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

Prepared for

Port of Portland

Portland, Oregon

Prepared by

Anchor QEA, LLC

6650 SW Redwood Lane, Suite 333

Portland, Oregon 97224

January 2011

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LIST OF ACRONYMS AND ABBREVIATIONS

Anchor QEA	Anchor QEA, LLC
AOC	Administrative Order on Consent for the Removal Action
Apex	Apex Laboratories, LLC
ARARs	Applicable or Relevant and Appropriate Requirements
CC	Construction Change
CDF	Confined Disposal Facility
CHASP	Contractor Health and Safety Plan
CQAP	Construction Quality Assurance Plan
cy	cubic yards
DAR	Design Analysis Report
DEQ	Oregon Department of Environmental Quality
DSL	State of Oregon Department of State Lands
EPP	Environmental Protection Plan
IMRP	Interim Monitoring and Reporting Plan
LWD	large woody debris
NEI	Northwest Earthmovers, Inc.
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NTCRA	Non-Time-Critical Removal Action
ODOT	Oregon Department of Transportation
Port	Port of Portland
PPE	personal protective equipment
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RAA	Removal Action Area
RAWP	Removal Action Work Plan
RFI	Request for Information
RI/FS	Remedial Investigation/Feasibility Study
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

CERTIFICATION STATEMENTS

The Phase I Removal Action Wheeler Bay Shoreline Stabilization Slope Repair has been constructed in accordance with the final design and specifications in the matter of the Portland Harbor Superfund Site, Terminal 4 Facility, Portland, Oregon. U.S. Environmental Protection Agency, Region X, Comprehensive Environmental Response, Compensation, and Liability Act Docket No. CERCLA 10-2004-0009. Port of Portland Respondent.

JhRVerduin III

John R. Verduin III, P.E.
Anchor QEA, LLC
Date: 1/21/11

Kelly L Madalinski

Kelly Madalinski
Port of Portland
Date: 1/21/11

As required by Section VIII.24 of the Administrative Order on Consent for Removal Action at the Terminal 4 Facility, Portland, Oregon, the following statement certifies the contents of this document:

> *"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

JhRVerduin III

John R. Verduin III, P.E., Anchor QEA, LLC
Partner

Date: 1/21/11

1 INTRODUCTION

1.1 Regulatory 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 Terminal 4 (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, probably 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 (IMRP) 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. This report summarizes the repair work completed during the 2010 in-water work window. See Table 1 for a summary of major events and milestones, from the signing of the AOC through the completion of the Wheeler Bay shoreline stabilization slope repair.

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

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

The design modifications were consistent with the T4 Phase I Removal Action final design, which was approved by USEPA. The modified design occurred within the original footprint of the Phase I Wheeler Bay work and consisted of similar activities. The work followed general agreement with the construction Health and Safety Plan, Construction Quality Assurance Plan (CQAP), 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 Water Quality Monitoring and Compliance Conditions Plan (WQMCCP; USEPA 2008a), the July 22, 2008 Biological Opinion prepared by the National Marine Fisheries Service (NMFS; 2008), and the more recent Wheeler Bay Shoreline Stabilization Slope Repair Removal Action Work Plan (Wheeler Bay RAWP; Anchor QEA 2010).

1.1.2 Roles and Responsibilities

USEPA designated Sean Sheldrake as the project coordinator to oversee implementation of the final design and work plan. Anchor QEA, LLC (Anchor QEA) and the Port jointly prepared the design documents. The Port was responsible for completing the Wheeler Bay shoreline stabilization slope repair work in conformance with the AOC, Applicable or Relevant and Appropriate Requirements (ARARs), approved Wheeler Bay RAWP (Anchor QEA 2010), Biological Opinion (NMFS 2008), WQMCCP (USEPA 2008a), and other applicable documents.

Northwest Earthmovers Inc. (NEI) was hired by the Port to complete the Wheeler Bay shoreline stabilization repair work. The Port also hired Anchor QEA to perform environmental monitoring and to support the Port's construction management and oversight activities throughout the Wheeler Bay shoreline stabilization slope repair project.

1.2 Organization of this Document

The remainder of this document provides detailed information on the shoreline stabilization slope repair work design and construction activities conducted to implement the design as follows:

- **Section 2 – Site Background** provides a description of the RAA and describes previous site investigations that were completed to characterize the sediment at T4 and used to inform the Phase I Removal Action design.

- **Section 3 – Summary of the Shoreline Stabilization Slope Repair Design and Construction Planning** provides site background information used to inform the Phase I design, summarizes the Wheeler Bay shoreline stabilization slope repair project objectives and performance standards, and details the project design activities and environmental protection measures.
- **Section 4 – Wheeler Bay Shoreline Stabilization Slope Repair Construction Activities** describes the project timeline, details the mobilization and demobilization process, and summarizes Wheeler Bay shoreline stabilization slope repair activities and construction deviations from design.
- **Section 5 – Summary of Monitoring and Construction Quality Assurance Activities** describes monitoring and construction quality assurance activities that were performed during implementation of the Wheeler Bay shoreline stabilization slope repair to confirm compliance with the design and attainment of performance standards.
- **Section 6 – Documentation of Performance Standards Attainment** summarizes the specific verification activities used to attain performance standards.
- **Section 7 – Field Monitoring Quality Assurance/Quality Control Documentation** provides a summary of the quality assurance/quality control (QA/QC) activities conducted during the field activities associated with the construction phase.
- **Section 8 – Certifications and Institutional Controls** presents the actions required for certification and institutional controls.
- **Section 9 – Construction Costs** details the costs associated with implementation of the Wheeler Bay shoreline stabilization slope repair project.
- **Section 10 – Lessons Learned** provides a list of lessons that were learned throughout the implementation of the Wheeler Bay shoreline stabilization slope repair project that will be helpful to refer to during the design stages of the Phase II project.
- **Section 11 – Operations and Maintenance of Wheeler Bay Shoreline Stabilization Slope Repair Area** summarizes monitoring recommendations and procedures.
- **Section 12 – Wheeler Bay Shoreline Stabilization Slope Repair Contact Information** summarizes the contact information for private and public representatives involved with the Wheeler Bay shoreline stabilization slope repair project.
- **Section 13 – References** summarizes the references used in the document.

2 SITE BACKGROUND

2.1 Phase I Removal Action Area

The Port is a port district of the State of Oregon, which owns the T4 uplands between River Miles 4.1 and 4.5 on the Lower Willamette River. The Port acquired T4 from the City of Portland 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." The focus of the Wheeler Bay shoreline stabilization slope repair work is in Wheeler Bay (see Figure 1).

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

2.2 Summary of Site Investigations

A summary of the physical and chemical characterization information that was collected at T4 to characterize the existing site conditions and used to inform the design and develop the Wheeler Bay shoreline stabilization slope repair work is presented in Section 2 of the Phase I Removal Action Work Plan (Phase I RAWP; Anchor 2008b). Additional site survey data were collected to assist with the slope repair work. In addition, surface soil samples were collected in the areas of observed erosion and analyzed for lead, serving as an indicator of impacted soil. One of the four samples analyzed had a detected concentration of lead above the presumed background concentration of lead, but the detected concentrations were below relevant screening levels for human and ecological receptors. Based on these results, no further sampling was completed and the bank was repaired. Appendix F presents the full technical memorandum summarizing the analysis and results.

3 SUMMARY OF THE SHORELINE STABILIZATION SLOPE REPAIR DESIGN AND CONSTRUCTION PLANNING

This section summarizes the shoreline stabilization slope repair design details and the construction planning details for implementation of the design as described in the Wheeler Bay RAWP (Anchor QEA 2010).

The shoreline stabilization slope repair design was developed in accordance with the objectives and performance standards presented in the Wheeler Bay RAWP (Anchor QEA 2010). The Wheeler Bay RAWP (Anchor QEA 2010) presented the construction planning details for the implementation of the design with significant input from the contractors. This document provides the specific details for the shoreline stabilization slope repair work activities, and a description of how those activities were implemented. These details are summarized below.

3.1 Repair Summary

Appendix D of the Wheeler Bay RAWP (Anchor QEA 2010) details the design and construction of the Wheeler Bay shoreline stabilization slope repair. The sequencing of the work was designed 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 LWD with the track hoe excavator to a stockpile at the top of the slope.
- Using the track hoe excavator, remove the habitat rock and prepare the armor rock surface to receive the new armor rock layer. This work will be conducted 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 armor rock and select fill to grade.

- Upon completion of the armor rock 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 topsoil as required.
- Complete the landscaping work.

3.1.1 Construction Planning

3.1.1.1 Earthwork and Landscaping Sequence and Methods

The methods for the Wheeler Bay shoreline stabilization slope repair earthwork and landscaping are summarized below. This work was completed from shore with land-based equipment.

- **Erosion Control.** Erosion control was installed prior to beginning any site earthwork. In accordance with planning, silt fence was installed on the downslope of the project area. Permanent security fencing delineated the project area along the railroad.
- **Dust Control.** Weather and site conditions did not trigger implementation of dust control measures during construction. Operational procedures were adjusted during periods of high wind to maintain optimal dust control.
- **Grade Control.** Prior to the start of excavation, the area was surveyed and staked by a surveyor. Surveying and grade control during the fill process was performed by NEI.
- **Armor Rock and Select Fill Placement.** Armor rock and select fill placement began during the first week of construction and was performed with an excavator.
- **Large Woody Debris Placement.** Anchors were installed and LWD was placed and chained to the anchors starting in the second week of construction. NEI used the excavator and special anchor-driving equipment.
- **Planting and Seeding.** The installation of plant materials began during the fourth week onsite. Planting occurred following the topsoil placement. Willows and Red Osier dogwood were planted in the riparian planting zone. Hydroseeding and jute matting were placed in the access road repair area.

4 WHEELER BAY SHORELINE STABILIZATION SLOPE REPAIR CONSTRUCTION ACTIVITIES

The Wheeler Bay shoreline stabilization slope repair work began on October 1, 2010, and was completed on October 29, 2010. Activities were documented in daily reports. The daily reports were compiled into weekly reports and copies of the weekly reports are provided in Appendix A. The weekly reports were submitted to USEPA throughout the duration of the project. Photographs were taken throughout the project and select ones are provided in Appendix B.

All work was conducted in accordance with the project Drawings and Construction Specifications (Appendix D of the Wheeler Bay RAWP, Anchor QEA 2010) or approved revisions to those requirements, which are also discussed in this section. All changes to or clarifications of the project design were documented with a Construction Change (CC) and/or a Request for Information (RFI), reviewed, and approved by the Port and USEPA. A complete list of all CCs and RFIs for the Wheeler Bay shoreline stabilization slope repair project is provided in Table 2. Figures 2 and 3 show the as-built configuration of the Wheeler Bay shoreline stabilization area. Record drawings are provided in Appendix C.

A final site inspection was completed with representatives of USEPA (Ken Fellows and Ingmar Saul of Parametrix) on October 28, 2010—one day prior to when all construction work was to be completed. Two items were identified that needed to be addressed before demobilization:

1. Complete remaining construction activities (finalize placement of plantings and mulch, hydroseed, and re-install irrigation system).
2. Clean up the debris/garbage from the shoreline, including a pressure-treated post.

The remaining construction activities identified were completed on October 28 and 29, 2010. The debris and garbage, including the pressure-treated post, were removed on October 29, 2010.

4.1 Project Schedule

The original schedule for the Wheeler Bay shoreline stabilization slope repair project had a planned timeline of approximately 4 weeks to reach completion (September 22 through October 15, 2010). Actual completion was achieved in 4 weeks (October 1 through October 29, 2010). The project was completed within the estimated timeline; however, the start date was delayed and mobilization occurred on October 1, 2010.

4.2 Mobilization

Mobilization primarily occurred on October 1, 2010 and included delivery of equipment, setup of temporary facilities, erosion/sedimentation control, and construction of temporary access roads. Some activities such as erosion/sedimentation control continued throughout the project.

4.2.1 Equipment

Primary equipment mobilized and generally on-site during the project included a 160LC excavator, IT28G front-end loader, and single- or tandem-box end-dump trucks for delivery of materials. Other equipment and materials used included a second 160LC excavator equipped with a compactor, and four steel plates (8 feet by 16 feet).

4.2.2 Erosion/Sedimentation Control

Erosion and sedimentation control consisted of a silt fence surrounding the work area in which soil and/or aggregate was excavated or placed on the river side. The silt fence was installed on October 1, 2010. The silt fence was inspected daily and repaired or replaced as needed. Daily reports documented silt fence repair or maintenance activities on three separate occasions between October 1 and October 29, 2010.

4.2.3 Temporary Access

On October 1, 2010, planks were placed on the railroad crossing to provide excavator access to the project site.

4.3 Summary of Wheeler Bay Shoreline Stabilization Slope Repair Activities

This section discusses construction of the various elements of the Wheeler Bay shoreline stabilization slope repair project. The project layout is discussed using the following terminology:

- Station – The project begins at Station 0-30 and ends at Station 7+00. This corresponds roughly with the area of construction on the original shoreline stabilization work. The first number in the station designation represents 100 feet along the baseline. The baseline for the project generally corresponds to the top of bank for the finished project. The second number represents the number of feet past the station number. For example, Station 3+50 represents the point 350 feet along the baseline from the beginning of the project.
- Elevation – Elevations provided use the NGVD 29-47 datum. In addition to station, project feature locations are described based on the target finish grade elevation at the location.

In general, the project consisted of removing the existing habitat layer and placing larger armor rock where necessary up to elevation 16.5 feet NGVD up to Station 2+81, and placement of anchored LWD along the top of the armoring along the full length of the slope. The intent of these repairs was to improve resistance to erosive forces. Figure 2 shows a plan view of the as-built configuration of the Wheeler Bay shoreline.

4.3.1 Large Woody Debris Stockpiling

LWD stockpiling was completed between October 1 and October 13, 2010. LWD was moved to a location out of the construction activity and above the silt curtains for placement later.

4.3.2 Armor

Armor was placed between Station 0-30 and 2+81, from elevation 10 to 16.5 feet NGVD. The armor section within this area consists of a variable thickness of Oregon Department of Transportation (ODOT) type 700 armor to meet the design grades. Figure 2 shows the armor installation for this area. Armor section layer thickness and grade were controlled on a daily basis with slope staking. Figure 3 shows a generalized cross section of the slope repair. The extent of the armor rock up the slope was not as much as anticipated and shown on the construction Drawings (Appendix D of the Wheeler Bay RAWP, Anchor QEA 2010).

On October 4, 2010, NEI removed the existing habitat material on top of the armor layer between Stations 0-30 and 2+81. This material was stockpiled above the silt fence. It was replaced back on the new armor on October 27, 2010. From October 4 to October 14, 2010, the armor section was placed between Stations 0-30 and 2+50. From October 13 to October 22, 2010, the armor section was placed between Stations 2+50 and 2+90. Select fill was placed behind the new armor rock as shown on the Drawings (Appendix D of the Wheeler Bay RAWP, Anchor QEA 2010) over roughly the same construction period. The extent of the armor rock was within the footprint of the armor rock placed for the original shoreline repair work (see Figure 2).

Appendix D documents material import quantities for the project. The total quantity of select fill and armor rock delivered to the project was 163 tons and 427 tons, respectively (see Table 3). The armor rock quantities are consistent with the design quantities required for the armor section. Approximately 80 percent more select fill was required than anticipated.

4.3.3 Topsoil and Coir Fabric

Topsoil and coir fabric were placed as follows:

- Stations 0-20 to 2+50, elevation 16.5 feet NGVD – In this area, the section consisted of a variable layer of topsoil placed over coir fabric, which was placed over the subgrade. The coir erosion-control fabric was then wrapped around on top of the topsoil, anchored in trenches, and staked in place.
- Temporary Access Road – In this area, the section consisted of a variable layer of topsoil placed under jute matting. This section was only placed in areas identified as needing repair.

Topsoil was delivered to the site in end-dump trucks and transported down the slope using a front-end loader. Topsoil thickness and grade were controlled on a daily basis with field measurements. Topsoil was placed on October 21 near the new armoring and October 27, 2010 in repair of the access road.

Appendix D documents material import quantities for the project. The total quantity of topsoil delivered to the project was 50 cubic yards (cy), consistent with the design volume required for the project.

4.3.4 Planting

Landscaping work included tree planting, mulch placement, and hydroseeding, as follows:

- Native Plantings – Native plantings were delivered on October 25, 2010. The trees were planted between October 25 and October 28, 2010. Native plantings were placed behind the new armoring at roughly elevation 16.5 feet NGVD and in the area of the repaired access road. Native plantings consisted of Columbia River willow, Scouler willow, Hooker willow, and Red Osier dogwood at elevation 16.5 feet NGVD; these plantings were replaced as required in the access road repair area between elevation 16.5 and 20 feet NGVD and at the top of bank.
- Mulch – Mulch, consisting of medium fir bark, was placed after trees were planted in the same area as the trees. The mulch was placed to a depth of at least 4 inches and typically about 6 inches. The mulch was delivered and placed on October 28, 2010.
- Hydroseed – Hydroseed consisted of a mix of grass seed (native grasses for long-term sustainable coverage and a sterile wheat for short-term erosion control, fertilizer, wood fiber, and a binding agent. It was applied by spraying to the areas (elevation 20 feet NGVD to top of bank) in the access road repair area. The hydroseed was applied on October 29, 2010, after the jute matting was rolled over the hydroseeded area and stapled in place.

4.3.5 Large Woody Debris and Habitat Logs

Anchored LWD were placed at the top of the newly placed armor material (elevation 16.5 feet NGVD) between Stations 0-30 and 2+81 and at approximately elevation 15 feet NGVD from Station 2+81 to 7+00. Figures 2 and 3 show the LWD locations. The LWD was placed such that either the root wads were placed flush to each other, or the tops were overlapped 1 to 2 feet. Each LWD was chained separately to two anchors. Anchors were driven with the excavator and a specially designed drive plate. After the anchors were driven to the design elevation, they were set by pulling up until refusal was met. Anchors were installed from

October 15 to October 26, 2010. LWD was placed and secured, and three pre-existing anchored LWD (habitat baskets) were reconstructed and anchored from October 18 to October 28, 2010. Existing non-anchored LWD, which were removed and stockpiled before construction began, were placed back on the shore as habitat logs at the end of the project.

4.4 Demobilization

Demobilization occurred October 28 and October 29, 2010. Demobilization included the removal of equipment and excess materials from the site. It also included the removal of incidental garbage and debris and removal of a treated wood piece on the beach. Port staff reconnected the irrigation control wiring at the point where it had been disconnected to construct the construction access ramp.

5 SUMMARY OF MONITORING AND CONSTRUCTION QUALITY ASSURANCE ACTIVITIES

Monitoring and construction QA activities were conducted during the Wheeler Bay shoreline stabilization slope repair construction according to the Wheeler Bay RAWP (Anchor QEA 2010). Specific monitoring and QA activities and results are described below. These results were used to verify that the construction design had been implemented as described in the Wheeler Bay RAWP, and that performance standards were attained, as described in Section 6. The water quality monitoring activities were conducted in accordance with the WQMCCP (USEPA 2008a) and Water Quality Monitoring Plan (WQMP; Appendix E of the Wheeler Bay RAWP, Anchor QEA 2010), as well as activities required by the Biological Opinion (NMFS 2008), are described in Section 6.

5.1 Visual Monitoring Results

Because all of the Wheeler Bay construction activities occurred out of the water in the dry, a number of visual monitoring activities occurred. Visual monitoring was conducted at least daily for ongoing project activities. In all cases, visual monitoring either confirmed compliance with the project specifications or corrections were made to bring the issue into compliance. Visual monitoring included the following:

- Site Conditions – Visual monitoring was used to verify that erosion-control features were installed prior to site work. The silt curtain fence was observed at least daily to verify that it was in working order or corrected if necessary.
- Shoreline Stabilization – Earthwork activities were controlled with elevation and grade checks. In addition, visual monitoring included checks of slope grades, verification of general material characteristics of each fill type, and qualitative confirmation of compaction using a hand probe.
- Vegetation and Groundcover – Mulch thicknesses were verified with a tape measure. Placement of erosion-control fabrics, habitat logs, LWD, and hydroseed were visually verified. Spacing of trees was spot-checked using a tape measure.
- Environmental Protection Measures – The silt fence was observed at least daily and repaired as needed (see Section 4.2.2). The project site, stockpiles, and the adjacent paved road were observed at least daily and after rain events for evidence of erosion or tracking of soil. The surface water of the adjacent Wheeler Bay was observed for

turbidity or sheen on at least a daily basis. Equipment was observed constantly for evidence of leakage, excessive noise, or excessive exhaust. Heavy weekend rains (October 23 and October 24, 2010) damaged the silt fence in one location, and it was subsequently repaired.

5.2 Borrow Source Material Characterization Documentation

The soil materials imported for the armor section were select fill and Class 700 armor imported from Cemex English Pits in Vancouver, Washington, and Cemex Fisher East Quarry in Vancouver, Washington, respectively. Based on visual observation, the armor met the project specifications. The select fill was tested for grain size and chemical quality, and results are included in Appendix E. Table 4 summarizes the chemistry results in Appendix E. The select fill met the chemical quality criteria in the project specifications.

The specifications required the topsoil to consist of 67 percent sandy loam mixed with 33 percent compost. Samples of compost were analyzed and all samples were found to be above the Import Material Chemical Goals for certain chemicals. In order to complete the project before the construction window expired, the Port, with approval from USEPA, elected to use 100 percent of the sandy loam material with no compost mixed. The selected sandy loam material was submitted for chemical analysis and all detection limits were below Import Material Chemical Goals, confirming the suitability of the sandy loam material for use as topsoil. Results of the approved material are presented in Appendix E. The topsoil was imported from Endicott-Wood Enterprises in Tualatin, Oregon.

5.3 Health and Safety Monitoring Results

Primary health and safety concerns during the project were physical hazards (e.g., slips, trips, or construction equipment). Procedures to address these concerns were identified in the NEI Contractor Health and Safety Plan (CHASP; Appendix A of the Wheeler Bay RAWP, Anchor QEA 2010), and reinforced with daily safety meetings at the beginning of the work shift. Site conditions did not trigger formal air, dust, or water quality monitoring.

