of reviewing COC forms; holding times; field, trip, and method blanks; surrogate, MS/MSD, and LCS/LCSD recoveries; field duplicate, laboratory duplicate, MS/MSD, and LCS/LCSD RPDs; and reporting limits. Level IV data validation consists of a full data validation, including a review of raw data.

Level III data validation is comparable to the Puget Sound Dredge Disposal Analysis quality assurance 1 (QA1) data review, and Level IV data validation is comparable to the Puget Sound Dredge Disposal Analysis quality assurance 2 (QA2) data review (Washington State Department of Ecology 1989). For consistency with the chemistry analytical work that will be performed in accordance with CLP protocols, data collected as part of the Phase I Removal Action construction phase will also be validated in accordance with the CLP (i.e., Level III and Level IV data validation will be performed).

Initially, 10 percent of the data will undergo a Level IV data validation. If the USEPA recommends that more than 10 percent of the data undergo a Level IV data validation following its review of the first sediment data package, the Port will discuss additional Level IV data validation with the USEPA at that time.

The contract analytical laboratory will deliver complete data packages for all chemical analyses. The data will be evaluated in accordance with the QAPP.

The third-party, independent data validator will perform data validation on all chemistry data generated using the USEPA's Functional Guidelines (USEPA 1999 and 2002). These procedures and criteria may be modified as necessary to address project-specific and method-specific criteria, control limits, and procedures. Data evaluation will consist of data screening, checking, reviewing, editing, and interpretation to document analytical data quality and to determine whether the quality is sufficient to meet the DQOs. Data evaluation will include a review of completeness and compliance.

Any deviations from analytical methods or any special reporting requirements apart from those specified in this QAPP will be detailed on COC forms. The data validator will verify that reduction of laboratory measurements and laboratory reporting of analytical parameters are in accordance with the procedures specified for each analytical method and/or as specified in this QAPP.

The results of the data validation, including text assigning qualifiers in accordance with the USEPA's Functional Guidelines (USEPA 1999 and 2002) and a tabular summary of qualifiers, will be generated by the data validator.

Deficiencies discovered as a result of the data validation, as well as the corrective actions implemented in response, will be documented and submitted in the form of a written report addressing the following topics, as applicable to each method:

- Assessment of the data package
- Description of any protocol deviations
- Failures to reconcile reported and/or raw data
- Assessment of any compromised data

- Overall appraisal of the analytical data
- Table of site name, sample quantities, matrix, and fractions analyzed.

It should be noted that qualified data are not necessarily invalid if they are of sufficient quality to meet the intended use. The goal of producing the best possible data does not necessarily mean producing data without QC qualifiers. Qualified data can provide useful information.

Resolution of any issues regarding laboratory performance or deliverables will be handled between the laboratory and the Project Chemist. During that process, the Project QA Manager may make suggestions for reanalysis.

Data validation reports will be kept in the project file at the Anchor office in Seattle, Washington.

9 LABORATORY AUDITS AND CORRECTIVE ACTIONS

Laboratory and field performance audits and corrective action procedures are described in this section.

9.1 Laboratory and Field Performance Audits

Laboratory and field performance audits consist of onsite reviews of QA systems and equipment for sampling, calibration, and measurement. Laboratory audits will not be conducted for the construction phase; however, all laboratory audit reports will be made available to the Project QA Manager upon request. All laboratories are required to have written procedures addressing internal QA/QC; these procedures will be submitted and will be reviewed by the Project QA Manager to ensure compliance with this QAPP. All laboratories must ensure that personnel engaged in sampling and analysis tasks have appropriate training.

The laboratory will, as part of the audit process, provide written details of any and all planned modifications for Anchor's review.

9.2 Corrective Action Procedures

9.2.1 Corrective Action for Field Sampling

The Field Coordinator will be responsible for correcting equipment malfunctions during the field sampling effort. The Project QA Manager will be responsible for resolving situations in the field that may result in non-compliance with the QAPP. All corrective measures will be immediately documented in the field logbook.

9.2.2 Corrective Action for Laboratory Analyses

The laboratory is required to submit and comply with its SOPs. The laboratory project manager will be responsible for ensuring that appropriate corrective actions are initiated as required for conformance with the QAPP. All laboratory personnel will be responsible for reporting problems that may compromise the quality of the data.