Monitoring of health and safety concerns was addressed as follows according to the NEI CHASP:

- Observation for compliance with personal protective equipment (PPE) requirements – The Contractor's Project Manager verified that these requirements were addressed at all times. Compliance was documented in the Construction Weekly Progress Reports (see Appendix A).
- Documentation of incidents – Each daily report included documentation of health and safety incidents. No health or safety incidents were documented.
- Observation for dust – All contractor personnel observed for indicators of potential dust hazards throughout the project. These indicators included visible drying of previously wetted surfaces, activities known to cause dust generation (e.g., soil excavation, grading, etc.), or presence of visible dust in the air. The exposed area of potentially contaminated soils was very small, limited only to the areas where the demarcation fabric was visible. The remainder of the site was covered as part of the 2008 stabilization work. Therefore, dust hazards were minimal.

6 DOCUMENTATION OF PERFORMANCE STANDARDS ATTAINMENT

As mentioned previously, USEPA and the Port identified performance standards for each Wheeler Bay shoreline stabilization slope repair activity during the design process. The CQAP (Appendix A of the DAR, Anchor 2008a) provides specific details about the QA/QC and responsibilities necessary to accurately evaluate achievement of the performance standards for each construction activity. These verification and monitoring activities were performed throughout the implementation of the Wheeler Bay shoreline stabilization slope repair as described in the previous section. Attainment of performance standards, as verified through construction QA/QC activities, are described below by activity.

6.1 Wheeler Bay Shoreline Stabilization

6.1.1 Performance Standards

Specific performance standards for the Wheeler Bay shoreline stabilization work included the following:

- 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.
- Eliminate direct contact with contaminated river bank soils.
- Use import material for fill and grading that meets defined chemical goals (presented in Appendix D of the Wheeler Bay RAWP; Site Clearing, Earthwork, and Shoreline Stabilization specification; Section 312000, Anchor QEA 2010).
- Conduct the work consistent with the Biological Opinion developed by NMFS (2008).

6.1.2 Quality Assurance Documentation

As described in the CQAP (Appendix A of the DAR, Anchor 2008a), QA for the shoreline stabilization construction included chemical and physical testing of import materials, observation of material placement to verify material placement thickness and extent, verification of material quantities used, and pre- and post-construction surveys to confirm design elevations were achieved. QA documentation (e.g., laboratory reports, field notes, photographs, material quantity measures, and surveys) have verified that the shoreline stabilization slope repair area meets all of the performance standards. Compliance with the performance standards is summarized below.

6.1.2.1 Design Shoreline to be Stable, Resist Erosive Forces, and Eliminate Direct Contact with Contaminated River Bank Soils

In the areas where the erosion occurred, the design was modified to include larger armoring (Class 700 armor rock) up to a higher elevation (16.5 feet NGVD). Habitat rock, excavated before armor layer placement, was placed on top of the armor layer. In addition, LWD was anchored at the armor/natural slope contact line from Station 0-30 to 7+00. The orange demarcation layer was replaced in areas where it was damaged. Documentation of the placement of the shoreline stabilization materials is provided in the Construction Weekly Progress Reports in Appendix A.

6.1.2.2 Shoreline Stabilization Design Elevations were Achieved

The top elevation of the new armor layer (elevation 16.5 feet NGVD) was continuously checked with a laser level. The laser level was established from a surveyed benchmark set up by the Port. The lateral extent of the new armoring was taped off based on the Drawings (Appendix D of the Wheeler Bay RAWP, Anchor QEA 2010).

6.1.2.3 Cap Import Material Met Defined Chemical Goals and Physical Characteristics

Attainment of this performance standard was achieved through comparison of the chemical and physical characteristics of the proposed borrow materials (i.e., select fill and topsoil) to the chemical and physical characteristics identified in Table 1 of the Wheeler Bay RAWP (Anchor QEA 2010). To confirm that the imported material was environmentally acceptable, USEPA requested the design include the following text excerpted from the specifications established for the McCormick & Baxter Superfund capping project, "cap material to be used for construction of the sediment cap will be imported, clean, granular material free of roots, organic material, contaminants, and all other deleterious and objectionable material" (Ecology and the Environment 2003).

The soil materials imported for the armor section were select fill, ODOT Class 700 Armor, and topsoil. Based on visual observation, the armor met the project specifications. The select fill was tested for grain size and chemical quality, and results are included in Appendix E. The select fill met the physical and chemical quality criteria in the project specifications.

The specifications required the topsoil to consist of 67 percent sandy loam mixed with 33 percent compost. Samples of compost were analyzed and all were found to be above the Import Material Chemical Goals for certain chemicals. In order to complete the project before the construction window expired, the Port, with approval from USEPA, elected to use 100 percent of the sandy loam material with no compost mixed. The selected sandy loam material was submitted for chemical analysis and all detection limits were below Import Material Chemical Goals, confirming the suitability of the sandy loam material for use as topsoil. Results of the approved material are presented in Appendix E. Table 4 summarizes the chemistry results from Appendix E.

6.1.2.4 Work Conducted was Consistent with the WQMP, WQMCCP, and Biological Opinion

The water quality monitoring program that was implemented during the Wheeler Bay shoreline stabilization slope repair at T4 was developed based on the WQMP (Appendix E of the Wheeler Bay RAWP, Anchor QEA 2010) and the WQMCCP (USEPA 2008a). Visual water quality monitoring occurred throughout the duration of the shoreline stabilization activities as described in this report to confirm consistency with the WQMP and WQMCCP.

NEI and all construction monitoring personnel were given the Biological Opinion (NMFS 2008) as part of the specifications. Additionally, all monitoring personnel were aware of the specific terms and conditions detailed in the Biological Opinion and were directed to notify the Construction Manager if a construction activity was identified that did not comply, so that action could be taken to bring the activity back into compliance.

7 FIELD MONITORING QUALITY ASSURANCE/QUALITY CONTROL DOCUMENTATION

The following sections provide a summary of the field monitoring QA/QC activities conducted during the construction activities to ensure the collection of high quality data. Borrow source material samples were collected by Anchor QEA, and analyses of these samples were performed by Apex Laboratories, LLC (Apex).

7.1 Monitoring Laboratory Data Quality Assurance/Quality Control

7.1.1 Laboratory Quality Control Criteria

Results of the QC samples from each sample group were reviewed by the analyst immediately after a sample group was analyzed. The QC sample results were then evaluated to determine if control limits were exceeded. If control limits were exceeded in the sample group, the Project QA Manager was contacted immediately, and corrective action (e.g., method modifications followed by reprocessing the affected samples) was initiated prior to processing a subsequent group of samples.

All primary chemical standards and standard solutions used in this project were traceable to documented, reliable, commercial sources. Standards were validated to determine their accuracy by comparison with an independent standard. Any impurities found in the standard were documented.

Apex conducted initial and continuing calibrations, and prepared and analyzed laboratory duplicates, matrix spikes/matrix spike duplicates, and method blanks in accordance with the QAPP (Appendix F of the Wheeler Bay RAWP, Anchor QEA 2010).

7.2 Data Validation

Laboratory data were validated by Anchor QEA. The data validations were performed under the functional guidelines (USEPA 2004, 2008b) and following criteria outlined in the WQMP and QAPP (Appendices E and F of the Wheeler Bay RAWP, respectively, Anchor QEA 2010). The data validation verified the analytical accuracy and precision of the chemical analyses performed during this monitoring effort and no data were rejected. The data may have been qualified as estimated for a particular analysis based on method or technical criterion. Data qualified with a "J" indicates that the associated numerical value is the approximate concentration of the analyte. Data qualified with a "UJ" indicates the approximate reporting limit below which the analyte was not detected. Consequently, these data qualifications are not expected to alter the data quality objectives defined in the WQMP and the QAPP. Validation reports are provided in Appendix E.

8 CERTIFICATIONS AND INSTITUTIONAL CONTROLS

8.1 Final USEPA Approval

Through USEPA's acceptance of the Draft Closure Report and subsequent revisions addressing comments on the draft document, USEPA has approved the contents of the Final Closure Report. Formal written documentation of this acceptance is expected after the Final Closure Report is submitted. It should be noted that USEPA approved the completion of the shoreline stabilization slope repair operations sufficient for equipment to be removed from the site.

8.2 Institutional Controls

Institutional controls for the site, which cover the period of time between the Phase I and Phase II actions, are presented in Section 10.2 of the Phase I Removal Action Closure Report (Anchor QEA 2009).

9 CONSTRUCTION COSTS

This section presents a summary of Wheeler Bay shoreline stabilization slope repair implementation costs for the shoreline stabilization work at T4. The total construction cost for the repair of the shoreline stabilization erosion was approximately $187,200. This cost includes project change orders, and staging and access. This cost does not include investigation, design, permitting, construction management, construction monitoring, and projected interim monitoring.

10 LESSONS LEARNED

This section provides a summary of lessons that were learned throughout the implementation of the Wheeler Bay shoreline stabilization slope repair project that may be important to refer to during subsequent construction activities.

Import Material Criteria

- During the Wheeler Bay repair work, chemical testing of topsoil import material was performed and results were compared to the McCormick and Baxter sediment cap criteria used in the T4 Phase I Removal Action. The use of in-water sediment cap criteria for a topsoil application should be re-evaluated. While it is recognized that import material criteria must be protective of sediment quality in the adjacent water body via transport processes such as erosion, there are no site-specific sediment quality guidelines currently developed for Portland Harbor. This type of sediment quality guidelines are being developed specifically through the Portland Harbor RI/FS process. Background criteria should be carefully considered and incorporated in the development of any import criteria, as Cascade volcanic soil and sediment may be naturally enriched in certain metals. During the import material testing for Wheeler Bay topsoil, it was determined that regional background concentrations of nickel were well above the Threshold Effects Concentration (TEC) criterion. This may be true for other metals as well.
- In summary, it is recommended that import criteria for soil be re-evaluated as part of the Portland Harbor RI/FS process, and it should also be recognized that different criteria are appropriate for different applications. This will greatly facilitate and expedite the identification of appropriate and environmentally protective borrow sources for future actions in the Harbor.

11 OPERATIONS AND MAINTENANCE OF WHEELER BAY SHORELINE STABILIZATION SLOPE REPAIR AREA

Quarterly monitoring is recommended for the Wheeler Bay shoreline stabilization slope repair area (between 0 and 275 feet from the mouth of the bay) to confirm that the repair is functioning as designed, and that vegetation coverage goals will be attained at the end of Year 3. Quarterly monitoring will occur within the repair area between 0 and 275 feet from the mouth of the bay and consist of a visual survey of the slope for sloughing, stability, and erosion to determine if it is stable. A visual survey of the armor layers will also be completed quarterly to determine if excessive erosion is occurring. Based on the results of the Year 1 vegetation monitoring for the original stabilization work, which showed insignificant change from month to month, vegetation monitoring of the repaired area will also be conducted quarterly between 0 and 275 feet from the mouth of the bay.

Quarterly monitoring is expected to be frequent enough to identify any large-scale issues that could impact the repaired slope and vegetation (e.g., herbivore, drought, or erosion). The quarterly monitoring events will be conducted in approximately January, April, July, and October. One of the quarterly monitoring events will occur after a high water event. The annual Wheeler Bay surveys for the entire shoreline stabilization area will continue to be conducted in October each year as identified in the IMRP (Appendix C of the DAR, Anchor 2008a).

12 WHEELER BAY SHORELINE STABILIZATION SLOPE REPAIR CONTACT INFORMATION

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13 REFERENCES

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USEPA. 2008b. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. USEPA 540-R-08-01. June.

TABLES

Table 1
Summary of Major Events and Milestones – Wheeler Bay Shoreline Stabilization Slope Repair

Event or Milestone	Date
Administrative Order on Consent Signed	October 2, 2003
Engineering Evaluation/Cost Assessment Submittal	February 23, 2004
Final Removal Action Phase I Design Submitted to USEPA	June 30, 2008
Phase I Removal Action Complete	October 22, 2008
Observed Erosion of Western Portion of Wheeler Bay Shoreline	Week of June 21, 2010
Draft Removal Action Phase I Wheeler Bay Shoreline Stabilization Slope Repair Design Submitted to USEPA	August 10, 2010
USEPA Approval of Draft Removal Action Phase I Wheeler Bay Shoreline Stabilization Slope Repair Design	August 12, 2010
Final Removal Action Phase I Wheeler Bay Shoreline Stabilization Slope Repair Design Submitted to USEPA	October 1, 2010
Wheeler Bay Slope Repair Mobilization	October 1, 2010
Wheeler Bay Slope Repair Demobilization	October 29, 2010

Table 2
Wheeler Bay Shoreline Stabilization Slope Repair CCs and RFIs

Contract Changes				
CO	**CC**	**Issue Encountered**	**Action Required**	**Directive Language**
1	1.1	Tree Type Substitution – The Port's landscape architect wanted to switch from the specified Red Alder to Red Osier Dogwood. The Port felt that it would have a better chance of survival.	Anchor QEA changed drawings.	Substitute Red Osier Dogwood for Red Alder.
N/A	N/A	Extent of Armor Rock – The extent of the new armor rock up the slope was not as much as anticipated and shown on the construction drawings.	The extent of the new armor rock was placed to the top elevation as dictated by the design.	Field change
N/A	N/A	Use of Sandy Loam Only in Topsoil – In order to complete the project before the construction window expired, the Port, with approval from USEPA, elected to use 100 percent of the sandy loam material with no compost mixed.	The Port obtained approval from USEPA for the topsoil modification.	Field change
N/A	N/A	Elimination of the Access Road – The Contractor elected to not construct or use an access road as shown on the construction drawings.	The Contractor transferred materials down the slope utilizing sheet metal as a material slide.	Field change

Table 2
Wheeler Bay Shoreline Stabilization Slope Repair CCs and RFIs

Requests for Information					
RFI	**Subject**	**Contractor Question**	**Anchor QEA**	**Port Engineer**	**Port Construction**
1	Installation of Woody Debris	During our discussions regarding the installation of the large woody debris, a question as to the orientation of the trees w/ stumps has arisen. NEI would like to orient the trees stump to stump and cut end to cut end providing some overlap at the cut ends approximately 2 ft. This overlap should assist in keeping the trees from moving around during high water. Does this orientation meet the Port's satisfaction?	Having the tree root wads flush and overlapping the tree tops 1 to 2 feet is fine. The trees should be anchored individually as shown on the drawings.	I concur.	Concur with Port Engineering and Consultant
2	Landscape changes	We have been talking about changing one of the tree types. Where does this stand?	NA	The Port would like to substitute Red Twig Dogwood (*Cornus stolonifera*) for the Red Alder. I have noted this in Submittal #12, and the Port has recently issued a change letter noting the same.	Concur with Port Engineering and Consultant

Table 3

Summary of Wheeler Bay Shoreline Stabilization Slope Repair Import Material Quantities

Material (units)	Date	Ticket No.	Quantity Delivered	Quantity Required - Design Neat Section
Select Fill (tons)				
1341312 - Select Fill	10/5/2010	1481294428	32.95	
1341312 - Select Fill	10/5/2010	1481294439	33.09	
1341312 - Select Fill	10/5/2010	1481294448	32.82	
1341312 - Select Fill	10/7/2010	1481294558	32.11	
1341312 - Select Fill	10/7/2010	1481294536	31.91	
		TOTAL:	**163**	90
Class 700 Rip Rap (tons)				
1307763 - Class 700 Rip Rap	10/5/2010	1823094517	14.93	
1307763 - Class 700 Rip Rap	10/5/2010	1823094523	14.96	
1307763 - Class 700 Rip Rap	10/5/2010	1823094540	14.65	
1307763 - Class 700 Rip Rap	10/5/2010	1823094547	14.46	
1307763 - Class 700 Rip Rap	10/5/2010	1823094558	14.80	
1307763 - Class 700 Rip Rap	10/5/2010	1823094566	14.92	
1307763 - Class 700 Rip Rap	10/5/2010	1823094584	14.60	
1307763 - Class 700 Rip Rap	10/5/2010	1823094594	14.64	
1307763 - Class 700 Rip Rap	10/5/2010	1823094612	14.87	
1307763 - Class 700 Rip Rap	10/5/2010	1823094615	13.87	
1307763 - Class 700 Rip Rap	10/5/2010	1823094624	14.66	
1307763 - Class 700 Rip Rap	10/5/2010	1823094629	14.03	
1307763 - Class 700 Rip Rap	10/5/2010	1823094639	14.89	
1307763 - Class 700 Rip Rap	10/6/2010	1823094731	14.93	
1307763 - Class 700 Rip Rap	10/6/2010	1823094765	14.93	
1307763 - Class 700 Rip Rap	10/6/2010	1823094800	14.87	
1307763 - Class 700 Rip Rap	10/6/2010	1823094824	14.49	
1307763 - Class 700 Rip Rap	10/7/2010	1823094852	14.88	
1307763 - Class 700 Rip Rap	10/7/2010	1823094860	14.56	
1307763 - Class 700 Rip Rap	10/7/2010	1823094895	14.60	
1307763 - Class 700 Rip Rap	10/7/2010	1823094909	14.98	
1307763 - Class 700 Rip Rap	10/7/2010	1823094957	14.82	
1307763 - Class 700 Rip Rap	10/7/2010	1823094966	14.99	
1307763 - Class 700 Rip Rap	10/7/2010	1823094998	14.91	
1307763 - Class 700 Rip Rap	10/7/2010	1823095003	14.76	
1307763 - Class 700 Rip Rap	10/7/2010	1823095043	14.83	
1307763 - Class 700 Rip Rap	10/7/2010	1823095047	15.00	
1307763 - Class 700 Rip Rap	10/7/2010	1823095081	14.79	
1307763 - Class 700 Rip Rap	10/7/2010	1823095089	14.86	
		TOTAL:	**427**	420
Sandy Loam (cubic yards)				
	10/20/2010	N174	25	
	10/20/2010	N181	25	
		TOTAL:	**50**	50

Table 4
Summary of Chemistry Data Results: Select Fill and Topsoil

Sample ID: / Sample Date: / Project:	Import Material Goal	Select Fill-100914-1 9/14/2010 Wheeler Bay		Topsoil SL-101210-EW 10/12/2010 Wheeler Bay	
Conventional Parameters (%)					
Total Solids		94.9		85.5	
Total Organic Carbon		--		0.404	
Gravel		26.2		2.5	
Coarse Sand		28.3		4.1	
Medium Sand		39.2		24.5	
Fine Sand		1.7		28.8	
Silt		4.1		32.8	
Clay		0.3		3.4	
Metals (mg/kg)					
Antimony		1.09	U	--	
Arsenic	9.79	**1.22**	**J**	**3.49**	
Beryllium		1.09	U	--	
Cadmium	0.99	**0.12**	**J**	**0.338**	**J**
Chromium	43.4	**6.52**		**14.5**	
Cobalt	NC	--		**11**	
Copper	31.6	**13.5**		**19.1**	
Iron	NC	--		**22400**	
Lead	35.8	**2.41**		**10.1**	
Mercury	0.18	0.0871	U	**0.0451**	**J**
Nickel	22.7	**15.8**		**14.8**	
Selenium	NC	2.18	U	2.42	U
Silver	0.5	1.09	U	1.21	U
Thallium		1.09	U	--	
Zinc	121	**33.2**		**72.6**	
Semivolatile Organic Compounds (µg/kg)					
Acenaphthene	20	2.04	U	6.12	U
Acenaphthylene	20	2.04	U	6.12	U
Anthracene	57.2	2.04	U	6.12	U
Benz(a)anthracene	108	2.55	U	**10.1**	
Benzo(a)pyrene	150	**1.82**	**J**	**14.1**	
Benzo(b)fluoranthene	20	**1.54**	**J**	**15.5**	
Benzo(k)fluoranthene	20	2.04	U	**5.94**	**J**
Benzo(g,h,i)perylene	20	**1.04**	**J**	**13.8**	
Chrysene	166	2.55	U	**13.7**	
Dibenzo(a,h)anthracene	33	2.04	U	**3.23**	**J**
Dibenzofuran	20	2.04	U	6.12	U
Fluoranthene	423	2.04	U	**20.5**	
Fluorene	77.4	2.04	U	6.12	U
Indeno(1,2,3-cd)pyrene	20	2.04	U	**11.7**	
1-Methylnaphthalene	20	4.08	U	12.2	U
2-Methylnaphthalene	20	4.08	U	12.2	U
Naphthalene		4.08	U	12.2	U
Phenanthrene	204	2.04	U	**5.48**	**J**
Pyrene	195	2.04	U	**20.3**	
Bis(2-ethylhexyl) phthalate	100	51.0	U	28.2	U
Diethyl phthalate	20	10.2	U	15.3	U
Butylbenzyl phthalate	20	15.3	U	15.3	U
Dimethyl phthalate	20	10.2	U	15.3	U
Di-n-butyl phthalate	20	10.2	U	15.3	U
Di-n-octyl phthalate	20	19.4	U	15.3	U
Polychlorinated Biphenyls (µg/kg)					
Aroclor 1016		7.77	U	5.54	UJ
Aroclor 1221		7.77	U	5.54	UJ
Aroclor 1232		7.77	U	5.54	UJ
Aroclor 1242		7.77	U	5.54	UJ
Aroclor 1248		7.77	U	5.54	UJ
Aroclor 1254		7.77	U	5.54	UJ
Aroclor 1260		7.77	U	5.54	UJ
Chlorinated Pesticides (µg/kg)					
2,4'-DDD		2.61	U	3.72	U
2,4'-DDE		2.61	U	3.72	U
2,4'-DDT		2.61	U	3.72	U
4,4'-DDD		2.61	U	3.72	U
4,4'-DDE		2.61	U	3.72	U
4,4'-DDT		2.61	U	3.72	U
Aldrin	2	2.61	U	3.72	U
alpha-BHC	2	2.61	U	3.72	U
beta-BHC	2	2.61	U	3.72	U
cis-Chlordane	2	2.61	U	3.72	U
cis-Nonachlor	4	3.61	U	3.72	U
delta-BHC	2	2.61	U	3.72	U
Dieldrin	1.9	2.61	U	3.72	U

Table 4
Summary of Chemistry Data Results: Select Fill and Topsoil

Sample ID: Sample Date: Project:	Import Material Goal	Select Fill-100914-1 9/14/2010 Wheeler Bay		Topsoil SL-101210-EW 10/12/2010 Wheeler Bay	
Endosulfan I	2	2.61	U	3.72	U
Endosulfan II	4	2.61	U	3.72	U
Endosulfan sulfate	4	2.61	U	3.72	U
Endrin	2.22	2.61	U	3.72	U
Endrin aldehyde	4	2.61	U	3.72	U
Endrin ketone	4	2.61	U	3.72	U
gamma-BHC (Lindane)	2.37	2.61	U	3.72	U
Heptachlor	2	2.61	U	3.72	U
Heptachlor Epoxide	2.47	2.61	U	3.72	U
Hexachlorobenzene	10	2.61	U	3.72	U
Hexachlorobutadiene	10	2.61	U	3.72	U
Methoxychlor	20	7.68	U	10.9	U
Oxychlordane	4	2.61	U	3.72	U
Technical Chlordane		30.7	U	43.8	U
Toxaphene	200	30.7	U	43.8	U
trans-Chlordane		2.61	U	3.72	U
trans-Nonachlor	4	2.61	U	3.72	U
Total Petroleum Hydrocarbons (mg/kg)					
Diesel Range Organics	50	22.1	U	26.5	U
Oil Range Organics	50	**19.6**	**J**	**23.1**	**J**

Notes:
Bold = Detected result
J = Estimated value
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit
-- Compound not analyzed

FIGURES

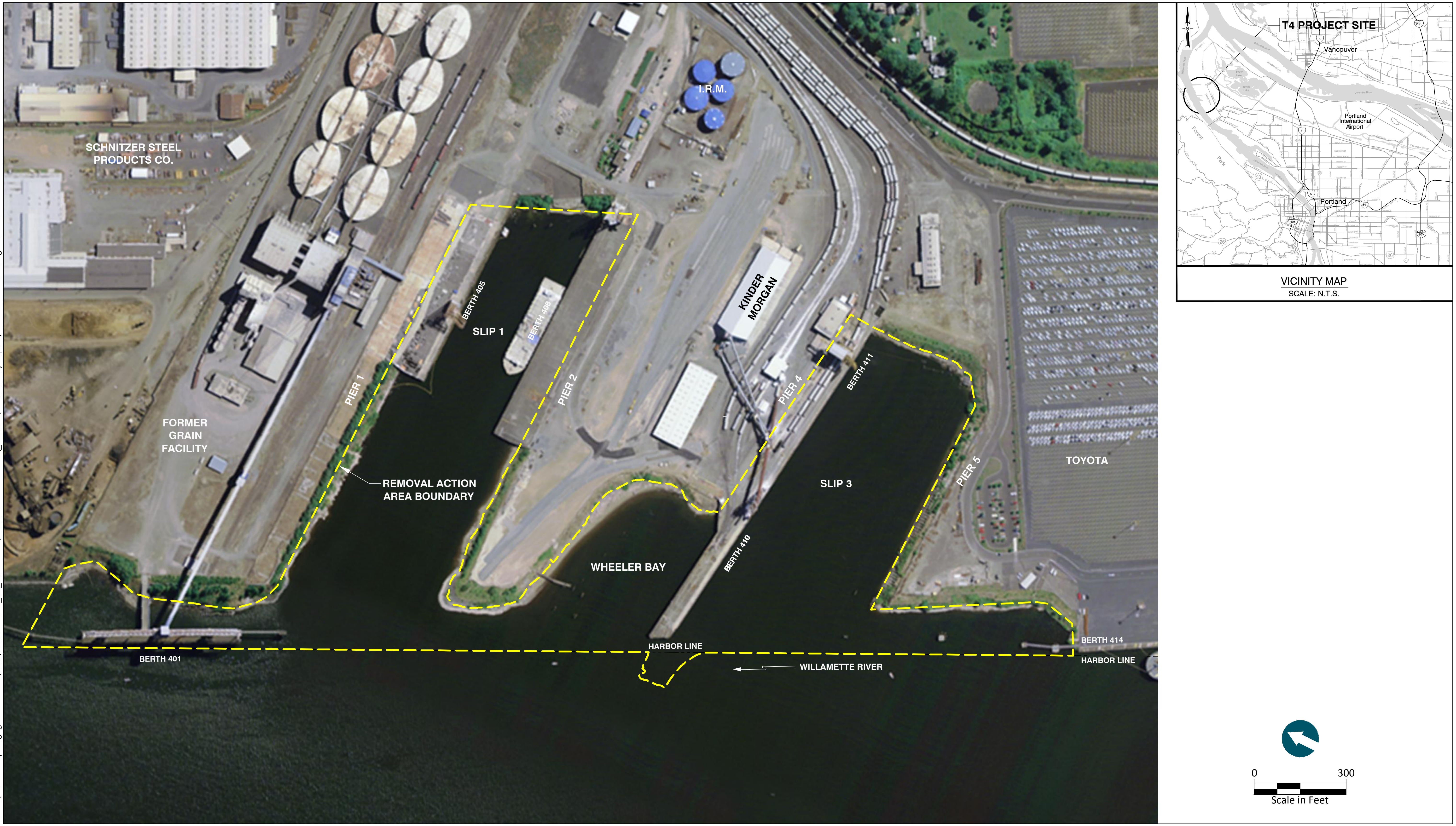
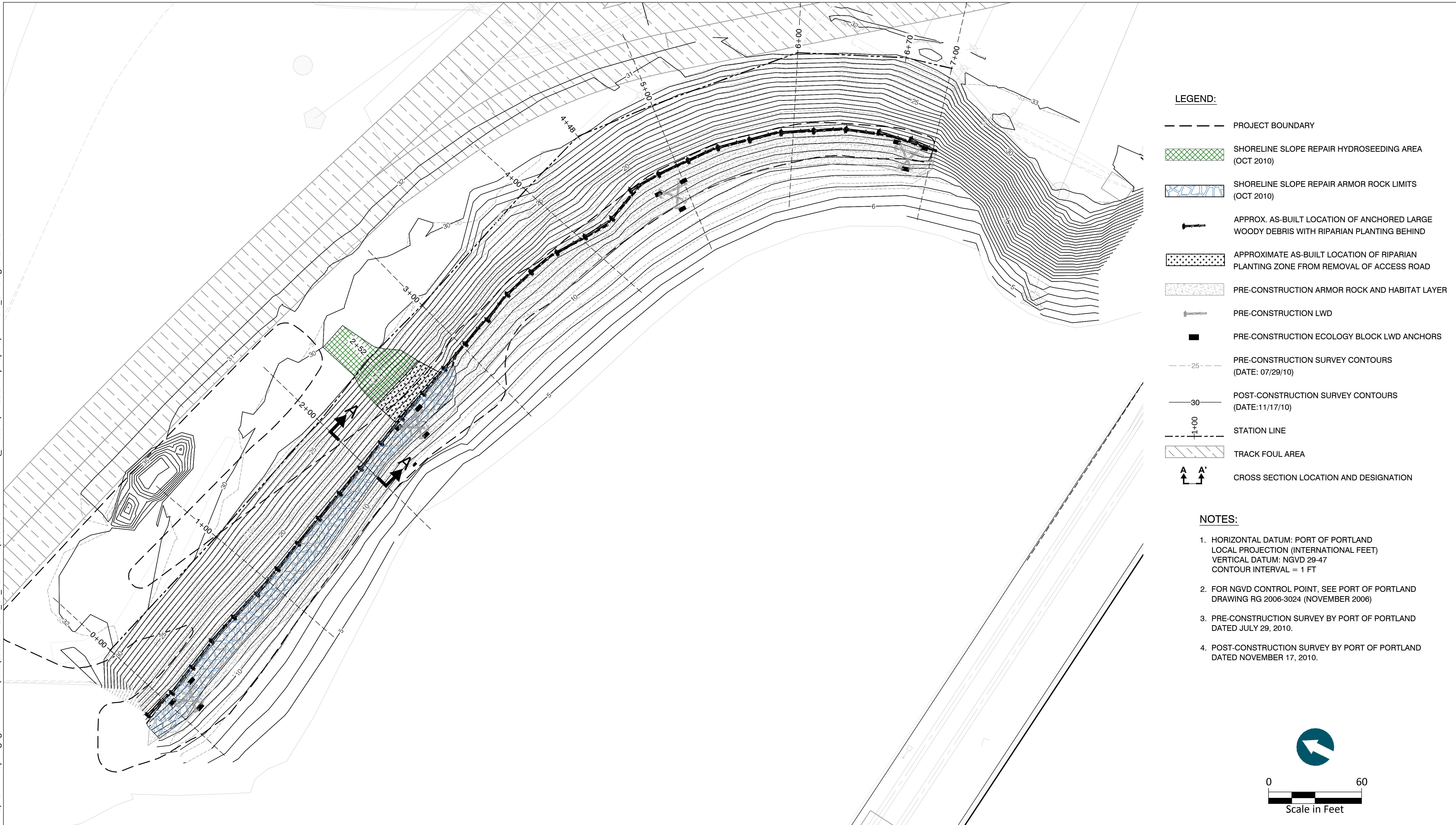


Figure 1
Site Plan and Vicinity Map
Terminal 4 Phase I Removal Action - Wheeler Bay Shoreline Stabilization Slope Repair - Removal Action Closure Report
Portland, Oregon

ANCHOR QEA



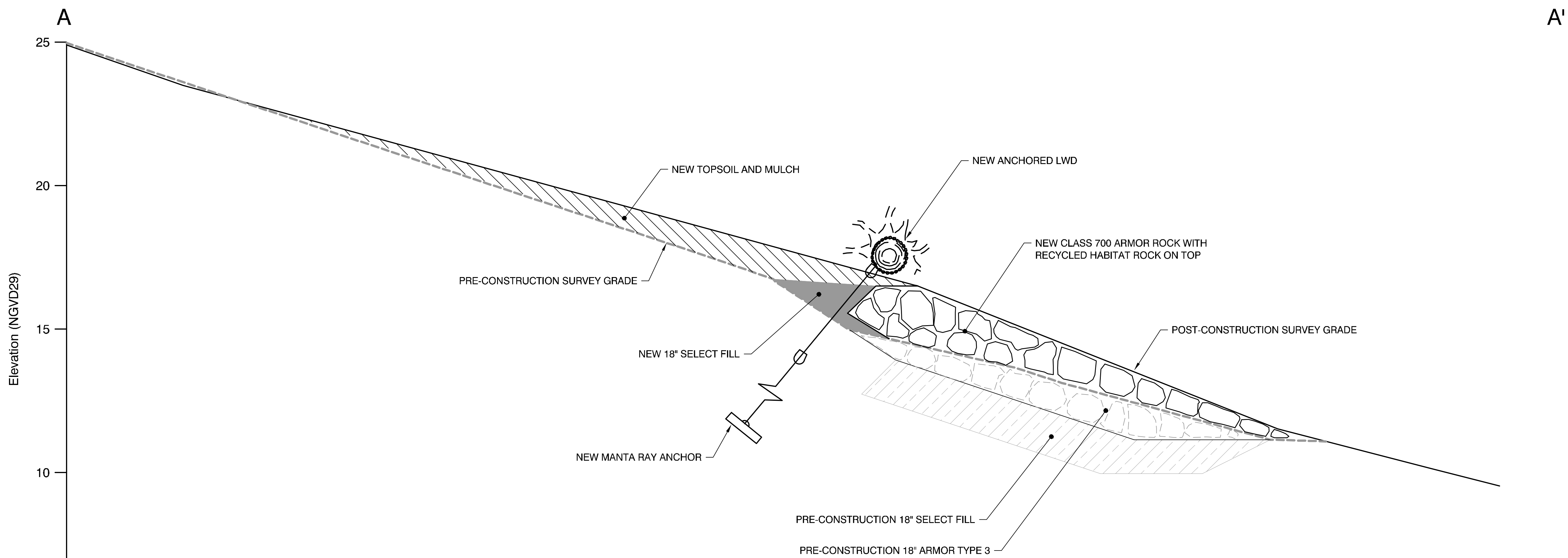
NOTES:

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. PRE-CONSTRUCTION SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.
4. POST-CONSTRUCTION SURVEY BY PORT OF PORTLAND DATED NOVEMBER 17, 2010.

Jan 25, 2011 2:23pm tgriga K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4_Phase 1\Wheeler Bay Repair\WBR-C-1_C-4.dwg RACR FIG 2

ANCHOR QEA

Figure 2
As-Built Plan View and Cross Section Location
Terminal 4 Phase I Removal Action - Wheeler Bay Shoreline Stabilization Slope Repair - Removal Action Closure Report
Portland, Oregon



TYPICAL AS-BUILT SLOPE REPAIR SECTION

NOTES:

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

Jan 25, 2011 2:23pm tgriga K:\Jobs\050332-PORT_OF_PORTLAND\05033201 TERMINAL 4_Phase 1\Wheeler Bay Repair\WBR-C-1_C-4.dwg RACR FIG 3

Figure 3
As-Built Cross Section A-A'
Terminal 4 Phase I Removal Action - Wheeler Bay Shoreline Stabilization Slope Repair - Removal Action Closure Report
Portland, Oregon

APPENDIX A
CONSTRUCTION WEEKLY PROGRESS REPORTS

October 12, 2010

Sean Sheldrake
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Mailstop ECL-115
Seattle, WA 98101-3140

Subject: **Terminal 4 Removal Action – Wheeler Bay Bank Repairs**
Construction Weekly Progress Report for October 1 through 8, 2010

Dear Sean:

This weekly status report contains information related to the implementation of the Terminal 4 Removal Action – Wheeler Bay Bank Repairs as required by the Administrative Order on Consent (AOC) between the Port of Portland (Port) and the U.S. Environmental Protection Agency (USEPA) signed on October 2, 2003. The reporting period covered by this letter is October 1 to 8, 2010.

SIGNIFICANT DEVELOPMENTS

- Mobilization and construction work began

CONSTRUCTION ACTIVITIES PERFORMED

- Mobilization of NEI to the site
- Erosion control measures were implemented (silt fences installed at the bottom of the slope)
- Existing woody debris was removed and stockpiled
- Habitat mix was removed from the surface of the existing rip rap in areas where additional rip rap will be placed
- NEI begins to bring Class 700 rip rap and select fill to the site
- Demarcation fabric replaced where missing
- NEI begins placing Class 700 rip rap to grade (from roughly station 0-30 to 2+00)
- NEI begins placing select fill to grade (from roughly station 0-30 to 2+00)

PROBLEMS ENCOUNTERED AND PROPOSED SOLUTIONS

- None

MONITORING ACTIVITIES PERFORMED

- Visual observations of erosion control measures and Wheeler Bay surface water. Erosion control structure working as designed. No turbidity evidence within Wheeler Bay.

SUMMARY OF MONITORING DATA COLLECTED AND RECEIVED

- None

SCHEDULE OF ACTIVITIES TO BE PERFORMED DURING NEXT REPORTING PERIOD

- No construction activities at the site are anticipated during the week of October 11th. The search for top soil will continue.

If you have any questions, please call me at (503) 415-6676.

Sincerely,

Kelly Madalinski
Environmental Project Manager
Port of Portland

Attachments:

- Attachment A: Port of Portland Daily Construction Reports
- Attachment B: NEI Daily Construction and Quality Control Reports

ATTACHMENT A

PORT OF PORTLAND DAILY CONSTRUCTION REPORTS

PORT OF PORTLAND

DAILY DIARY

PROJECT Terminal 4, Wheeler Bay Bank Repairs **CONTRACT NO.** 10D015/820027

CONTRACTOR Northwest Earthmovers **SUPERINTENDENT** Carl Johnson (NEI)

DAY OF WEEK & DATE: **Friday, October 1, 2010** **REPORT NO.** **1**

WEATHER Cloudy to partly sunny **TEMPERATURE** 65-70 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
CHASP Overview Meeting: 1-NEI principal 1-project manager 1-superintendent 1-laborer **Construction Activities:** 1-superintendent 1-laborer 1-truck driver	1-Chevrolet HD pickup (OR XZC998) 1-Ford Service truck (OR 512701) 1-Hitachi 160LC Excavator (N833)/mobilized to work area only—not used for construction activities

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 Arrive on site—deliver project documents to T4 administration building

07:30 phone call to Bruce Craven (KM)
NEI arrives on site

08:00-
09:00 Walk project site with NEI staff (Jeff Hargens, Carl Johnson, and laborer)

09:00-
10:30 NEI conducts CHASP overview and safety kickoff meeting/walk work site with attendees:

Ingmar Saul (PMX)
Carl Johnson (NEI)
Sheila McConnell (PMX)
Jeff Hargens (NEI)
Philip Hansen (NEI)
"Red"-laborer (NEI)
Roger Anderson (POP)
Kelly Madalinski (POP)
Tim Stone (AQ/POP)

10:30-
12:15 NEI begins mobilization and site preparation
Begin layout of work area and installation of silt fence downgradient of work area
EPA oversight observing work (Ingmar Saul)

12:00-
12:30 Tim Stone phone conversation with Bruce Craven (KM)

12:30 inform Carl Johnson (NEI) of logistical coordination requirements for rail crossing

12:15-
12:45 NEI lunch break

12:45-
13:00 NEI moves Hitachi 160LC across rail at crossing using planks to protect rails (completed during non-operational train hours)

PORT OF PORTLAND

DAILY DIARY

PROJECT Terminal 4, Wheeler Bay Bank Repairs **CONTRACT NO.** 10D015/820027

CONTRACTOR Northwest Earthmovers **SUPERINTENDENT** Carl Johnson (NEI)

DAY OF WEEK & DATE: **Friday, October 1, 2010** **REPORT NO.** **1**

WEATHER Cloudy to partly sunny **TEMPERATURE** 65-70 degrees F

13:00-
14:00 Walk construction site with John Durst (POP). Phone call from John Durst to Bruce Craven (KM) confirming understanding of rail crossing logistics.

13:00-
15:45 NEI digging approx. 6-inch deep anchor trench for silt fence and installing silt fence and backfilling anchor trench (Photo 1 and Photo 2).
Completed installation of approx. 400 L.F. of silt fencing.
EPA contractor on site observing installation (Ingmar Saul).

16:00 Anchor QEA, Parametrix, and NEI off site.

PHOTO 1

PORT OF PORTLAND

DAILY DIARY

PROJECT Terminal 4, Wheeler Bay Bank Repairs **CONTRACT NO.** 10D015/820027

CONTRACTOR Northwest Earthmovers **SUPERINTENDENT** Carl Johnson (NEI)

DAY OF WEEK & DATE: **Friday, October 1, 2010** **REPORT NO.** **1**

WEATHER Cloudy to partly sunny **TEMPERATURE** 65-70 degrees F

PHOTO 2

PORT OF PORTLAND

DAILY DIARY

PROJECT Terminal 4, Wheeler Bay Bank Repairs **CONTRACT NO.** 10D015/820027

CONTRACTOR Northwest Earthmovers **SUPERINTENDENT** Carl Johnson (NEI)

DAY OF WEEK & DATE: **Friday, October 1, 2010** **REPORT NO.** **1**

WEATHER Cloudy to partly sunny **TEMPERATURE** 65-70 degrees F

NA **HRS:** **NA**

TESTS PERFORMED: **None**

PHONE LOG:

07:30—attempt to reach Bruce Craven(KM) regarding clarification of rail crossing access times and logistics
12:00—receive return call from Bruce Craven(KM); Bruce reiterates that the tracks cannot be crossed outside of the hours of 03:00-07:30,11:30-13:00, and 17:00-18:00 on days of active rail operations. Bruce indicates that special exceptions can be coordinated through the Terminal Manager (Bruce Craven or Jeff Bean), but it will take some time and should be only used as an option when absolutely necessary.

PORT OF PORTLAND

DAILY DIARY

PROJECT Terminal 4, Wheeler Bay Bank Repairs **CONTRACT NO.** 10D015/820027

CONTRACTOR Northwest Earthmovers **SUPERINTENDENT** Carl Johnson (NEI)

DAY OF WEEK & DATE: **Friday, October 1, 2010** **REPORT NO.** **1**

WEATHER Cloudy to partly sunny **TEMPERATURE** 65-70 degrees F

SITE PHOTOS/VIDEOS TAKEN:	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1-installation of silt fence in progress **2-completed silt fence installation along shoreline/downgradient of construction area** ***Multiple pre-construction condition photos not attached to this document.**	None

INSPECTOR Timothy J. Stone HRS 9.0 DATE 10/1/10

(signature on hardcopy)

PORT OF PORTLAND

DAILY DIARY

PROJECT Terminal 4, Wheeler Bay Bank Repairs **CONTRACT NO.** 10D015/820027

CONTRACTOR Northwest Earthmovers **SUPERINTENDENT** Carl Johnson (NEI)

DAY OF WEEK & DATE: **Monday, October 4, 2010** **REPORT NO.** **2**

WEATHER Cloudy, light rain, and occasional sun breaks **TEMPERATURE** 55-62 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	MAJOR EQUIPMENT ON JOB (Size/capacity and hours):
Weekly Construction Meeting: 1-project manager 1-superintendent **Construction Activities:** 1-superintendent 1-laborer	1-Chevrolet HD pickup (OR XZC998)/on site 5 hours 1-Ford Service truck (OR 512701)/on site 9 hours 1-Hitachi 160LC Excavator (N833)/8 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00-
08:00 2-NEI and 1-PMX staff travel to T6 for TWIC Escort training and credentials.

08:00-
08:30 mobilize HITACHI 160LC down slope to work area

08:30-
11:15 NEI removing naturally occurring woody debris from 0+00 to 0+300 (approximate) and stockpiling wood above erosion control from approx. 3+00 to 3+50.