The Project QA Manager will be notified immediately if any QC sample exceeds the laboratory control limits. The analyst will identify and correct the anomaly before continuing with the sample analysis. The laboratory project manager will document the

corrective action taken in a memorandum submitted to the Project QA Manager within 3 days of the initial notification. A narrative describing the anomaly, the steps taken to identify and correct the anomaly, and the treatment of the relevant sample batch (i.e., recalculation, reanalysis, and re-extraction) will be submitted with the data package in the form of a cover letter.

10 REFERENCES

U.S. Environmental Protection Agency (USEPA). 1987. Data Quality Objectives for Remedial Response Activities, Development Process. EPA/540/G-87/003. March.

USEPA. 1998. EPA Guidance for Quality Assurance Project Plans. EPA QA/G-5. EPA/600R-98/018. February.

USEPA. 1999. Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency. EPA540/R-99/008. October.

USEPA. 2000. Data Quality Objectives for Hazardous Waste Site Characterization. EPA QA/G-4. EPA/600/R-00/007. January.

USEPA. 2001a. EPA Requirements for Quality Assurance Project Plans. EPA QA/R-5. EPA/240/B-01/003. March.

USEPA. 2001b. EPA Requirements for Quality Management Plans. EPA QA/R-2. EPA/240/B-01/002. March.

USEPA. 2002. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency. EPA540-R-01-008. July.

Washington State Department of Ecology. 1989. Draft Final Report, Puget Sound Dredged Disposal Analysis, Abbreviated Data Quality Evaluation for Dredged Material Disposal Projects. March.

TABLES

Table 1
Analytical Extraction/Cleanup Methods, Test Methods, and Reporting Limit Goals for Soil and Sediment Samples

Chemical Parameter	Extraction/Cleanup Method	Analytical Method	Reporting Limit Goal
Metals (µg/kg)			
Cadmium	USEPA Method 3050	USEPA Method 6020	20
Lead	USEPA Method 3050	USEPA Method 6020	100
Zinc	USEPA Method 3050	USEPA Method 6020	600
Semivolatile Organic Compounds (µg/kg)			
PAHs (µg/kg)			
Naphthalene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Acenaphthylene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Acenaphthene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Fluorene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Phenanthrene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Anthracene	USEPA Method 3541	USEPA Method 8270C-SIM	20
2-Methylnaphthalene	USEPA Method 3541	USEPA Method 8270C-SIM	20
1-Methylnaphthalene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Biphenyl	USEPA Method 3541	USEPA Method 8270C-SIM	20
2,6-Dimethylnaphthalene	USEPA Method 3541	USEPA Method 8270C-SIM	20
2,3,5-Trimethylnaphthalene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Fluoranthene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Pyrene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Benzo(a)anthracene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Chrysene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Benzo(b)fluoranthene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Benzo(k)fluoranthene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Benzo(a)pyrene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Ideno(1,2,3-cd)pyrene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Dibenz(a,h)anthracene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Benzo(g,h,i)perylene	USEPA Method 3541	USEPA Method 8270C-SIM	6.7
Benzo(e)pyrene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Perylene	USEPA Method 3541	USEPA Method 8270C-SIM	20
Phthalates (µg/kg)			
Dimethyl phthalate	USEPA Method 3541	USEPA Method 8270C-SIM	20
Diethyl phthalate	USEPA Method 3541	USEPA Method 8270C-SIM	20
Di-n-butyl phthalate	USEPA Method 3541	USEPA Method 8270C-SIM	20
Butyl benzyl phthalate	USEPA Method 3541	USEPA Method 8270C-SIM	20
Bis(2-ethylhexyl)phthalate	USEPA Method 3541	USEPA Method 8270C-SIM	20
Di-n-octyl phthalate	USEPA Method 3541	USEPA Method 8270C-SIM	20
TPH (mg/kg)			
Diesel-range petroleum hydrocarbons	Acid/silica gel	NWTPH-D	0.25
Heavy oil-range petroleum hydrocarbons	Acid/silica gel	NWTPH-D	0.5
Chlorinated Pesticides (µg/kg)			
4,4'-DDE	USEPA Method 3541	USEPA Method 8081A	2.0
4,4'-DDD	USEPA Method 3541	USEPA Method 8081A	2.0
4,4'-DDT	USEPA Method 3541	USEPA Method 8081A	2.0
2,4'-DDE	USEPA Method 3541	USEPA Method 8081A	2.0
2,4'-DDD	USEPA Method 3541	USEPA Method 8081A	2.0
2,4'-DDT	USEPA Method 3541	USEPA Method 8081A	2.0