NEI utilizing demolition saw to cut chains from 2 log jams installed during initial construction operations. Logs from the constructed log jams stockpiled separately for eventual reinstallation.

09:30-
11:00 Weekly contractor construction meeting. Attendees:

Carl Johnson (NEI)	Roger Anderson (POP)
Jeff Hargens (NEI)	Kelly Madalinski (POP)
Tim Stone (AQ/POP)	John Durst (POP)
Marcel Hermans (POP)	Tom Condon (POP)
Bruce Craven (KM)	John Verduin (AQ)
Phillip Bales (POP)	Mary Green (POP)
Utility locator (POP)	

11:15-
12:00 Weekly progress meeting with EPA.

Roger Anderson (POP)	Kelly Madalinski (POP)
Tim Stone (AQ/POP)	John Durst (POP)
Marcel Hermans (POP)	John Verduin (AQ)
Ingmar Saul (PMX)	

11:15-
12:30 NEI clearing habitat mix from surface of rip rap between 0+00 and 0+75 (approx.)

12:15 NEI notified that they should attempt to segregate 1 ½-inch minus crushed rock being cleared from above rip rap/below habitat mixture. During reinstallation contractor will attempt to place this material first and cover with available

PORT OF PORTLAND

DAILY DIARY

PROJECT Terminal 4, Wheeler Bay Bank Repairs **CONTRACT NO.** 10D015/820027

CONTRACTOR Northwest Earthmovers **SUPERINTENDENT** Carl Johnson (NEI)

DAY OF WEEK & DATE: **Monday, October 4, 2010** **REPORT NO.** **2**

WEATHER Cloudy, light rain, and occasional sun breaks **TEMPERATURE** 55-62 degrees F

habitat mixture.

12:30-
13:00 NEI lunch break.

13:00-
15:30 NEI removes rip rap from 0+75 to 2+90 (approx.) and places large woody debris to protect silt fence from rip rap rolling down the slope during tomorrow's anticipated material unloading activities.

15:30 POP receives notification from Bruce Craven (email) that there will be no rail activity on 10/5/10. NEI notified.

15:30-
16:00 NEI moves 160LC excavator to top of slope. NEI clean up and shutdown.

16:00 Anchor QEA, Parametrix, and NEI off site.

NA **HRS:** **NA**

TESTS PERFORMED: **None**

PHONE LOG:
12:05 Tim Stone to John Verduin: discuss implication of 1 1/2-inch minus crushed rock identified in rip rap, beneath habitat mixture. Contractor will be instructed to attempt to segregate and place beneath habitat mix during repair work.

SITE PHOTOS/VIDEOS TAKEN:	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
(attached below) **1- naturally occurring woody debris stockpiled** **2-logs removed from 2 constructed log jams stockpiled** **3-clearing habitat mixture and exposing existing rip rap surface** **4- completed removal of habitat mixture and exposure of rip rap** ***other photos of construction activities available but not attached to this document.**	None

INSPECTOR Timothy J. Stone HRS 8.5 DATE 10/4/10
(signature on hardcopy)

PORT OF PORTLAND

DAILY DIARY

PHOTO 1

PHOTO 2

PORT OF PORTLAND

DAILY DIARY

PHOTO 3

PHOTO 4

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Tuesday, October 5, 2010**	**REPORT NO.**	**3**
WEATHER	Partly cloudy(AM), Sunny(PM), Northwest wind 5-15 mph	**TEMPERATURE**	55-65 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator	1-Ford Service truck (OR 512701)/9 hours 1-Hitachi 160LC Excavator (N833)/8 hours 1-Cat IT28G (N710)/3 hours 3-steel plates (8' x 16')

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI(1), AQ/POP(1), and PMX(1) staff on site

07:00-
07:30 mobilize HITACHI 160LC down slope to work area; and prepare to receive rock shipments

07:40 NEI begins receiving import of Class 700 rip rap and select fill from CEMEX. Rip rap being dumped down access path then transferred with HIT 160LC excavator to footprint of repair starting at station 0-30.

NEI stockpiling select fill upgradient of security fence > 25' from railroad track

NEI building base layer, but not completing to finish grade as a means of clearing dump area.

10:00 dumping of 4 loads of Class 700 onto slope has resulted in exposure of demarcation fencing. Large rocks embedding into the topsoil and mulch on access path when dropping on ground from truck. Attempts to recover these rocks have resulted in snagging and exposing remnants of demarcation fencing.

10:30 Jeff Hargens (NEI) on site. Discuss options to prevent further impact to the topsoil and demarcation marker. NEI will deliver 3-8'x16' steel sheets to act as a material slide for the riprap.

11:20 NEI receives final load of select fill material.
Total for 10/5 = 3 tandem loads/98.86 ton

12:20-
12:50 NEI Lunch Break
NEI has completed placement rip rap base layer from 0-30 to 0+40 (approx.)

12:50 NEI resumes receiving of Class 700 rip rap and placement of rip rap base layer at approx. 0+40

13:30 NEI receives CAT IT28G(N710) loader and 3 steel plates (8' x 16') and installs the plates to protect surface of access path on slope from rip rap as it is moved down the slope.

14:00-
15:45 NEI continues to receive import of Class 700 rip rap; and placement of base layer of rip rap within footprint of repair area
NEI has completed placement of Class 700 rip rap base layer from approx. station 0-30 to 0+75

PORT OF PORTLAND

DAILY DIARY

15:45-
16:00 NEI moves HITACHI 160LC to top of bank for refueling.

16:00 Parametrix and NEI off site.

16:15-
17:00 Roger Anderson on site to review boundaries of repair and rip rap placement; and verify contractor layout with Tim Stone.

Persons on site 10/5:

Tim Stone(AQ/POP), Carl Johnson (NEI), Jeff Hargens (NEI), Truck Driver (NEI), 3-truck drivers (CEMEX), Ingmar Saul (PMX), Roger Anderson (POP)

Material delivery summary as of 10/5:

	Delivered 10/5 (tons)	Delivery Verification Method	Preceding Delivered Total (tons)	Total Delivered for Project (tons)
Select Fill	98.86	Scale ticket	0	98.86
Class 700 RR	190.28	Scale ticket	0	190.28

	NA	HRS:	NA

TESTS PERFORMED:	**None**

PHONE LOG:
11:05 Phone call from Tim Stone to Roger Anderson. Set up time to observe contractor layout and confirm footprint of rip rap placement area.

14:10 Phone call from Tim Stone to Bruce Craven. Discuss Kinder Morgan train operation schedule for upcoming days. Current schedule: operation to begin at 17:00 on 10/5; resuming at 07:00 on 10/6 (Wednesday) with possible downtime after 12:00 on 10/6; and full operation day on 10/7 (Thursday). Tentatively no operations on 10/8 (Friday).

SITE PHOTOS/VIDEOS TAKEN: (attached below)	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1- Class 700 rip rap import unloading to slope **2- Top-of-bank stockpile of Class 700 and select fill** **3- In place base layer of Class 700** **4- End-of-day Class 700 placement progress** ***other photos of construction activities available but not attached to this document.**	None

PORT OF PORTLAND

DAILY DIARY

INSPECTOR	Timothy J. Stone	HRS	10.0	DATE	10/5/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Wednesday, October 6, 2010**	**REPORT NO.**	**4**
WEATHER	Clear, Northwest wind 5-15 mph	**TEMPERATURE**	L:60 H:80 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer	1-Ford Service truck (OR 512701)/10 hours 1-Chevrolet HD pickup (OR XZC998)/8 hours 1-Hitachi 160LC Excavator (N833)/10 hours 1-Cat IT28G (N710)/10 hours 4-steel plates (8' x 16')/10 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI(1), AQ/POP(1), and PMX(1) staff on site

07:00-
07:30 mobilize HITACHI 160LC down slope to work area

NEI continues placing rip rap base layer beginning at approximately station 0+75

NEI transferring select fill from stockpile at top of slope with loader to excavator and bottom of slope; and placing select fill base layer at upgradient extent of rip rap base layer beginning at approximately station 0+00 (Photo 1)

08:30-
09:30 Jeff Hargens (NEI) on site to walk construction footprint layout and confirm design objectives.

09:30 NEI operator/laborer on site

10:00 NEI continues transferring select fill from stockpile at top of slope to excavator at toe of slope
Excavator at toe of slope and placing select fill at upgradient extent of rip rap base layer (Photo 3).

11:30 NEI begins receiving CL 700 import (single truck on approx. 1.5-hour rounds).

12:00 NEI lunch break

NEI has completed placement of rip rap base layer from approximately station 0-30 to 1+00

NEI has completed placement of select fill filter layer at upgradient edge of rip rap base layer from approximately station 0+00 to 1+00

12:30 NEI receives delivery of 1 steel sheet (8' x 16')

12:30 NEI moving CL 700 from stockpile at top of slope to base of slope.

NEI begins moving rip rap to 0+00 and begins building rip rap slope to grade including approx. 2' bench at elevation 16.5 feet which overlies select fill base layer. NEI using laser level to verify elevation as slope is constructed.

NEI will need to place base layer of select fill at transition to existing slope (station 0-30 to 0+00) before placing rip rap to complete the transition (Photo 2).

12:30 Continuing to receive CL 700 imports.

16:00 NEI operator/laborer off site
EPA oversight (PMX) off site

16:45 NEI moves excavator to top of slope.

17:00 NEI superintendent/operator off site
AQ/POP inspector off site

Summary of contractor progress:
Rip rap base layer completed from approximately station 0-30 to 1+25
Select fill base layer completed from approximately station 0+00 to 1+25
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0+00 to 1+00

Persons on site 10/6/10:

Tim Stone(AQ/POP), Carl Johnson (NEI), Jeff Hargens (NEI), Truck Driver (NEI), Operator/laborer (NEI),1-truck driver(CEMEX), Ingmar Saul (PMX), John Durst (POP), Tom Peterson (POP), Philipp Bales (POP)

Material delivery summary as of 10/6/10 (end-of-day):

	Delivered 10/6 (tons)	Delivery Verification Method	Preceding Delivered Total (tons)	Total Delivered for Project (tons)
Select Fill	0	Scale ticket	98.86	98.86
Class 700 RR	59.22	Scale ticket	190.28	249.50

	NA	HRS:	NA

TESTS PERFORMED:	None

PHONE LOG:
16:00 Tim Stone to Bruce Craven. Coordinate logistics of moving rock imports across tracks during train operation on 10/7/10.

SITE PHOTOS/VIDEOS TAKEN: (attached below)	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1- placement of select fill base layer **2- transition to existing grade from approx. station 0+00 to 0-30** **3- base layer of select fill placed upgradient of base layer of rip rap** **4- rip rap slope and 2-foot bench constructed to**	None

elevation 16.5 ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	

INSPECTOR	Timothy J. Stone	HRS	10.0	DATE	10/5/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PORT OF PORTLAND

DAILY DIARY

PHOTO 4

PORT OF PORTLAND

DAILY DIARY

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Thursday, October 7, 2010**	**REPORT NO.**	**5**
WEATHER	Clear, Southeast wind 5-15 mph	**TEMPERATURE**	L:58 H:70 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer	1-Ford Service truck (OR 512701)/10 hours 1-Chevrolet HD pickup (OR XZC998)/10 hours 1-Hitachi 160LC Excavator (N833)/10 hours 1-Cat IT28G (N710)/10 hours 4-steel plates (8' x 16')/10 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI(2), AQ/POP(1), and PMX(1) staff on site

07:15 Tim Stone contacts Jim Farrell (KM) to coordinate import-truck crossings at the rail during KM active operations
NEI begins placing base layer of select fill from approximately station 0+00 to 0-30 and creating transition to existing shoreline

07:30 NEI moving stockpile material down slope with loader and transferring to excavator for placement
Placing rip rap from approximately 0+00 to 0-30 to meet grade at transition to existing shoreline (Photo 1)
Tim Stone coordinates with KM foreman to facilitate crossing of rails with import material during KM operations

08:00 NEI begins receiving imports from CEMEX (select fill and CL 700)
NEI continues moving material down slope and placing with excavator
NEI placing rip rap from 0+00 to 1+00 to complete a continuous grade in the rip rap surface—filling voids and bellies that remained after building rip rap to design grade

09:00-
12:30 NEI continuing construction of rip rap to finish grade beginning at 1+00 moving toward KM terminal
NEI placing base layer of rip rap and base layer of select fill from 1+25 to 2+00

12:30 NEI lunch break

13:00-
16:00 NEI continues placing rip rap to grade from 1+00 to 2+00
NEI placing select fill upgradient of 2-foot rip rap bench at elevation 16.5
NEI continues receiving imports of select fill and CL 700 rip rap

15:30 EPA oversight (PMX) off site

16:00 Jeff Hargens on site—observe site progress with Tim Stone and Carl Johnson

16:30 NEI moves excavator to top of slope and to staging area.

17:00 NEI project manager(1), superintendent/operator(1), and operator/laborer(1) off site
AQ/POP inspector off site

Summary of contractor progress:
Rip rap base layer completed from approximately station 0-30 to 2+00
Select fill base layer completed from approximately station 0-30 to 2+00

PORT OF PORTLAND

DAILY DIARY

Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-30 to 2+00
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-30 to 2+00

Persons on site 10/7/10:

Tim Stone(AQ/POP), Carl Johnson (NEI), Jeff Hargens (NEI), Operator/laborer (NEI),4-truck drivers(CEMEX), Ingmar Saul (PMX), John Durst (POP), Lorali Sinnen (POP)

Material delivery summary as of 10/7/10 (end-of-day):

	Delivered 10/7 (tons)	Delivery Verification Method	Preceding Delivered Total (tons)	Total Delivered for Project (tons)
Select Fill	64.02	Scale ticket	98.86	162.88
Class 700 RR	177.98	Scale ticket	249.50	427.48

	NA	HRS:	NA

TESTS PERFORMED:	None

PHONE LOG:
16:00 Tim Stone to Jim Farrell (KM). Coordinate logistics of moving rock imports across tracks during train operation on 10/7/10.

SITE PHOTOS/VIDEOS TAKEN: (attached below)	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1- placed rip rap from 0-30 to 0+00 at transition to existing grade **2- placed select fill above rip rap from 0-30 to 0+00 at transition to existing grade** **3- placing select fill above rip rap at approximately station 1+50** **4- condition placed rip rap and select fill from approximately station 0+75 to 0-30** ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	None

INSPECTOR	Timothy J. Stone	HRS	10.0	DATE	10/7/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

ATTACHMENT B

NEI DAILY CONSTRUCTION AND QUALITY CONTROL REPORTS

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	11.0	Terminal 4 Wheeler Bay Bank Repairs	820027	2010D015

Port of Portland

☐ O&M Manual	**Submitted By (name of person)**	**General Contractor**	Contractor Job No.
☒ Specification	Philip Hansen (Estimating Dept.)	Northwest Earthmovers, Inc.	#1019
☐ Calculations		Sub-Contractor:	
☐ Warranty	**Port Drawing Reference** / Router	Material Supplier:	
☐ Change Order	**Drawing No.** / **Sht. No.**	**Primary Consultant**	
☐ Other ___________		Anchor QEA	

Transmittal Routing ("From" > "To")	Copies	Attention (destination name)	Date Sent	Date Rec'd	Date Due
Contractor > Port Const.	1	John Durst	10/4/10		
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.**
		Weekly Reviewed Field Report - thru 10/2				

CONTRACTOR/CONSULTANT NOTES:	TRC USE ONLY	PORT NOTES:	SUBJECT TO ALL CONTRACT REQUIREMENTS
(submitted electronically per job site meeting 10/4 direction)		☐ File	A = PROCEED
		☐ Tim Stone	B = CORRECT AS NOTED & PROCEED
	Date Rec'd At TRC:	☐	C = REVISE AND RESUBMIT
	Index No:		INFO = FOR INFORMATION ONLY
	Document Quality: OK / Resubmit		

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair   Contract #87460   **NEI Job # 1019**

Date: 10/1/10   Weather: Cloudy

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken) INSTALLED IN GOOD CONDITION

Silt Fence: We installed fence today

Construction Entrance: Not need at this time

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
NB33 Hit. 160	None	None	Was delivered today, we didn't use

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim Stone met with Kindor Morgin and we can only cross R/R tracks between non-working hours, I talked to Mr. Hargens and he said it would be discussed at Mondays meeting

I FOLLOWED UP WITH TIM AND JOHN BY PHONE IN THE AFTERNOON.

LABOR			EQUIPMENT		
Description	Activity	Hrs	Description	Activity	Hrs
Mike Madison	install silt fence	4			
" "	orientation meeting	3			
Carl Johnson	install silt fence	4			
" "	orientation meeting	3			

6 Work Performed (Description & Quality Observations):

Describe work Performed: Orientation meeting, and we install by hand 370' of orange silt fence

QUALITY OK

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

370 orange silt fence ✓

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By: CG

REVIEWED 10/4/10

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair   Contract #87460   **NEI Job # 1019**

Date: 10/4/10   Weather: Cloudy, some lite shower PM

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good ✓

Construction Entrance: Not need at this time

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal ✓

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N833 Hit. 160	None	None	running good ✓

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

I asked Tim & Kelly if we could place woody debris below silt fence they said we should keep it in work area and we did
Tim & Ingmar were on site all day they looked at existing rip-rap and said it looked OK for new rip-rap placment

We will start hauling select fill & rip-rap tomorrow, Kinder Morgan's train will be shut down

LABOR			EQUIPMENT		
Description	Activity	Hrs	Description	Activity	Hrs
Mike Madison	remove chains trees	1 1/2	N833 Hit. 160	remove wood & fish mixs	2 1/2
" "	Obtain escort card	1			
Carl Johnson	Obtain escort card	1	N833 Hit. 160	removed wood &	5 1/2
" "	Monday Portmeeting	1 1/2		fish mix	

6 Work Performed (Description & Quality Observations):

Describe work Performed: We removed wood debris, cut chains on log bundles, we cleaned off fish mix preparing existing rip-rap for new placment of rock

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

None

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship:

REVIEWED

Prepared By:

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/5/10 Weather: Sunny

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N833 Hit. 160	None	None	running normal
N710 CAT I+28	None	None	running normal

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

I talked to Tim S. & Jeff H. about slope where we are dumping rip-rap the demarcation layer was starting to be exposed, it is approx. 6" deep, so we decided to fix the problem by placing steel sheets on the slope

Ingmar and I looked at demarcation along scarped end and repaired 1 small area with new orange fencing on North end of repair area

LABOR

Description	Activity	Hrs
Carl Johnson	repair demarcation	½
" "		

EQUIPMENT

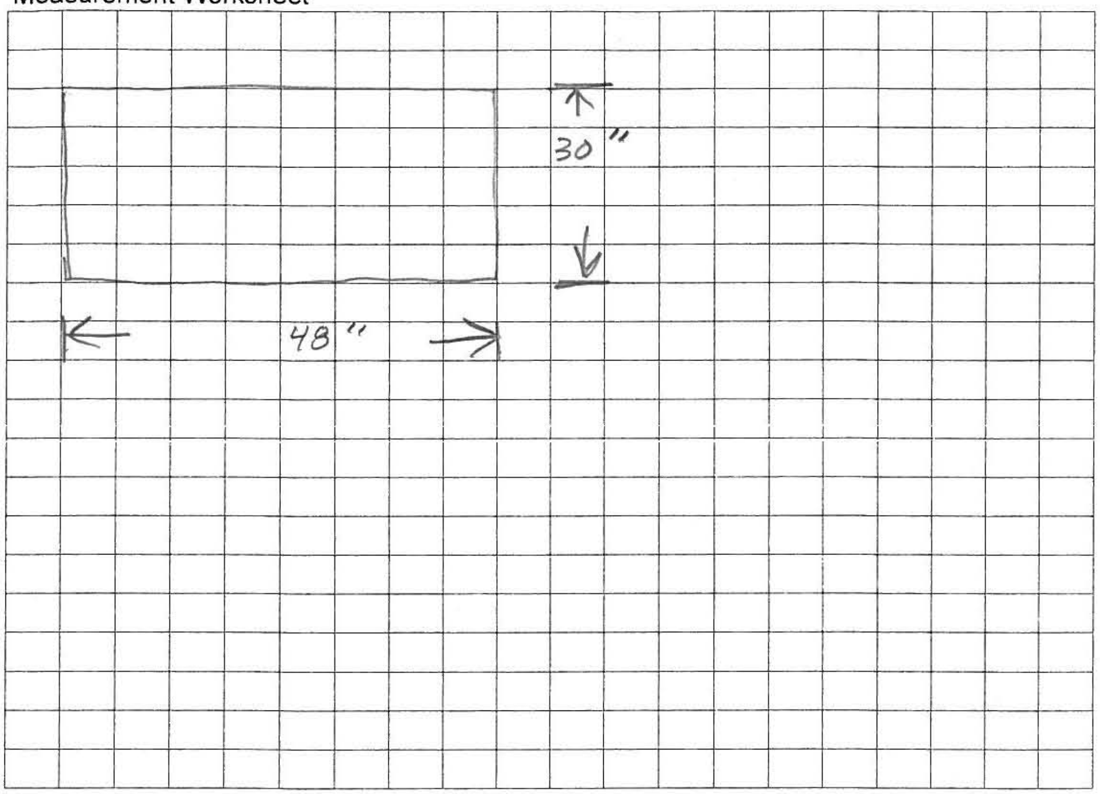
Description	Activity	Hrs
N833 Hit. 160	pack & place rip-rap	7
N710 CAT I+28	pack & place steel plates	1

6 Work Performed (Description & Quality Observations):

Describe work Performed: We started receiving rock from Cemex, we started packing & placing rip-rap at Northend, we placed steel sheets on slope where dump rip-rap, and repair small demarcation section

Measurement Worksheet

Demarcation Repair



7 Material Volumes & Quantities: (& Quality Observations)

3 transfer lds delivered by Cemex 98.86 total tons of Select fill
13 solo lds delivered by Cemex 190.28 total tons of Class 700 rip-rap

No rock delivery tomorrow Kinder Morgan are running the train

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Reviewed

Prepared By: CQ

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair   Contract #87460   **NEI Job # 1019**

Date: 10/6/10   Weather: Sunny

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good ✓

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None ✓

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N833 Hit. 160	None	None	running normal ✓
N710 CAT It28	None	None	running normal ✓

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim Sr & Jeff H. & I talked about building full rip-rap & select fill section to - 20, and we talked about rip-rap & select fill overrun to make work area look like cross sections

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Mike Madison	grade rip-rap	1	N710 CAT It 28	pack rip-rap	3 1/2
" "			" " " "	pack select fill	1
Carl Johnson			N833 Hit. 160	place rip-rap	7 1/2
" "			" " "	place select fill	1

6 Work Performed (Description & Quality Observations):

Describe work Performed: We packed & placed rip-rap & select fill
We placed 1 more steel sheet on dumping slope, we had 1 solo
hauling rip-rap ½ day train was shut down from 11:30 on

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

4 solo lds rip-rap delevered by Cemex 59.22 total tons

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By: CJ

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair   Contract #87460   **NEI Job # 1019**

Date: 10/7/10   Weather: Cloudy

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
NB33 Hit. 160	None	None	running good ✓
N710 CAT IT28	None	None	running good ✓

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim S. & Ingmar were onsite all day

TALKED TO TIM S. AND INGMAR THAT WE WOULD NOT BE WORKING FRIDAY, AND MONDAY WAITING FOR TOPSOIL APPROVAL AND/OR ANCHOR MATERIAL.

LABOR / **EQUIPMENT**

Description	Activity	Hrs	Description	Activity	Hrs
Mike Madison	✓ grade, shovel select	1	N710 CAT IT28	pack select fill	2
	Escort Rock truck	1	" " " "	pack rip-rap	5
Carl Johnson			N833 Hit. 160	place & pack rip-rap	6
" "			" " "	place & pack select	3

6 Work Performed (Description & Quality Observations):

Describe work Performed: Placed & pack rip-rap & select fills, ✓ grade top of rip-rap at 16.50, and placed approx. 12" of select fill on back side of rip-rap

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

12 solo lds rip-rap delevered by Cemex 177.98 total tons

2 Transfer lds select fill delevered by Cemex 64.02 total tons

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

REVIEWED

Prepared By:

Mission: To enhance the region's economy and quality of life by providing efficient cargo and air passenger access to national and global markets.

PORT OF PORTLAND
Possibility. In every direction.

October 19, 2010

Sean Sheldrake
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Mailstop ECL-115
Seattle, WA 98101-3140

Subject: Terminal 4 Removal Action – Wheeler Bay Bank Repairs
Construction Weekly Progress Report for October 11 through 15, 2010

Dear Sean:

This weekly status report contains information related to the implementation of the Terminal 4 Removal Action – Wheeler Bay Bank Repairs as required by the Administrative Order on Consent (AOC) between the Port of Portland (Port) and the U.S. Environmental Protection Agency (USEPA) signed on October 2, 2003. The reporting period covered by this letter is October 11 to 15, 2010.

SIGNIFICANT DEVELOPMENTS

- Continued construction activities

CONSTRUCTION ACTIVITIES PERFORMED

- Imported large woody debris (LWD) to site
- Imported Class 700 riprap to site
- Imported coir fabric to site
- Imported chain to site
- Continued to remove habitat mixture to expose existing riprap before placing new riprap
- Completed a test installation of a Manta Ray anchor

7200 NE Airport Way Portland OR 97218
Box 3529 Portland OR 97208
503 415 6000

PROBLEMS ENCOUNTERED AND PROPOSED SOLUTIONS

- Continued to look for suitable top soil material. Additional sources of top soil were sampled and submitted to the laboratory for chemistry analysis.

MONITORING ACTIVITIES PERFORMED

- Visual observations of erosion control measures and Wheeler Bay surface water. Erosion control structure working as designed. No turbidity evidence within Wheeler Bay.

SUMMARY OF MONITORING DATA COLLECTED AND RECEIVED

- None

SCHEDULE OF ACTIVITIES TO BE PERFORMED DURING NEXT REPORTING PERIOD

- Finishing placement of riprap and select fill
- Installation of LWD and Manta Ray anchors
- Importing of top soil

If you have any questions, please call me at (503) 415-6676.

Sincerely,

Kelly Madalinski
Environmental Project Manager
Port of Portland

Attachments:
- Attachment A: Port of Portland Daily Construction Reports
- Attachment B: NEI Daily Construction and Quality Control Reports

ATTACHMENT A
PORT OF PORTLAND DAILY CONSTRUCTION REPORTS

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Wednesday, October 13, 2010**	**REPORT NO.**	**6**
WEATHER	Clear, Southeast wind 5-15 mph	**TEMPERATURE**	L:59 H:74 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver	1-Ford Service truck (OR 512701)/10 hours 1-Hitachi 160LC Excavator (N833)/10 hours 1-Cat IT28G (N710)/10 hours 4-steel plates (8' x 16')/10 hours 1-truck/end-dump trailer (LWD transport)

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

08:00 AQ/POP(1) staff on site

08:30 NEI(1) and PMX(1) staff on site

08:30-
09:00 NEI preparing equipment and unloading log-anchor systems.

09:00-
10:45 NEI moving naturally occurring woody debris toward river between station 2+81 and 7+00 to allow access for installation of imported/anchored LWD at elevation 15 contour.
NEI receives shipment of 300'-- ¾" chain

10:45-
11:15 NEI delivers and drops first load of LWD (4 logs)
Measured diameter at 21' above stump to confirm 12-inch diameter

11:15-
12:00 NEI moving LWD across tracks and down slope with loader
NEI transferring LWD from toe of slope and placing near anchor locations starting at station 7+00

12:00-
12:30 NEI lunch break

12:30-
13:00 NEI extending station layout to from station 2+00 to station 7+00

13:00-
13:30 NEI delivers load of LWD (6 logs)
Measured diameter at 21' above stump to confirm 12-inch diameter

13:30-
14:30 NEI moving LWD to approximately station 6+00.

14:30 NEI begins clearing habitat mixture and exposing rip rap from approximately station 2+40 to 2+81
Jeff Hargens (NEI) on site.

Tim Stone inspects delivery of ¾" lashing chain. Specification and submittal require non-galvanized chain. Chain found to be galvanized--incorrect chain delivered to site. Notified Jeff Hargens of issue. NEI will have correct chain delivered as soon as possible.

15:30 Jeff Hargens, Tim Stone, and Carl Johnson discuss installation specifications and methodologies relating to anchoring of LWD. Does cable need to terminate below ground? Tim will contact Peter Hummel regarding the intent of the design.

16:00 NEI and PMX staff off site.

16:15 Tim Stone contacts Peter Hummel (AQ) regarding LWD-anchor installation design. Peter indicates that cable does not need to terminate below ground for this application. Chain will be cinched tight around log and secured with shackle. Cable will be run through the shackle, pulled tight and terminated as shown in drawings.

16:30 Phone call from Tim Stone to Jeff Hargens. Clarify the LWD anchor system design as discussed with Peter Hummel.
Tim Stone off site.

Summary of contractor progress:
Rip rap base layer completed from approximately station 0-30 to 2+00
Select fill base layer completed from approximately station 0-30 to 2+00
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-30 to 2+00
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-30 to 2+00
Pre-existing woody debris cleared from work area from 0-30 to 7+00

Persons on site 10/13/10:

Tim Stone(AQ/POP), Carl Johnson (NEI), Jeff Hargens (NEI), Operator/laborer/truck driver (NEI), Ingmar Saul (PMX)

Material delivery summary as of 10/13/10 (end-of-day):

	Units	**Delivered 10/7 (units)**	**Delivery Verification Method**	**Preceding Delivered Total**	**Total Delivered for Project**
Select Fill	tons	64.02	Scale ticket	98.86	162.88
Class 700 RR	tons	177.98	Scale ticket	249.50	427.48
Manta Ray anchors	pieces	68	Visual inspection	0	68
Chain-3/4" **galvanized**	feet	300	Visual inspection—**OUT OF SPEC**	0	300
Large woody debris	pieces	10	Visual inspection and measurement	0	10

	NA	**HRS:**	**NA**

TESTS PERFORMED: **None**

PHONE LOG:
16:15 Tim Stone to Peter Hummel (AQ). Confirm design intent for LWD anchoring system.

16:30 Tim Stone to Jeff Hargens (NEI). Relay information regarding LWD anchoring system design.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

PORT OF PORTLAND

DAILY DIARY

1- naturally occurring LWD cleared from approximately 2+81 to 7+00 **2- delivery of LWD (4 pieces)** **3- delivery of LWD (6 pieces)** ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	None

INSPECTOR	Timothy J. Stone	HRS	8.0	DATE	10/13/10

(signature on hardcopy)

PHOTO 1

PORT OF PORTLAND

DAILY DIARY

PHOTO 2

PHOTO 3

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Thursday October 14, 2010**	**REPORT NO.**	**7**
WEATHER	Clear, Southeast wind 0-5 mph	**TEMPERATURE**	L:50 H:64 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver	1-Ford Service truck (OR 512701)/6 hours 1-Hitachi 160LC Excavator (N833)/taken off site 1-Hitachi 160LC Excavator (N849) delivered with hoe compactor unit/6 hours 1-Cat IT28G (N710)/6 hours 4-steel plates (8' x 16')/6 hours 1-truck/end-dump trailer (LWD transport)

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI(2), PMX(1), and AQ/POP(1) staff on site

07:15-
08:00 NEI receiving coir fabric (3 rolls x 1079 sq.ft. = 3237 sq.ft.), 10"x10"x1" fabric staples (1000 pcs.)
NEI removes excavator N833 from site
NEI delivers replacement 160LC equipped with hoe compactor for driving anchors
NEI delivers LWD (4 pcs.)—confirmed compliance with spec by measurement (Photo 1)

08:00-
09:00 NEI assembling tooling and configuring 160LC excavator and hoe compactor for driving anchor systems (Photo 2)

09:00-
10:00 NEI preparing to test-drive manta ray anchors
NEI delivers LWD (4 pcs)—confirmed compliance with spec by measurement

10:30-
11:00 NEI attempts to drive anchor at approximately station 6+80 by pushing on threaded anchor rod and vibrating with hoe compactor
Threaded anchor rod is too flexible for driving anchor, and anchor could not be driven beyond 3 ft below ground surface.
Anchors will need to be driven by independent heavy rod (approximately 1-3/8" diameter) inserted into drive hole provided in anchor foot.

11:15 NEI delivers additional 6 rolls coir fabric: BioD-Mat, Rolanka International, Inc., 29 oz./sq.yd. (6 rolls x 1070 sq.ft.= 6474 sq.ft).
NEI delivers 100 2"x2"x2' df stakes for anchoring coir fabric
NEI delivers partially assembled stainless anchor cables

11:15-
12:30 NEI moving LWD across tracks and stockpiling at top and base of slope.

13:00 NEI, PMX and AQ/POP staff off site

13:00-
19:00 NEI travels to LWD borrow site and recovering remaining LWD required for project.

PORT OF PORTLAND

DAILY DIARY

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Summary of contractor progress (reflects revised stationing layout by contractor):
Rip rap base layer completed from approximately station 0-20 to 2+50
Select fill base layer completed from approximately station 0-20 to 2+50
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+50
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+50
Pre-existing woody debris cleared from work area from 0-20 to 7+00

Persons on site 10/14/10:

Tim Stone(AQ/POP), Carl Johnson (NEI), Operator/laborer/truck driver (NEI), Delivery person (NEI), Ingmar Saul (PMX)

Material delivery summary as of 10/14/10 (end-of-day):

	Units	Delivered 10/14 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with sub. 2.0)	68	68
Chain-3/4" **galvanized**	feet	300	Visual inspection—**OUT OF SPEC**	0	300
Coir fabric	Square feet	9711	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	1000	10"x10"x1"	0	1000
Wood stakes	pieces	100	2"x2"x2' df	0	100
Large woody debris	pieces	8	Visual inspection and measurement	10	18

	NA	**HRS:**	**NA**

TESTS PERFORMED:	**None**

PHONE LOG:
None.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

1- LWD delivery #1 (4 pieces)

2- fabricated anchor-driver assembly

3- delivery of LWD (4 pieces)

4- attempt to drive anchor with threaded anchor rod

***other photos of construction activities available but not attached to this document. Photos will be**

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

None

transmitted to Mary Green and she will make them available on the Port system.					
INSPECTOR	Timothy J. Stone	HRS	6.0	DATE	10/14/10

(signature on hardcopy)

PHOTO 1

PORT OF PORTLAND

DAILY DIARY

PHOTO 2

PHOTO 3


PHOTO 4

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Friday October 15, 2010**	**REPORT NO.**	**8**
WEATHER	Morning Fog; PM Clearing, NW wind 0-5 mph	**TEMPERATURE**	L:50 H:60 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver	1-Ford Service truck (OR 512701)/7 hours 1-Hitachi 160LC Excavator (N849)/7 hours 1-Cat IT28G (N710)/7 hours 4-steel plates (8' x 16')/7 hours 1-truck/end-dump trailer (LWD transport)

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 PMX(1), and AQ/POP(1) staff on site
NEI delivers LWD (5 pieces)—visually observed and measured for specification compliance (PHOTO 1)

08:00 Carl Johnson (NEI) on site
NEI begins fabricating reconfigured anchor-driving rod

09:15 NEI assembling tooling and configuring 160LC excavator and hoe compactor for driving anchor systems and mobilizing down slope to approximately station 6+80

09:15-10:00 NEI preparing to test-drive manta ray anchor at 6+80
Anchor driven to approximately 6.5 feet bgs at which point driving rod bent and was retracted from ground (PHOTO 2)
NEI attempts to recover anchor from ground by pulling with excavator; however anchor sets at approx. 5.5 feet bgs and could not be removed—spec requires driving 7-10 feet bgs (PHOTO 3)

10:15 NEI delivers LWD (6 pieces)—NEI will import additional logs if needed
AQ/POP visually observes and measures LWD for specification compliance

10:30 NEI obtaining materials to reconfigure anchor-driving system
NEI moving LWD from drop area to stockpile across tracks to project stockpile area outside of fence

11:30 NEI begins fabrication of pilot push rod constructed of 3.5-inch O.D. SCH80 steel pipe

12:15 NEI moves to approximately 6+65 to attempt driving pilot hole with new assembly
Pilot hole driving was successful to depth, but weld broke away at hoe compactor attachment point

12:30 NEI receives 300' x ¾" long-link lash chain—non-galvanized

12:40 NEI lunch break

13:10 NEI demobilizes and prepares for end of day

14:00 NEI traveling to shop to complete fabrication of driving rod and pilot driver assembly
NEI, PMX, and AQ/POP off site

Summary of contractor progress (reflects revised stationing layout by contractor):
Rip rap base layer completed from approximately station 0-20 to 2+50

PORT OF PORTLAND

DAILY DIARY

Select fill base layer completed from approximately station 0-20 to 2+50
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+50
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+50
Pre-existing woody debris cleared from work area from 0-20 to 7+00

Persons on site 10/15/10:

Tim Stone(AQ/POP), Carl Johnson (NEI), Operator/laborer/truck driver (NEI), Ingmar Saul (PMX), freight delivery person

Material delivery summary as of 10/15/10 (end-of-day):

	Units	Delivered 10/15 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	68	68
Chain-3/4" Non-galvanized	feet	300	Visual inspection—consistent with spec	0	300
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	300	300
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Large woody debris	pieces	11	Visual inspection and measurement	18	29

	NA	**HRS:**	**NA**

TESTS PERFORMED:	**None**

PHONE LOG:
None.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

1- LWD delivery #1 (5 pieces)

2- attempt to drive anchor at 6+80 with 1-1/2" drive rod

3- anchor set at 5.5 feet bgs

4- attempt to drive pilot hole with 3-inch SCH80 pipe assembly

***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

None

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DAILY DIARY

INSPECTOR	Timothy J. Stone	HRS	7.0	DATE	10/15/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PORT OF PORTLAND

DAILY DIARY

PHOTO 3

PHOTO 4

ATTACHMENT B

NEI DAILY CONSTRUCTION AND QUALITY CONTROL REPORTS

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/15/10 Weather: Foggy Am, Sunny PM

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal ✓

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT It28	None	None	running normal ✓
N849 Hit. 160	None	None	" " ✓
N530 End dump	None	None	" " ✓

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim and Engmar were on site as long as we were, we all talked about anchor installer, we all think we have a good Idea so we left project to Fab. new anchor driving devices

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Mike Madison	help Fab. pilot probe	2	N530 End dump	delivering trees	6½
" "			N710 CAT It28	pack trees	1
Carl Johnson	Fab. pilot probe	2	N849 Hit. 160	try to drive anchor	2

6 Work Performed (Description & Quality Observations):

Describe work Performed: We tried new anchor installer it didn't work, we Fab. pilot probe and tried it worked OK, we delivered more trees to project, we packed trees & coir fabric accross R/R track & 3/4" chain, we left project

Measurement Worksheet to rebuild anchor installer

7 Material Volumes & Quantities: (& Quality Observations)

11 trees delivered by our End dump.

3/4" Chain delivered the right chain (Plain)

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

LEOTREVINO

Prepared By: ______________

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/14/10 Weather: Foggy AM, Sunny PM

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape ✓

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N849 Hit. 160	None	None	Normal
N130 End dump	None	None	Normal
N710 CAT IT28	None	None	Normal

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were on site as long as we were, we talked about driving in anchors with hoe pac on the excavator and how to make it work.

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Mike Madison			N130 End dump	delivering trees	8
" "			N710 CAT IT28	packing trees	1
			N849 Hit. 160	" "	1
Carl Johnson	Weld anchor driver		N710 CAT IT28	pack anchor pieces	2
" "	on Hoe pac	1½	N849 Hit. 160	test driving anchor	1

6 Work Performed (Description & Quality Observations):

Describe work Performed: We welded anchor driver onto hoe pac, and tried it it didn't work, we delivered more tree to project and packed them around R/R track, we packed and layed out anchor material, we switched excavators

Measurement Worksheet to run hoe pac

7 Material Volumes & Quantities: (& Quality Observations)

7 trees delivered by our End dump

9 roll of Coir Fabric delivered by our driver and 100 wood stakes & 2 boxes staples

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Reviewed

Prepared By:

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/13/10 Weather: Sunny

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N833 Hit. 160	None	None	running normal
N130 END Dump	None	None	running normal
N710 CAT T+2B	None	None	running normal

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were on site all day, we talked about tree placement & anchoring trees
Tim noticed to wrong 3/4" chain was delivered it is Galv. not plain
Jeff H. & Philip H. are working on it
CHAIN TO BE REPLACED WITH PLAIN STEEL

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Mike Madison			N130 END Dump	delivering trees	9
Carl Johnson	setting stakes Elv. 15	3	N833 Hit. 160	moving & setting trees	4
" "			N710 CAT T+2B	packing trees	1

6 Work Performed (Description & Quality Observations):

Describe work Performed: We started hauling trees to job site, we moved wood debris out of the way from approx. Sta. 2+90 thru 7+00, we started placing trees in approx. locations, and set stakes for approx Sta. & Elv.

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

11 trees delivered by our End dump

3/4" chain delivered wrong chain Galv. Not Plain

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By: [signature]

REVIEWED [signature]

October 26, 2010

Sean Sheldrake
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Mailstop ECL-115
Seattle, WA 98101-3140

Subject: **Terminal 4 Removal Action – Wheeler Bay Bank Repairs Construction Weekly Progress Report for October 18 through 22, 2010**

Dear Sean:

This weekly status report contains information related to the implementation of the Terminal 4 Removal Action – Wheeler Bay Bank Repairs as required by the Administrative Order on Consent (AOC) between the Port of Portland (Port) and the U.S. Environmental Protection Agency (USEPA) signed on October 2, 2003. The reporting period covered by this letter is October 18 to 22, 2010.

SIGNIFICANT DEVELOPMENTS

- Continued construction activities

CONSTRUCTION ACTIVITIES PERFORMED

- Imported Manta Ray anchors to site.
- Installed Manta Ray anchors and secured large woody debris to anchors.
- Laid out coir fabric.
- Imported sandy loam top soil from Endicott Woods.
- Placed top soil on coir fabric, wrapped coir fabric on top of top soil and staking coir fabric in place.

PROBLEMS ENCOUNTERED AND PROPOSED SOLUTIONS

- None.

MONITORING ACTIVITIES PERFORMED

- Visual observations of erosion control measures and Wheeler Bay surface water. Erosion control structure working as designed. No turbidity evidence within Wheeler Bay.

SUMMARY OF MONITORING DATA COLLECTED AND RECEIVED

- None

SCHEDULE OF ACTIVITIES TO BE PERFORMED DURING NEXT REPORTING PERIOD

- Finishing placement of riprap and select fill
- Finishing installation of LWD and Manta Ray anchors
- Finishing placement of top soil
- Begin and finish installation of plantings and hydroseeding
- Construction completion on or before October 29, 2010

If you have any questions, please call me at (503) 415-6676.