Table 1
Analytical Extraction/Cleanup Methods, Test Methods, and Reporting Limit Goals for Soil and Sediment Samples

Chemical Parameter	Extraction/Cleanup Method	Analytical Method	Reporting Limit Goal
PCBs (µg/kg)			
Aroclor 1016	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1221	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1232	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1242	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1248	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1254	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1260	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1262	USEPA Method 3541	USEPA Method 8082	4.0
Aroclor 1268	USEPA Method 3541	USEPA Method 8082	4.0
Conventionals (%)			
Total Solids	--	USEPA Method 160.3	0.01

Notes:

All units are in dry weight.

Actual reporting limits may vary depending on sample moisture content and possible matrix interference.

Table 2
Analytical Test Methods and Reporting Limit Goals for Borrow Source Samples

Chemical Name	Analytical Method	Reporting Limit Goals
Conventional Analyses (%)		
In-situ moisture	ASTM D2216	0.1
Grain Size	ASTM D422-63	1
TOC	SM 5310B	0.1
Metals (mg/kg)		
Arsenic	USEPA Method 6020	0.5
Beryllium	USEPA Method 6020	0.2
Cadmium	USEPA Method 6020	0.2
Chromium	USEPA Method 6020	0.5
Cobalt	USEPA Method 6020	0.2
Copper	USEPA Method 6020	0.5
Iron	USEPA Method 6020	20
Lead	USEPA Method 6020	1
Mercury	USEPA Method 7471A	0.05
Nickel	USEPA Method 6020	0.5
Selenium	USEPA Method 6020	0.5
Silver	USEPA Method 6020	0.2
Zinc	USEPA Method 6020	4
PCBs (µg/kg)		
Aroclor 1016	USEPA Method 8082	4
Aroclor 1221	USEPA Method 8082	4
Aroclor 1232	USEPA Method 8082	4
Aroclor 1242	USEPA Method 8082	4
Aroclor 1248	USEPA Method 8082	4
Aroclor 1254	USEPA Method 8082	4
Aroclor 1260	USEPA Method 8082	4
Aroclor 1262	USEPA Method 8082	4
Aroclor 1268	USEPA Method 8082	4
Total PCBs	USEPA Method 8082	4
Pesticides (µg/kg)		
Sum DDD	USEPA Method 8081	2
Sum DDE	USEPA Method 8081	2
Sum DDT	USEPA Method 8081	2
Aldrin	USEPA Method 8081	1
alpha-BHC	USEPA Method 8081	1
alpha-Chlordane	USEPA Method 8081	1
beta-BHC	USEPA Method 8081	1
beta-Chlordane	USEPA Method 8081	1
Toxaphene	USEPA Method 8081	100
cis-Nonachlor	USEPA Method 8081	2
delta-BHC	USEPA Method 8081	1
Dieldrin	USEPA Method 8081	2
Endosulfan I	USEPA Method 8081	1
Endosulfan II	USEPA Method 8081	2
Endosulfan Sulfate	USEPA Method 8081	2
Endrin	USEPA Method 8081	2
Endrin aldehyde	USEPA Method 8081	2
Endrin ketone	USEPA Method 8081	2

Table 2
Analytical Test Methods and Reporting Limit Goals for Borrow Source Samples

Chemical Name	Analytical Method	Reporting Limit Goals
gamma-BHC (Lindane)	USEPA Method 8081	1
Heptachlor	USEPA Method 8081	1
Heptachlor Epoxide	USEPA Method 8081	1
Hexachlorobenzene	USEPA Method 8081	1
Hexachlorobutadiene	USEPA Method 8081	1
Methoxychlor	USEPA Method 8081	10
Oxychlordane	USEPA Method 8081	2
trans-Nonachlor	USEPA Method 8081	2
SVOC (µg/kg)		
1-Methylnaphthalene	USEPA Method 8270	6.7
2-Methylnaphthalene	USEPA Method 8270	6.7
Acenaphthene	USEPA Method 8270	6.7
Acenaphthylene	USEPA Method 8270	6.7
Anthracene	USEPA Method 8270	6.7
Benzo(a)anthracene	USEPA Method 8270	6.7
Benzo(a)pyrene	USEPA Method 8270	6.7
Benzo(b)fluoranthene	USEPA Method 8270	6.7
Benzo(g,h,i)perylene	USEPA Method 8270	6.7
Benzo(k)fluoranthene	USEPA Method 8270	6.7
bis(2-Ethylhexyl)phthalate	USEPA Method 8270	20
Butylbenzylphthalate	USEPA Method 8270	20
Chrysene	USEPA Method 8270	6.7
Dibenzo(a,h)anthracene	USEPA Method 8270	6.7
Dibenzofuran	USEPA Method 8270	6.7
Diethylphthalate	USEPA Method 8270	20
Dimethylphthalate	USEPA Method 8270	20
Di-n-butylphthalate	USEPA Method 8270	20
Di-n-octylphthalate	USEPA Method 8270	20
Fluoranthene	USEPA Method 8270	6.7
Fluorene	USEPA Method 8270	6.7
Indeno(1,2,3-cd)pyrene	USEPA Method 8270	6.7
Phenanthrene	USEPA Method 8270	6.7
Pyrene	USEPA Method 8270	6.7
Total PAHs	USEPA Method 8270	6.7
TPH (mg/kg)		
TPH - Residual Range	NWTPH-DX	10
TPH - Diesel Range	NWTPH-DX	5

Table 3
Analytical Test Methods and Reporting Limit Goals for Water Samples

Chemical Parameter	Analytical Method	Reporting Limit Goal
Metals (mg/L)		
Cadmium	USEPA Method 200.8	20
Lead	USEPA Method 200.8	20
Zinc	USEPA Method 200.8	10
Semivolatile Organic Compounds (µg/L)		
PAHs (µg/L)		
Naphthalene	USEPA Method 8270C-SIM	10
Acenaphthylene	USEPA Method 8270C-SIM	10
Acenaphthene	USEPA Method 8270C-SIM	10
Fluorene	USEPA Method 8270C-SIM	10
Phenanthrene	USEPA Method 8270C-SIM	10
Anthracene	USEPA Method 8270C-SIM	10
Fluoranthene	USEPA Method 8270C-SIM	10
Pyrene	USEPA Method 8270C-SIM	10
Benzo(a)anthracene	USEPA Method 8270C-SIM	10
Chrysene	USEPA Method 8270C-SIM	10
Benzo(b)fluoranthene	USEPA Method 8270C-SIM	10
Benzo(k)fluoranthene	USEPA Method 8270C-SIM	10
Benzo(a)pyrene	USEPA Method 8270C-SIM	10
Ideno(1,2,3-cd)pyrene	USEPA Method 8270C-SIM	10
Dibenz(a,h)anthracene	USEPA Method 8270C-SIM	10
Benzo(g,h,i)perylene	USEPA Method 8270C-SIM	10
Conventionals (mg/L)		
TSS	USEPA Method 160.2	1

Table 4
Soil, Sediment, and Water Sample Container, Preservation, and Holding Times

Chemical Analysis	Sample Matrix	Sample Container	Preservative	Holding Time
Metals[a]	Soil/Sediment	1 8-oz. G	R	6 months
SVOC	Soil/Sediment	1 16-oz. G	R	14 days/40 days[b]
TPH	Soil/Sediment	1 8-oz. G	R	14 days/40 days[b]
Pesticides/PCBs	Soil/Sediment	1 16-oz. G	R	14 days/40 days[b]
Metals[a]	Water	500 mL HDPE	HNO_3 pH<2	6 months
SVOC	Water	1L AG	R	7 days/40 days[b]
TPH	Water	1L AG	R	7 days/40 days[b]
TSS	Water	1L HDPE	R	7 days

Notes:

a. Metals include cadmium, lead, and zinc.

b. Holding times are days until analytical extraction/days until extraction analysis.

G = Glass

AG = Amber Glass

HDPE = High density polyethylene

R = Refrigerate at 4°C