Sincerely,

Kelly L Madalinski

Kelly Madalinski
Environmental Project Manager
Port of Portland

Attachments:

- Attachment A: Port of Portland Daily Construction Reports
- Attachment B: NEI Daily Construction and Quality Control Reports

ATTACHMENT A

PORT OF PORTLAND DAILY CONSTRUCTION REPORTS

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Monday October 18, 2010**	**REPORT NO.**	**9**
WEATHER	Clear, NW wind 0-5 mph	**TEMPERATURE**	L:42 H:64 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver	1-Ford Service truck (OR 512701)/8 hours 1-Hitachi 160LC Excavator (N849)/8 hours 1-Cat IT28G (N710)/8 hours 4-steel plates (8' x 16')/8 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (2-Carl/Mike) on site installing re-tooled hoe compactor for driving pilot holes and anchors

07:30 AQ/POP (1-Stone), POP (1-Madalinski), PMX (1-Saul)

08:00 NEI mobilizes to toe of slope near stn. 6+50 to begin driving 3.5-inch pilot holes for anchors

08:30 POP(1- Anderson), NEI (1-Hargens) on site

10:00 POP(2-Durst/Hermans) on site to observe construction progress and anchor installations

09:00-
12:30 NEI continue driving pilot holes for anchors between approx. stn. 3+50 and 6+50
NEI driving anchors at 8 locations starting at approx. stn. 6+80 and ending near 5+80
Anchor rods are being cut to 5.5 feet and pushed to approximately 8 feet bgs

12:30-
13:00 NEI lunch break

13:00 NEI driving anchors nearing stn.5+80
Drive rod was bent on 10th anchor driven—NEI will fabricate replacement for 10/19/10 (Photo 1)

13:15-
15:00 NEI setting anchors by pulling back with 160 LC excavator—pull-back refusal reached after approximately 6 inches of pull back
NEI cutting chain to custom lengths for each end of each log to be anchored and attaching chain with shackle approximately 4 feet from each end of each log
NEI connecting anchor cables to shackle and pulling tight then installing two cable clamps to secure

15:15 NEI cleaning up/demobilizing for the day

15:30 NEI(2) and PMX(1) off site

16:00 AQ/POP(1) off site

PORT OF PORTLAND

DAILY DIARY

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+50
Select fill base layer completed from approximately station 0-20 to 2+50
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+50
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+50
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Logs placed and anchored from approximately stn. 5+80 to 6+80 (5 logs/10 anchors)

Persons on site 10/18/10:

Tim Stone(AQ/POP), Carl Johnson (NEI), Operator/laborer (NEI), Ingmar Saul (PMX); R. Anderson, K. Madalinski, J. Durst, M. Hermans(POP)

Material delivery summary as of 10/18/10 (end-of-day):

	Units	Delivered 10/15 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	68	68
Chain-3/4" Non-galvanized	feet	0	Visual inspection—consistent with spec	300	300
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	300	300
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Large woody debris	pieces	0	Visual inspection and measurement	29	29

	NA	**HRS:**	**NA**

TESTS PERFORMED:	**None**

PHONE LOG:
None.

SITE PHOTOS/VIDEOS TAKEN: (attached below)	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1- bent anchor drive-rod **2- completed anchor point attached to log** **3- anchored logs at overlap point (top end of LWD)**	None

PORT OF PORTLAND

DAILY DIARY

4- anchored logs at conneciton of root balls ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	

INSPECTOR	Timothy J. Stone	HRS	8.5	DATE	10/18/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Tuesday October 19, 2010**	**REPORT NO.**	**10**
WEATHER	Clear, NW wind 0-5 mph	**TEMPERATURE**	L:42 H:70 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver	1-Ford Service truck (OR 512701)/9 hours 1-Hitachi 160LC Excavator (N849)/9 hours 1-Cat IT28G (N710)/9 hours 4-steel plates (8' x 16')/9 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (2-Carl/Mike) and AQ/POP (1-Stone) on site—performing equipment inspection and safety checks

07:30 PMX (1-Saul) on site

08:15 POP (R. Anderson) on site to observe log installations completed on 10/18.

07:30-12:30 NEI installs replacement drive rod for anchor installation
NEI drives 14 anchors between stations 4+20 and 5+80
Anchor rods are being cut to 5.5 feet and pushed to approximately 8 feet bgs
Anchors set by pulling back with excavator approximately 6 inches--until pull back refusal was reached—set at approximately 7.5 feet bgs.
NEI completes placement and securing of 5 pieces of LWD between stations 4+60 and 5+80

12:30-13:00 NEI lunch break

13:00-14:00 NEI completes placement and securing of 2 pieces of LWD between stations 4+20 and 4+60

14:30-15:30 Sheila (PMX/EPA-Industrial Hygienist) on site to perform Health and Safety Audit.

14;00-16:30 NEI and AQ/POP walk area between 3+00 and 7+00 to layout and mark sections that will require repair of existing coir fabric and topsoil addition
NEI rolling out coir fabric starting at station 0-20; and completed to approximately station 2+60.
Coir fabric is 13 feet wide. Material was rolled out perpendicular to the bank and the downgradient edge was staked (2"x2"x2' df) in the anchor trench on 4-foot centers (with 10"x10"x1" staples on approx. 2-foot centers.

13:15-15:00 NEI setting anchors by pulling back with 160 LC excavator—pull-back refusal reached after approximately 6 inches of pull back
NEI cutting chain to custom lengths for each end of each log to be anchored and attaching chain with shackle approximately 4 feet from each end of each log
NEI connecting anchor cables to shackle and pulling tight then installing two cable clamps to secure

PORT OF PORTLAND

DAILY DIARY

15:15 NEI cleaning up/demobilizing for the day

16:30 NEI(2), PMX(1), and AQ/POP(1) off site

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+50
Select fill base layer completed from approximately station 0-20 to 2+50
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+50
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+50
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Logs placed and anchored from approximately stn. 4+20 to 6+80 (5 logs/10 anchors)

Persons on site 10/19/10:

Tim Stone(AQ/POP); Carl Johnson, Jeff Hargens, and Mike (NEI); Ingmar Saul and Sheila (PMX); R. Anderson(POP)

Material delivery summary as of 10/19/10 (end-of-day):

	Units	Delivered 10/15 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	4	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	68	72
Chain-3/4" Non-galvanized	feet	0	Visual inspection—consistent with spec	300	300
Chain-3/4" **galvanized**	feet	-300	Visual inspection—**OUT OF SPEC**	300	0
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Large woody debris	pieces	0	Visual inspection and measurement	29	29

TESTS PERFORMED: **None**

PHONE LOG:
None.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

1- NEI driving anchor points

2- NEI securing chains to anchor system

3- Wheeler Bay shoreline overview

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

None

4- NEI installing and staking coir fabric in anchor trench ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	

INSPECTOR	Timothy J. Stone	HRS	9.0	DATE	10/19/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Thursday October 21, 2010**	**REPORT NO.**	**11**
WEATHER	Partly Cloudy, NW wind 0-10 mph	**TEMPERATURE**	L:45 H:65 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver	1-Ford Service truck (OR 512701)/9 hours 1-Hitachi 160LC Excavator (N849)/9 hours 1-Cat IT28G (N710)/9 hours 4-steel plates (8' x 16')/9 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (2-Carl/Mike) and AQ/POP (1-Stone) on site—performing equipment inspection and safety checks

07:15 PMX (1-Saul) on site
NEI delivers 50 c.y. of sandy loam sourced from Endicott Woods (Trucks N174 and T12--trailer/transfers)

07:30-
07:45 NEI truck has difficulty with soft sands at rail crossing—NEI staff near tracks assisting truck driver
Tim Stone attempts to reach KM terminal manager and KM assistant manager
KM begins operating railway—foreman from KM contacts Tim Stone and indicates that the NEI staff was too close to the railway
KM foreman works with NEI and Tim Stone to allow NEI to assist the last truck across the rails

07:45-
09:30 John (PMX) on site with Ingmar Saul (PMX) for project orientation. John will be substituting for Ingmar on 10/22 and 10/25.

08:00-
12:30 NEI begins placing topsoil at station 0-20 between select fill and existing upgradient topsoil and mulch.
Tim Stone discusses with Carl Johnson the need for a layer of select fill that needs to be placed between the topsoil layer and the existing grade that consists of broken concrete. The concrete has large voids at the transition from the repaired surface to the existing surface which could facilitate "run out" of top soil at high river levels or overland flow from precipitation. NEI indicated that they have extra select fill that could be used for that purpose.
NEI raking and shaping topsoil, installing coir fabric over the installed topsoil layer, and temporarily staking (additional staking will be required to meet the specification requirements)
Topsoil and coir fabric in-place and temporarily staked between stations 0-20 and 2+50

12:30-
13:00 NEI lunch break

13:00-
14:45 NEI placing topsoil and coir fabric between station 3+00 and 7+00 in areas identified as needing repair. Additional staking will be required to meet specification requirements.

14:45-
16:15 NEI drives anchor pilot holes between 0-20 and 1+00.
Pilot-hole rod damaged. NEI will repair to complete the final pilot holes on 10/22.

16:30 NEI(2), PMX(1), and AQ/POP(1) off site

PORT OF PORTLAND

DAILY DIARY

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+50
Select fill base layer completed from approximately station 0-20 to 2+50
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+50
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+50
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Logs placed and anchored from approximately stn. 4+20 to 6+80 (5 logs/10 anchors)
Topsoil and coir fabric placed from stn. 0-20 to 2+50.
Topsoil and coir fabric placed in areas designated for repair from stn. 3+00 to 7+00

Persons on site 10/21/10:

Tim Stone(AQ/POP); Carl Johnson, Jeff Hargens, and Mike (NEI); Ingmar Saul(PMX); John (PMX)

Material delivery summary as of 10/21/10 (end-of-day):

	Units	Delivered 10/15 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	4	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	68	72
Chain-3/4" Non-galvanized	feet	0	Visual inspection—consistent with spec	300	300
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	0	0
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Sandy loam	Cubic yards	50	Visual inspection and scale tickets	0	50
Large woody debris	pieces	0	Visual inspection and measurement	29	29

TESTS PERFORMED: **None**

PHONE LOG:
None.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

PORT OF PORTLAND

DAILY DIARY

1- NEI installing sandy loam **2- NEI shaping and grading sandy loam** **3- Wheeler Bay shoreline overview** **4- NEI driving anchor pilot holes between station 0-20 and 0+100** **5- areas being repaired between station 3+00 and 7+00** ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	None

INSPECTOR	Timothy J. Stone	HRS	9.0	DATE	10/21/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

PHOTO 5

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Friday October 22, 2010**	**REPORT NO.**	**12**
WEATHER	Partly Cloudy, NW wind 0-10 mph	**TEMPERATURE**	L:53 H:63 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver	1-Ford Service truck (OR 512701)/8 hours 1-Hitachi 160LC Excavator (N849)/8 hours 1-Cat IT28G (N710)/8 hours 4-steel plates (8' x 16')/8 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (2-Carl/Mike) and AQ/POP (1-Stone) on site
NEI performing equipment inspection and safety checks

07:15-
08:00 PMX (1-John Howland) on site
NEI conducts repair of pilot-hole driver for anchor system

08:00-
09:00 Roger Anderson(POP) on site to observe progress
NEI driving 8 pilot holes for anchors between stations 1+00 and 2+50

09:00-
11:30 NEI driving and setting anchors between stations 0-20 and 2+50

11:30-
12:00 NEI lunch break

12:30-
14:45 NEI driving additional wood stakes along toe of coir fabric on 4-foot centers (between stations 0-20 and 2+50)

14:45-
15:45 NEI moves imported LWD down slope and placing into position between station 0-20 and 2+50

16:00 NEI(2), PMX(1), and AQ/POP(1) off site

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+50
Select fill base layer completed from approximately station 0-20 to 2+50
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+50
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+50
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Logs placed and anchored from approximately stn. 4+20 to 6+80 (5 logs/10 anchors)
Topsoil and coir fabric placed from stn. 0-20 to 2+50.
Topsoil and coir fabric placed in areas designated for repair from stn. 3+00 to 7+00
Anchor systems driven and set from stn. 0-20 to 2+50

Persons on site 10/22/10:

Tim Stone(AQ/POP); Carl Johnson, Jeff Hargens, and Mike (NEI); John Howland (PMX)

Material delivery summary as of 10/22/10 (end-of-day):

	Units	Delivered 10/15 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	72	72
Chain-3/4" Non-galvanized	feet	0	Visual inspection—consistent with spec	300	300
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	0	0
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Sandy loam	Cubic yards	0	Visual inspection and scale tickets	50	50
Large woody debris	pieces	0	Visual inspection and measurement	29	29

TESTS PERFORMED: **None**

PHONE LOG:
None.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

1- NEI driving anchors through select fill

2- NEI setting/pull testing anchor systems

3- NEI placing LWD

4- logs placed at top of constructed slope

***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

None

PORT OF PORTLAND

DAILY DIARY

INSPECTOR	Timothy J. Stone	HRS	9.0	DATE	10/21/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

ATTACHMENT B

NEI DAILY CONSTRUCTION AND QUALITY CONTROL REPORTS

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/18/10 Weather: Sunny

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT It28	None	None	running normal
N849 Hit. 160	None	None	" "

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were on site all day
Tim looked at our chain anchoring to trees and said it look good

LABOR			EQUIPMENT		
Description	Activity	Hrs	Description	Activity	Hrs
Mike Madison	tie down trees	7	N710 CAT It28	pack Chain	1
Carl Johnson	" " "	3 ½	N849 Hit. 160	drive tree anchors	4

6 Work Performed (Description & Quality Observations):

Describe work Performed: We drove anchor pilot & approx 11 anchors, installer bent again, we tied down 5 trees with chain to anchors starting at South end working North

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

None

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

REVIEWED

Prepared By:

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/19/10 Weather: Sunny

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT IT28	None	None	running normal
N849 Hit. 160	None	None	" "

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were on site all day Sheila with Parametrix did a suprize visit her only concern with us, walking on the rip-rap with staking material for coir fabric, we talked and decided to access from top slope

Tim & I identifed repair area of coir fabric and topsoil from approx Sta. 3+00 to 7+00

LABOR			EQUIPMENT		
Description	Activity	Hrs	Description	Activity	Hrs
Mike Madison	fasten trees &		N710 CAT IT28	move supplies	1
	place fabric	7			
Carl Johnson	fasten trees &		N849 Hit. 160	install anchors	3
	place fabric	5			

6 Work Performed (Description & Quality Observations):

Describe work Performed: We installed anchors and fastened trees, Sta. 3+50 - 7+00 we started installing coir fabric getting ready for topsoil from approx. Sta. - 15 to 2+00

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

We install & fastened 12 trees

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

REVIEWED

Prepared By:

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/21/10 Weather: Cloudy, some sun PM

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape ✓

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT IT28	None	None	Normal
N849 Hit. 160	None	None	Normal

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim and Ingmar were on site all day, Tim said topsoil looked good, and our repair areas looked good, Ingmar will be gone next 2 work days and John will be taking his place

DID NOT WORK ON-SITE YESTERDAY 10/20/10. WAITING FOR TOPSOIL APPROVAL.

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Mike Madison	place Coir fabric &	7			
" "	help pilot probe	1			
Carl Johnson	place Coir fabric	2½	N710 CAT IT28	pack topsoil	1
" "	knocked down topsoil	1½	N849 Hit. 160	" "	2½
" "			" " "	anchor pilots	1
Mike Madison	Escorting trucks	½			

6 Work Performed (Description & Quality Observations):

Describe work Performed: We placed topsoil along rip-rap repair & folding coir fabric over top & cutting around existing plantings, we placed coir fabric & topsoil on repairs from Sta. 3750 - 7+00, we started driving pilot holes for anchors

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

2 - transfer lds topsoil delivered by our trucks from Endicottwoods 50 total yds,

so far we have a total of 300 2x2x24" stakes on Job site

1 - 20x100 roll black plastic for covering stockpiles

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

REVIEWED

Prepared By:

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/22/10 Weather: Cloudy

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT IT 28	None	None	running normal
N849 Hit. 160	None	None	" "

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & John were on Job site all day, Roger stopped by and said we would need to install 2 or 3 runs of silt fence accross the slope on our ramp

LABOR Description	LABOR Activity	Hrs	EQUIPMENT Description	EQUIPMENT Activity	Hrs
Mike Madison	setting anchors	4	N710 CAT IT 28	pack anchors & trees	1½
" "	setting wood stakes	1½			
" "	setting trees	1			
Carl Johnson	put together anchors	1	N849 Hit. 160	setting anchors	4
" "	setting wood stakes	1½	" " "	setting trees	1½

6 Work Performed (Description & Quality Observations):

Describe work Performed: We installed anchors, we install wooden stakes in coir fabric, we set trees over anchors from approx. sta. -15 to 2+00

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

We set 20 anchors for 10 trees

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

REVIEWED

Prepared By: [signature]

November 2, 2010

Sean Sheldrake
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Mailstop ECL-115
Seattle, WA 98101-3140

Subject: **Terminal 4 Removal Action – Wheeler Bay Bank Repairs**
Construction Weekly Progress Report for October 25 through 29, 2010

Dear Sean:

This weekly status report contains information related to the implementation of the Terminal 4 Removal Action – Wheeler Bay Bank Repairs as required by the Administrative Order on Consent (AOC) between the Port of Portland (Port) and the U.S. Environmental Protection Agency (USEPA) signed on October 2, 2003. The reporting period covered by this letter is October 25 to 29, 2010.

SIGNIFICANT DEVELOPMENTS

- Construction activities concluded.

CONSTRUCTION ACTIVITIES PERFORMED

- Imported plantings and bark mulch.
- Repaired silt fence damaged by heavy rain.
- Continued installing coir fabric.
- Placed habitat material on toe of constructed riprap slope.
- Placed top soils.
- Installed plantings.
- Repaired irrigational lines.
- Cleaned and demobilized construction equipment.
- Cleared garbage and debris from shoreline.

PROBLEMS ENCOUNTERED AND PROPOSED SOLUTIONS

- None.

MONITORING ACTIVITIES PERFORMED

- Visual observations of erosion control measures and Wheeler Bay surface water. Erosion control structure working as designed. No turbidity evidence within Wheeler Bay.

SUMMARY OF MONITORING DATA COLLECTED AND RECEIVED

- None

SCHEDULE OF ACTIVITIES TO BE PERFORMED DURING NEXT REPORTING PERIOD

- None. Project complete.

If you have any questions, please call me at (503) 415-6676.

Sincerely,

Kelly Madalinski
Environmental Project Manager
Port of Portland

Attachments:
- Attachment A: Port of Portland Daily Construction Reports
- Attachment B: NEI Daily Construction and Quality Control Reports

ATTACHMENT A
PORT OF PORTLAND DAILY CONSTRUCTION REPORTS

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Monday October 25, 2010**	**REPORT NO.**	**13**
WEATHER	Partly Cloudy, NW wind 0-10 mph	**TEMPERATURE**	L:50 H:60 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver 2-laborers 1-landscape foreman 5-landscape laborers	1-Ford Service truck (OR 512701)/8 hours 1-Hitachi 160LC Excavator (N849)/8 hours 1-Cat IT28G (N710)/8 hours 4-steel plates (8' x 16')/8 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (Carl/Mike+2 laborers), AQ/POP (1-Stone) on site
NEI performing equipment inspection and safety checks

07:00-07:30 NEI performing repairs to silt fence at base of access ramp
Silt fence damaged during heavy weekend rains
No turbidity observed in river at breached location

07:30-10:30 PMX (1-John Howland) on site
NEI staking and stapling coir fabric installations
NEI chaining and securing LWD to anchor systems

10:30 NEI's landscaping contractor(6) delivers native plantings in 1 gallon pots
J. Durst, K. Madalinski, M. Hermans, R. Anderson (POP) on site to observe construction progress

10:45-12:30 NEI continues staking and stapling coir fabric
NEI continues chaining and attaching LWD to anchor systems
NEI's subcontractor begins installing plantings working from 7+00 to 3+00

12:30-13:00 Lunch break

13:30-15:30 Lyle(POP maintenance) on site to observe planting procedures and inspect trees delivered by NEI subcontractor
NEI constructing rip rap transition section between stations 2+60 and 2+80 (placing rip rap and select fill per design)
NEI backfilling anchor pilot-holes with select fill between 0-20 and 2+50

15:45 NEI(4), NEI subcontractor(6), PMX(1), and AQ/POP(1) off site

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DAILY DIARY

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+90
Select fill base layer completed from approximately station 0-20 to 2+90
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+50
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+50
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Logs placed and anchored from approximately stn. 4+20 to 6+80 and stn. 0-20 to 2+50
Topsoil and coir fabric placed from stn. 0-20 to 2+50
Topsoil and coir fabric placed in areas designated for repair from stn. 3+00 to 7+00
Anchor systems driven and set from stn. 0-20 to 2+50

Persons on site 10/25/10:

Tim Stone(AQ/POP); Carl Johnson, Jeff Hargens, 2 laborers, Mike(NEI); John Howland (PMX); 6 persons (landscape sub); J. Durst, K. Madalinski, R. Anderson, Lyle, M. Hermans (POP)

Material delivery summary as of 10/25/10 (end-of-day):

	Units	Delivered 10/25 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	72	72
Chain-3/4" Non-galvanized	feet	0	Visual inspection—consistent with spec	300	300
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	0	0
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Sandy loam	Cubic yards	0	Visual inspection and scale tickets	50	50
Large woody debris	pieces	0	Visual inspection and measurement	29	29
Native plantings	pieces	1800	Visual observation	0	1800

TESTS PERFORMED: **None**

PHONE LOG:
None.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

PORT OF PORTLAND

DAILY DIARY

1- damage to silt fence near access ramp **2- anchored LWD at top of constructed rip rap slope** **3- NEI subcontractor augering holes for native plantings** **4- completed native plantings** ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	None

INSPECTOR	Timothy J. Stone	HRS	9.0	DATE	10/25/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

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DAILY DIARY

PHOTO 4

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DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Tuesday October 26, 2010**	**REPORT NO.**	**14**
WEATHER	Cloudy/Rain, NW wind 0-15 mph	**TEMPERATURE**	L:45 H:53 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver 2-laborers 1-landscape foreman 5-landscape laborers	1-Ford Service truck (OR 512701)/8 hours 1-Hitachi 160LC Excavator (N849)/8 hours 1-Cat IT28G (N710)/8 hours 4-steel plates (8' x 16')/8 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (Carl, Mike+1 laborers), AQ/POP (1-Stone) on site
NEI performing equipment inspection and safety checks

07:30 Ingmar Saul (PMX) on site

07:00-
07:30 NEI receives 1-trailer/transfer load of sandy loam

08:30 Jeff Hargens(NEI); and landscape subcontractor (6 persons) on site

07:30-
09:00 NEI installing topsoil at transition from select fill to existing grade between stations 2+50 and 3+00

08:30-
12:00 NEI subcontractor installing native plantings between stations 0-20 and 2+50

09:00-
12:00 NEI installing anchors for LWD between 2+50 and 4+00
NEI installing anchors at toe of rip rap slope for anchoring of LWD baskets to be reconstructed at approximately 0+00 and 2+50 (two anchors at toe of rip rap for each basket installation).

12:00-
12:30 Lunch break

12:30-
14:00 NEI subcontractor installing native plantings between stations 0-20 and 2+50
NEI installing chains and shackles and securing LWD basket to anchor system at station 0+00

14:00 NEI landscape subcontractor(6) off site

14:45 Carl Johnson(NEI) off site
Roger Anderson(POP) on site to observe construction progress

14:00-
15:45 NEI installing chains and shackles and securing LWD to anchor systems between stations 2+00 and 2+80

16:00 NEI(2), PMX(1), and AQ/POP(1) off site

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+90
Select fill base layer completed from approximately station 0-20 to 2+90
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+90
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+90
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Pre-existing woody debris replaced along shoreline from 5+00 to 7+00
LWD placed and anchored from approximately stn. 4+20 to 6+80 and stn. 0-20 to 2+80
Topsoil and coir fabric placed from stn. 0-20 to 3+00
Topsoil and coir fabric placed in areas designated for repair from stn. 3+00 to 7+00
Anchor systems driven and set from stn. 0-20 to 7+00 (including anchors for tree baskets at 0+00 and 2+50)

Persons on site 10/26/10:

Tim Stone(AQ/POP); Carl Johnson, Jeff Hargens, 1 laborer, Mike(NEI); Ingmar Saul (PMX); 6 persons (landscape sub); R. Anderson (POP)

Material delivery summary as of 10/26/10 (end-of-day):

	Units	Delivered 10/26 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	72	72
Chain-3/4" Non-galvanized	feet	0	Visual inspection—consistent with spec	300	300
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	0	0
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Sandy loam	Cubic yards	25	Visual inspection and scale tickets	50	75
Large woody debris	pieces	0	Visual inspection and measurement	29	29
Native plantings	pieces	0	Visual observation	1800	1800

TESTS PERFORMED: **None**

PHONE LOG:
None.

PORT OF PORTLAND

DAILY DIARY

SITE PHOTOS/VIDEOS TAKEN: **(attached below)**	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1- placing topsoil at interface from select fill to existing grade near station 2+80 **2- NEI subcontractor installing native plantings near station 2+00** **3- re-constructed LWD basket at station 0+00** **4- overview of Wheeler Bay** ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	None

INSPECTOR	Timothy J. Stone	HRS	9.0	DATE	10/26/10

(signature on hardcopy)

PHOTO 1

PORT OF PORTLAND

DAILY DIARY

PHOTO 2

PHOTO 3

PHOTO 4

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Wednesday October 27, 2010**	**REPORT NO.**	**15**
WEATHER	Cloudy, NW wind 0-15 mph	**TEMPERATURE**	L:43 H:50 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer/truck driver 1-laborer	1-Ford Service truck (OR 512701)/8 hours 1-Hitachi 160LC Excavator (N849)/8 hours 1-Cat IT28G (N710)/8 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:30 NEI (Carl, Mike+1 laborer), AQ/POP (1-Stone) on site
NEI performing equipment inspection and safety checks
Ingmar Saul (PMX) on site

08:30 Jeff Hargens(NEI) on site

07:30-
12:30 NEI recovering and placing habitat substrate mixture on toe of constructed rip rap slope between stations 0-29 and 3+00
NEI grading disturbed areas of beach and placing naturally occurring woody debris at toe of rip rap slope between 0-20 and 4+00
NEI removing silt fence from along shoreline between 0-20 and 3+25
NEI re-constructing LWD basket at stations 0+00 and 2+50; completed installation of chain and attachment to anchor systems at LWD basket located at station 0+00

12:30-
13:00 Lunch break
Carl Johnson(NEI) off site

13:00-
14:00 NEI installing coir fabric and staking to elevation 20 feet, across access ramp area between stations 2+50 and 2+90
NEI and AQ/POP measuring areas repaired between stations 3+00 and 7+00 (see spreadsheet for dimensions)
NEI installing silt fence across ramp repair area at approximately elevation 20 feet; and placing layer habitat mixture immediately above silt fence to secure to ground surface

14:00-
16:00 NEI placing sandy-loam above elevation 20 feet up to access gate for restoration of access ramp area
NEI installing jute mat from gate area down to elevation 20 feet; jute mat anchored approximately 4 feet from top of slope in 1' deep anchor trench.
NEI installs silt fence across repair area to repair pre-existing condition; NEI placing layer of habitat mixture immediately above silt fence to secure bottom of fence to ground surface

16:00 NEI(2), PMX(1), and AQ/POP(1) off site

PORT OF PORTLAND

DAILY DIARY

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+90
Select fill base layer completed from approximately station 0-20 to 2+90
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+90
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+90
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Pre-existing woody debris replaced along shoreline from 0-20 to 7+00
LWD placed and anchored from approximately stn. 4+20 to 6+80 and stn. 0-20 to 2+80
Topsoil and coir fabric placed from stn. 0-20 to 3+00
Topsoil and coir fabric placed in areas designated for repair from stn. 3+00 to 7+00
Anchor systems driven and set from stn. 0-20 to 7+00 (including anchors for tree baskets at 0+00 and 2+50)

Persons on site 10/27/10:

Tim Stone(AQ/POP); Carl Johnson, Jeff Hargens, 1 laborer, Mike(NEI); Ingmar Saul (PMX);

Material delivery summary as of 10/27/10 (end-of-day):

	Units	**Delivered 10/26 (units)**	**Delivery Verification Method**	**Preceding Delivered Total**	**Total Delivered for Project**
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	72	72
Chain-3/4" Non-galvanized	feet	0	Visual inspection—consistent with spec	300	300
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	0	0
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Wood stakes	pieces	0	2"x2"x2' df	0	100
Sandy loam	Cubic yards	0	Visual inspection and scale tickets	75	75
Large woody debris	pieces	0	Visual inspection and measurement	29	29
Native plantings	pieces	0	Visual observation	1800	1800

TESTS PERFORMED: **None**

PHONE LOG:
None.

PORT OF PORTLAND

DAILY DIARY

SITE PHOTOS/VIDEOS TAKEN: **(attached below)**	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1- completed shoreline condition from 0-20 to 2+50 **2- completed shoreline condition from 3+00 to 7+00** **3- restoration of access ramp area below elevation 20 feet** **4- overview of Wheeler Bay** **5- anchor trench for jute mat at top of access ramp restoration area** ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	None

INSPECTOR	Timothy J. Stone	HRS	9.0	DATE	10/27/10

(signature on hardcopy)

PHOTO 1

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DAILY DIARY

PHOTO 2

PHOTO 3

PHOTO 4

PHOTO 5

PORT OF PORTLAND

DAILY DIARY

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Thursday October 28, 2010**	**REPORT NO.**	**16**
WEATHER	Cloudy, NW wind 0-15 mph	**TEMPERATURE**	L:43 H:50 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 1-operator/laborer 3-bark mulch applicators 6-landscaping staff	1-Ford Service truck (OR 512701)/8 hours 1-Hitachi 160LC Excavator (N849)/4 hours-removed from site 1-Cat IT28G (N710)/9 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (Carl/Mike), AQ/POP (1-Stone) on site
NEI performing equipment inspection and safety checks

07:30 Ingmar Saul (PMX) on site
NEI installing staples in jute mat above elevation 20 feet

08:30 Jeff Hargens(NEI) on site
Kelly Madalinski (POP) on site

09:30 Ken Fellows(PMX) on site to conduct EPA inspection of project
EPA/PMX completion recommendations:
1. clean up debris/garbage from shoreline
2. remove 1 length of pressure treated post (identified by stamp on post—McCormick and Baxter)

10:30 Ken Fellows(PMX) and Kelly Madalinski(POP) off site

07:30-
13:00 NEI cleaning and demobilizing excavator—removed from site
NEI moving 2 surplus LWD to fenced holding area for native plantings
NEI grading staging area outside of fence above project area (between rails and fenceline).
NEI clearing garbage and debris from shoreline
NEI subcontractor placing bark mulch between stations 7+00 and 3+00 (50 cubic yards)
NEI subcontractor installing native plantings across access ramp repair area

13:00-
17:00 NEI subcontractor delivers second load (50 cubic yards) of bark mulch
NEI subcontractor placing bark mulch between stations 0-20 and 3+00
NEI repairing irrigation lines (POP to complete splicing of control wires)
NEI receives additional 60 feet of non-galvanized ¾-inch chain
NEI installing chains and shackles and attaching remaining unanchored LWD to anchor systems
NEI completes installation of 4 tiered layers of silt fence and back fills with habitat mixture

Summary of contractor progress (reflects revised stationing layout by contractor):

Rip rap base layer completed from approximately station 0-20 to 2+90
Select fill base layer completed from approximately station 0-20 to 2+90
Rip rap slope and 2-foot bench at elevation 16.5 completed from approximately station 0-20 to 2+90
Select fill layer upgradient of 2-foot rip rap bench completed from approximately station 0-20 to 2+90
Pre-existing woody debris cleared from work area from 0-20 to 7+00
Pre-existing woody debris replaced along shoreline from 0-20 to 7+00
LWD placed and anchored from station 0-20 to 7+00
Topsoil and coir fabric placed from stn. 0-20 to 3+00
Topsoil and coir fabric placed in areas designated for repair from stn. 3+00 to 7+00
Anchor systems driven and set from stn. 0-20 to 7+00 (including anchors for tree baskets at 0+00 and 2+50)
Bark mulch completed between stations 0-20 and 7+00

Persons on site 10/28/10:

Tim Stone(AQ/POP); Carl Johnson, Jeff Hargens, 1 laborer, Mike(NEI); Ingmar Saul, Ken Fellows (PMX); Kelly Madalinski (POP)

Material delivery summary as of 10/28/10 (end-of-day):

	Units	Delivered 10/28 (units)	Delivery Verification Method	Preceding Delivered Total	Total Delivered for Project
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	0	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	72	72
Chain-3/4" Non-galvanized	feet	60	Visual inspection—consistent with spec	300	360
Chain-3/4" **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	0	0
Coir fabric	Square feet	0	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	0	9711
Fabric staples	pieces	0	10"x10"x1"	0	1000
Sandy loam	Cubic yards	0	Visual inspection and scale tickets	75	75
Large woody debris	pieces	0	Visual inspection and measurement	29	29
Bark mulch	Cubic yards	100	Visual inspection—contractor to provide scale tickets	0	100
Native plantings	pieces	0	Visual observation	1800	1800

TESTS PERFORMED:	**None**

PHONE LOG:

09:00 Tim Stone to Bruce Craven(KM) to facilitate rail crossing with bark mulch truck

PORT OF PORTLAND

DAILY DIARY

SITE PHOTOS/VIDEOS TAKEN: **(attached below)**	**FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:**
1- NEI subcontractor placing bark mulch **2- bark mulch installed condition above LWD** **3- NEI installing uppermost silt fence at access gate** ***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**	None

INSPECTOR	Timothy J. Stone	HRS	9.0	DATE	10/28/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PORT OF PORTLAND

DAILY DIARY

PROJECT	Terminal 4, Wheeler Bay Bank Repairs	**CONTRACT NO.**	10D015/820027
CONTRACTOR	Northwest Earthmovers	**SUPERINTENDENT**	Carl Johnson (NEI)
DAY OF WEEK & DATE:	**Friday October 29, 2010**	**REPORT NO.**	**17**
WEATHER	Cloudy, NW wind 0-5 mph	**TEMPERATURE**	L:52 H:62 degrees F

NUMBER/CLASS OF CONTRACTOR'S PERSONNEL:	**MAJOR EQUIPMENT ON JOB (Size/capacity and hours):**
Construction Activities: 1-superintendent/equipment operator 2-hydro-seed applicators	1-Ford Service truck (OR 512701)/4 hours 1-Cat IT28G (N710)/4 hours

CHRONOLOGICAL ACCOUNT OF DAY'S WORK:

07:00 NEI (Carl Johnson), AQ/POP (1-Stone) on site

07:30 Ingmar Saul (PMX) on site
NEI repairing irrigation lines at access ramp that were disconnected at the beginning of the project.

08:30-
10:00 NEI subcontractor on site to perform hydro-seed application in access ramp repair area--above elevation 20 feet (PHOTO 1). NEI subcontractor applied 18 pounds of grass seed to an area of approximately 1800 square feet.

09:30-
10:15 Kelly Madalinski, Roger Anderson, Lyle Larson (POP); Jeff Hargens, Philip Hansen (NEI); Tim Stone (AQ/POP) on site to perform final construction completion inspection. PHOTO 2 shows the completed conditions looking from station 3+00 toward station 7+00. PHOTO 3 shows the completed conditions looking from station 3+00 toward station 0-20.
NEI removes treated wood from shoreline as indicated by Ken Fellows (PMX) on 10/28. Wood debris was stamped as shown in PHOTO 4. Shoreline is free of incidental garbage and debris.
POP maintenance staff reconnects irrigation control wiring at the point it had been disconnected to construct the construction access ramp.

10:15 NEI completes final grading of area outside of access gate (between rails and fence line).
NEI secures gates and contacts Port security to notify that work has been completed/gates need to be locked.
Lyle Larson (POP) off site.
Ingmar Saul (PMX) off site.

10:30 NEI has completed punch list items. Final constructed condition accepted as complete.

12:30 NEI removes approximately 3700 square feet of coir fabric from site. NEI will return to vendor for credit.
NEI removes 10 manta-ray anchor systems from site.
2 pieces of LWD remain on site.

Persons on site 10/29/10:

Tim Stone(AQ/POP); Carl Johnson, Philip Hansen, Jeff Hargens(NEI); Ingmar Saul(PMX); Kelly Madalinski, Roger Anderson, Lyle Larsen (POP)

PORT OF PORTLAND

DAILY DIARY

Material delivery summary as of 10/29/10 (end-of-day):

	Units	**Delivered 10/28 (units)**	**Delivery Verification Method**	**Preceding Delivered Total**	**Total Delivered for Project**
Select Fill	tons	0	Scale ticket	162.88	162.88
Class 700 RR	tons	0	Scale ticket	427.48	427.48
Manta Ray anchors	pieces	-10	Visual inspection—confirm Manta Ray MR2 model (consistent with Sub. 2.0)	72	62
Chain-3/4” Non-galvanized	feet	0	Visual inspection—consistent with spec	360	360
Chain-3/4” **galvanized**	feet	0	Visual inspection—**OUT OF SPEC**	0	0
Coir fabric	Square feet	-3700 (estimated 3.5 rolls at 1079 sq. feet per roll)	Visual inspection—manufacturer tag (consistent with Sub. 6.0)	9711	6011
Fabric staples	pieces	0	10”x10”x1”	0	1000
Sandy loam	Cubic yards	0	Visual inspection and scale tickets	75	75
Large woody debris	pieces	0	Visual inspection and measurement	29	29
Bark mulch	Cubic yards	100	Visual inspection—contractor to provide scale tickets	0	100
Native plantings	pieces	0	Visual observation	1800	1800

TESTS PERFORMED: **None**

PHONE LOG:
08:45 Tim Stone to Philipp Bales regarding access to hydrant/water source for hydro seeding.

SITE PHOTOS/VIDEOS TAKEN:

(attached below)

1- Hydro seed application in progress

2- Final shoreline condition (from station 3+00 toward station 7+00)

3- Final shoreline condition (from station 3+00 toward station 0+00)

4- treated wood debris removed from shoreline—pressure treated certification stamp

***other photos of construction activities available but not attached to this document. Photos will be transmitted to Mary Green and she will make them available on the Port system.**

FORCE ACCOUNT WORK/ CHANGES ENCOUNTERED:

None

INSPECTOR	Timothy J. Stone	HRS	4.0	DATE	10/29/10

(signature on hardcopy)

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

ATTACHMENT B

NEI DAILY CONSTRUCTION AND QUALITY CONTROL REPORTS

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/25/10 Weather: Showers heavy at times

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: got washed out just North of our ramp Mike M. reinstalled and added another fence infront of existing one FIXED SAME DAY

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT IT28	None	None	running normal
N849 Hit. 160	None	None	" "

4 Hazard Conditions: None

○ Airborne Dust / Contaminants ○ Spilled Material
○ Disturbance of Demarcation Layer ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & John were onsite all day

John Casserly and crew started planting at South end working North

LABOR			EQUIPMENT		
Description	Activity	Hrs	Description	Activity	Hrs
Jeremy Haynes	install wood stakes	4			
" "	install tree chains	3½			
Mike Roper	install wood stakes	4			
" "	install tree chains	3½			
Mike Madison	install tree chains	3½	N710 CAT IT28	pack trees & select fill	2
" "	✓ grade select fill	2			
Carl Johnson	install tree chains	2	N849 Hit. 160	place rip-rap	3
" "	install wood stakes	1	" " "	place select fill	1½

6 Work Performed (Description & Quality Observations):

Describe work Performed: We installed wooden stakes in coir fabric on 4' centers
we chained down 10 more trees, installed stapes behind landscaper in fabric
we rip-rap & select fill our ramp area

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

250 stakes 2x2x24" wooden
1 - Box stapes

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By:

REVIEWED

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair   Contract #87460   **NEI Job # 1019**

Date: 10/26/10   Weather: Cloudy light showers & cold & windy

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Good Shape

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT II+28	None	None	running normal
N849 Hit. 160	None	None	" " "

4 Hazard Conditions: None

○ Airborne Dust / Contaminants
○ Disturbance of Demarcation Layer
○ Spilled Material
○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were on site all day, Tim asked me to place some woody debris in rip-rap area when I clean up. Roger stopped by and tolk us we need to use Jute matting on slope ramp area not coir fabric.
John Casserly and crew were out planting everything to ramp area they will be back Thursday 10/28 to finish planting and bark dusting

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Mike Roper	set anchors	4			
" "	Chain trees	4			
Mike Madison	set anchors	3	N710 CAT II+28	pack top soil	1
" "	Chain trees	4			
Carl Johnson			N849 Hit. 160	set anchors & trees	5½
" "			" " "	place woody debris	1

6 Work Performed (Description & Quality Observations):

Describe work Performed: We placed topsoil, layed out for remaining anchors placed anchors, started chaining trees, started cleaning up South end replacing woody debris up by anchored trees

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

1 transfer ld topsoil delivered by our trk from Endicott woods

NEEDS FIELD TICKET

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By:

REVIEWED

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair Contract #87460 **NEI Job # 1019**

Date: 10/27/10 Weather: Sunny

1 Inspection of Erosion Control: (state condition & ~~describe any maintenance~~ steps taken)

Silt Fence: Good shape we removed it today ✓ DONE ON WEST BED.

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT IT28	None	None	running normal ✓
N849 Hit. 160	None	None	" "

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were out on site all day

LABOR			EQUIPMENT		
Description	Activity	Hrs	Description	Activity	Hrs
Mike Roper	chain trees & remove				
" "	silt fence & install				
" "	fabric & stakes	8			
Mike Madison	Chain tree, remove		N710 CAT IT28	pack topsoil	1
" "	silt fence, install				
" "	fabric & stakes	7			
Carl Johnson			N849 Hit. 160	place fish mix	2
" "			" "	place woody debris	1 1/2
" "			" "	topsoil on slope	1

6 Work Performed (Description & Quality Observations):

Describe work Performed: We chained tree, removed silt fence, placed fish mix back on toe of rip-rap, placed woody debris back on fish mix, installed coir & Jute matting on slope ramp access & wooden stakes & staples

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

2 rolls Jute matting

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By: [signature]

REVIEWED [signature]

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair   Contract #87460   **NEI Job # 1019**

Date: 10/28/10   Weather: Showers all day

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Removed 10/27/10 ✓

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT IT 28	None	None	running normal
N849 H.H. 160	None	None	has been moved off site today

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were on site all day, Ken with Parametrix and Kelly with the Port, all 4 had a walk through for EPA approval

John Casserly and his crew was out finished planting and placing Bark Mulch

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Mike Madison	Chain trees &		N710 CAT IT28	Clean up site	1½
" "	install staples,				
" "	silt fence, clean				
" "	Garbage	7			
Carl Johnson	Chain trees &				
" "	install staples,				
" "	silt fence, clean				
" "	Garbage	8			

6 Work Performed (Description & Quality Observations):

Describe work Performed: We install remainder of chains on trees to anchors, installed staples in Jute mat & finished installing Jute on ramp, installed silt fences accross ramp area, hooked existing Irr. lines back together, picked up Garbage on beach, and cleaned up staging area

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

1 roll Jute matting
60' 3/4" chain
6 3/4" shackels

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By:

REVIEWED

Daily Construction & Quality Control

Job Name: T4 Wheeler Bay Bank Repair   Contract #87460   **NEI Job # 1019**

Date: 10/29/10   Weather: Foggy

1 Inspection of Erosion Control: (state condition & describe any maintenance steps taken)

Silt Fence: Removed 10/27/10

Construction Entrance: Not needed

Other: None

2 Inspection of Site: (state condition & describe any maintenance steps taken)

Sick or Injured Endangereed Species: None

Harbor Water Observation: Normal

3 Equipment Inspection:

Machine	Visible Leaks?	Repairs ?	Comments
N710 CAT IT28	None	None	running normal
			REMOVED FROM SITE TODAY

4 Hazard Conditions: None

- ○ Airborne Dust / Contaminants
- ○ Disturbance of Demarcation Layer
- ○ Spilled Material
- ○ Equipment Lock out / Tag out

5 Communications w/ Visitors, Inspectors, or Subs:

Tim & Ingmar were onsite
We had final walk through with Roger & Kelly they said everything looked good they had us remove one piece of treated piling pole off the beach.
Roger with the port wanted us to place fish mix from stockpile to other side of track to fill in low area along fence, I started packing rock and loss sight of train safty stop pole, I broke it off, operations were shut down and port fixed pole and Kinder Morgan continued loading ship from stockpile

ONLY PUNCH LIST ITEM TAKEN CARE OF SAME DAY

LABOR Description	Activity	Hrs	EQUIPMENT Description	Activity	Hrs
Carl Johnson	line out Hydroseeders	1	N710 CAT IT28	Mob. offsite	½

6 Work Performed (Description & Quality Observations):

Describe work Performed: I escorted Hydro seeders and showed them what needed to be done, picked up garbage loaded into truck, final walk through

Measurement Worksheet

7 Material Volumes & Quantities: (& Quality Observations)

None.

8 Non-Conformance Identified & Corrective Action:

Materials: None

Workmanship: None

Prepared By:

REVIEWED

APPENDIX B
CONSTRUCTION PHOTOS

Silt fence installed prior to construction

Removing existing habitat material from top of riprap and stockpiling

Removing existing habitat material from top of riprap and stockpiling

Temporarily removing existing large woody debris from construction area

Moving and stockpiling woody debris in eastern section

Transferring Class 700 riprap down the slope on steel plates

Placing Class 700 riprap on slope

First lift of Class 700 riprap on the slope

Placing subsequent lifts of Class 700 riprap

Placing select fill behind the riprap to tie into existing slope

Compacting select fill

Finished riprap and select fill section at western edge prior to final compaction

Rolling out coir fabric on top of select fill

Placing topsoil on coir fabric

Finished top soil placement

Finished coir fabric over the placed topsoil

Constructing the transition zone

Manta Ray anchor being lowered prior to driving

Manta Ray anchor being driven into place.

Large woody debris being imported to the site

Stockpile of imported large woody debris

Placing large woody debris on finished western portion

Chained and anchored large woody debris on eastern portion

Large woody debris placed butt to butt

Anchored large woody debris on right

Placing stockpiled unanchored large woody debris

Stockpile of plants

Preparing coir fabric for plantings

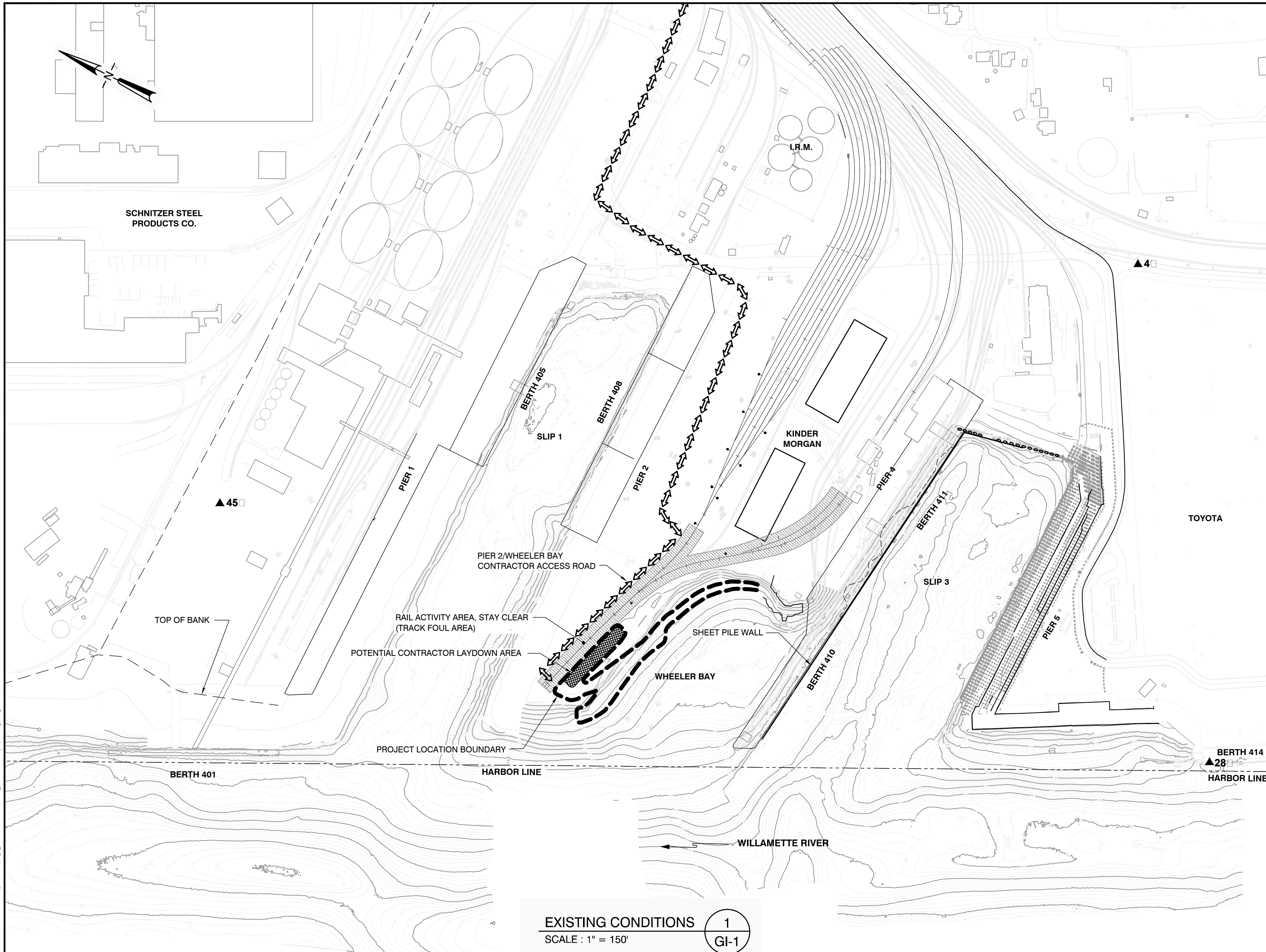

Placing bark around new plantings


Repairing the site access and material transfer road

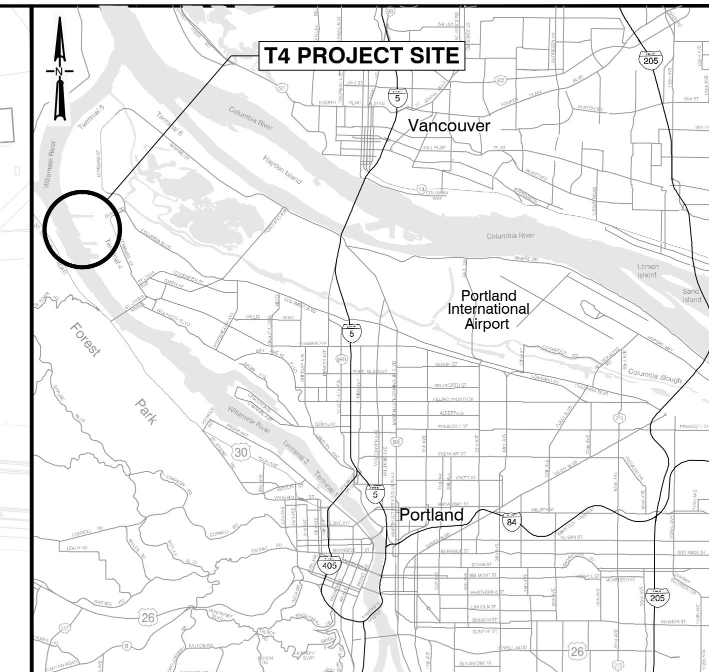

Repairing the irrigation lines


Hydroseeding site access and material transfer road

APPENDIX C
RECORD DRAWINGS



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)

NO.	DATE	BY	REVISIONS	CK'D	APPVD
2	1/25/11	RWA	RECORD DRAWING		
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
B20027 PROJECT NUMBER

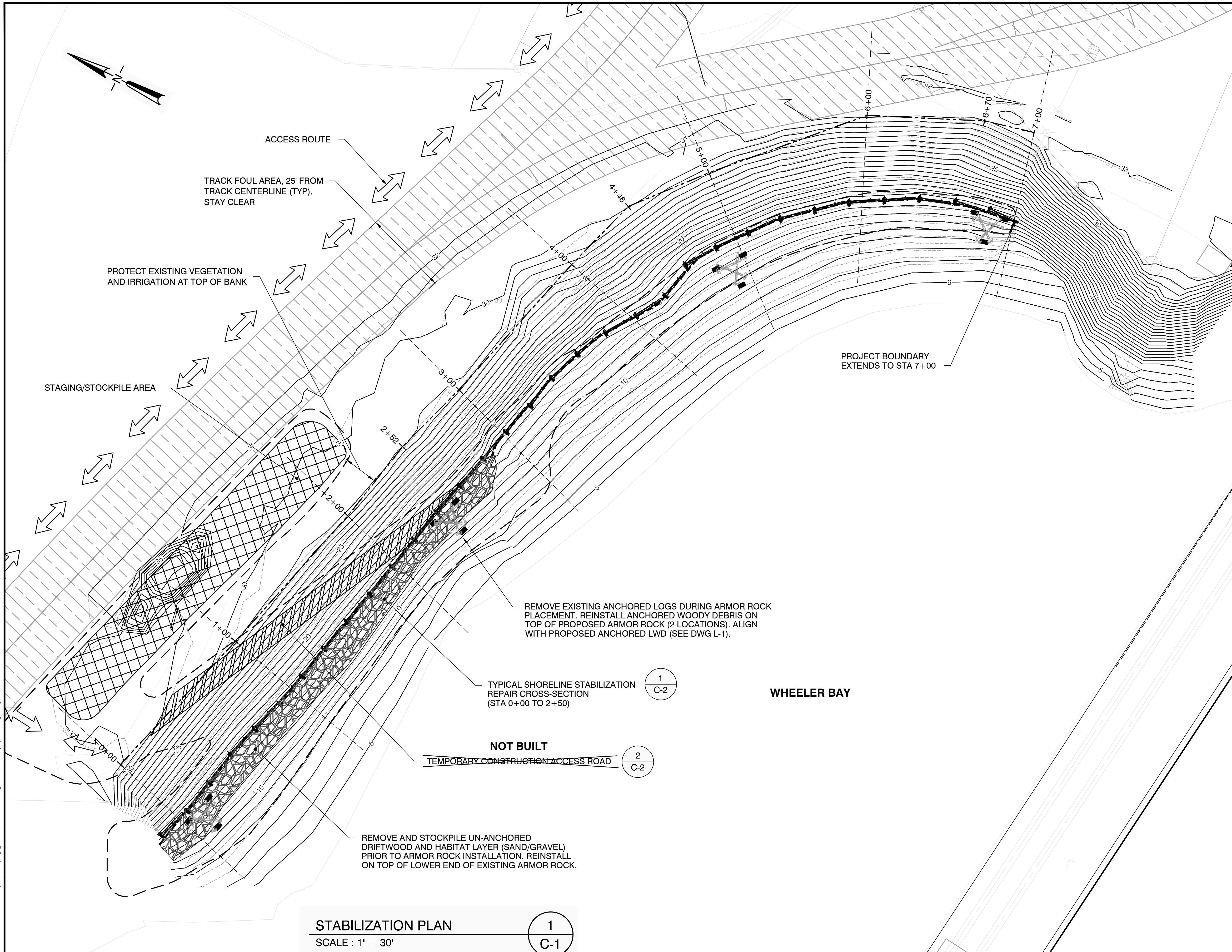
DESIGNED BY P. HUMMEL
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

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)



STABILIZATION PLAN 1 C-1
SCALE : 1" = 30'

LEGEND:

- PROJECT BOUNDARY
- SHORELINE SLOPE REPAIR ARMOR ROCK LIMITS (OCT 2010) 1 C-2
- NOT BUILT ~~TEMPORARY CONSTRUCTION ACCESS ROAD~~ 2 C-2
- APPROXIMATE LOCATION OF NEW ANCHORED LARGE WOODY DEBRIS WITH NEW RIPARIAN PLANTING BEHIND
- PRE-CONSTRUCTION LWD
- PRE-CONSTRUCTION ECOLOGY BLOCK LWD ANCHORS
- 25 PRE-CONSTRUCTION SURVEY CONTOURS (DATE: 07/29/10)
- 30 POST-CONSTRUCTION SURVEY CONTOURS (DATE:11/17/10)
- 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. PRE-CONSTRUCTION SURVEY BY PORT OF PORTLAND DATED JULY 29, 2010.
4. POST-CONSTRUCTION SURVEY BY PORT OF PORTLAND DATED NOVEMBER 17, 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

NO.	DATE	BY	REVISIONS	CK'D	APPVD
2	1/25/11	RWA	RECORD DRAWING		
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
B20027 PROJECT NUMBER

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"

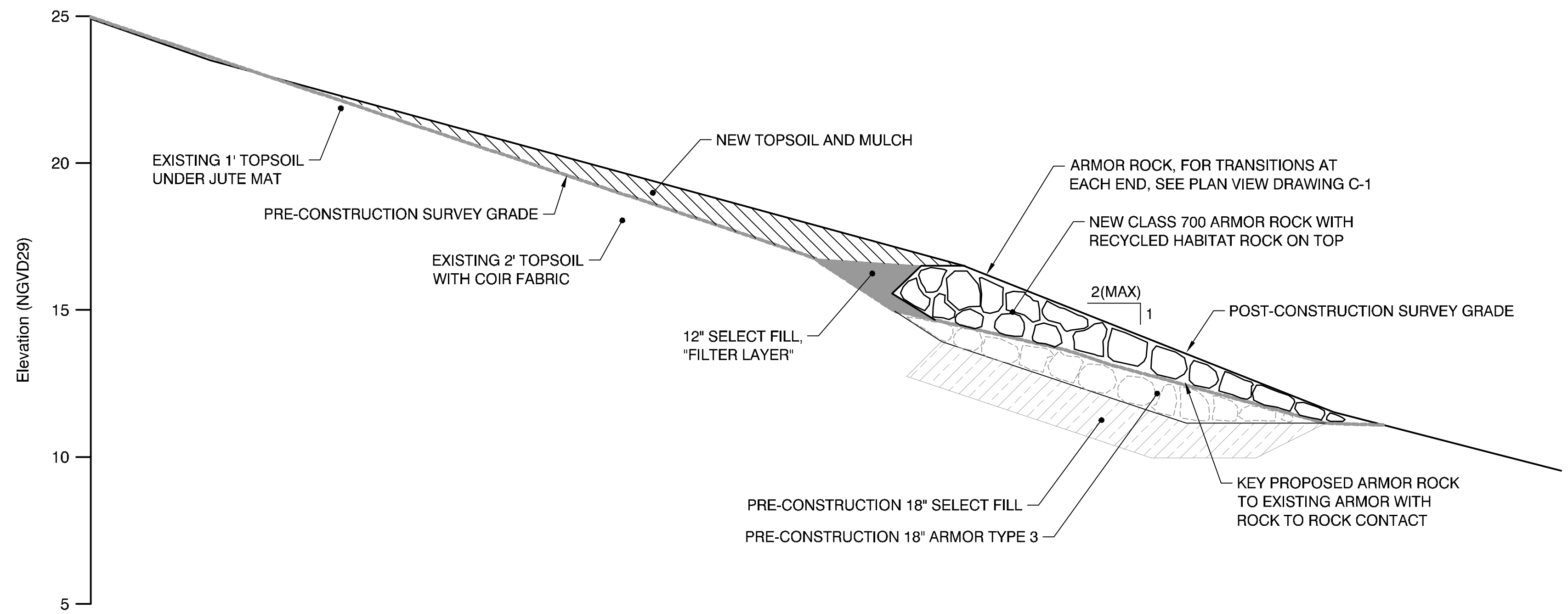
TERMINAL 4

WHEELER BAY BANK REPAIRS
STABILIZATION REPAIR PLAN

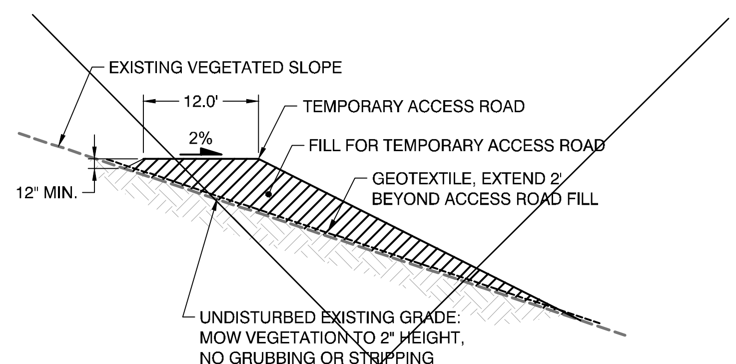
SUBMITTED BY ROGER ANDERSON PROJECT ENGINEER

TYPE CD DRAWING NO. T4 2010-500 2/8 (C-1)

1/25/2011 2:33:11 PM TGRIGA k:\jobs\050332 port of portland\050332 terminal 4_phase 1\wheeler bay repair\wbr-c1_c-4.dwg



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



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.
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

NOT BUILT

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

NO.	DATE	BY	REVISIONS	CKD	APPVD
3	1/25/11	RWA	RECORD DRAWING		
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

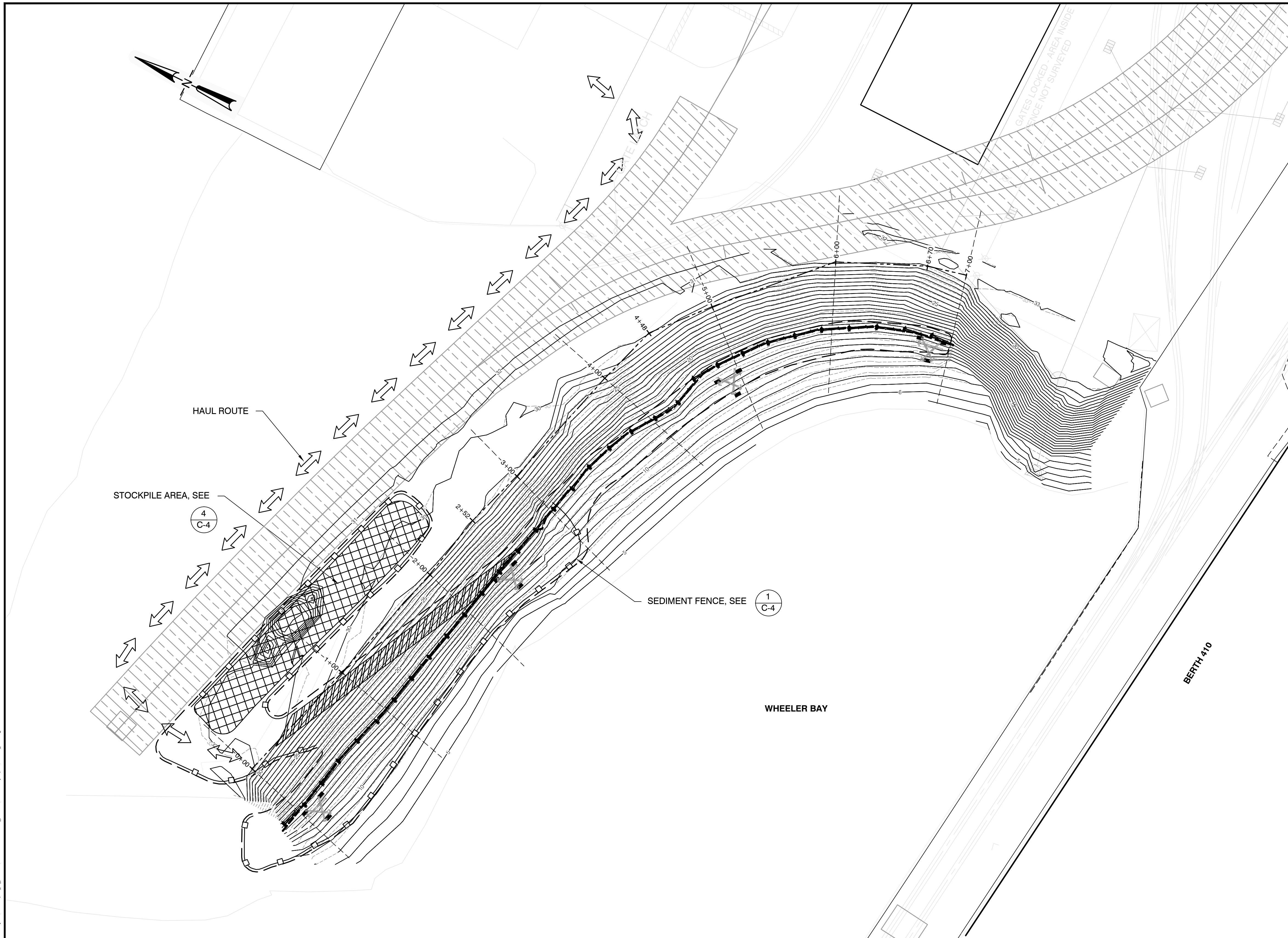
2010D015 DESIGN NUMBER | 820027 PROJECT NUMBER

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"

SUBMITTED BY ROGER ANDERSON PROJECT ENGINEER

TERMINAL 4
WHEELER BAY BANK REPAIRS
DETAILS

TYPE CD | DRAWING NO. T4 2010-500 | 3/8 | (C-2)



LEGEND:

- PROJECT BOUNDARY
- TRACK FOUL AREA
- ~~TEMPORARY CONSTRUCTION ACCESS ROAD~~ **NOT BUILT**
- PRE-CONSTRUCTION LWD
- PRE-CONSTRUCTION ECOLOGY BLOCK LWD ANCHORS
- 25 PRE-CONSTRUCTION SURVEY CONTOURS (DATE: 07/29/10)
- 30 POST-CONSTRUCTION SURVEY CONTOURS (DATE:11/17/10)
- 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'

NO.	DATE	BY	REVISIONS	CK'D	APPVD

NO.	DATE	BY	REVISIONS	CK'D	APPVD
2	1/25/11	RWA	RECORD DRAWING		
1	9/01/10	RWA	AS BID		

PORT OF PORTLAND
PORTLAND, OREGON

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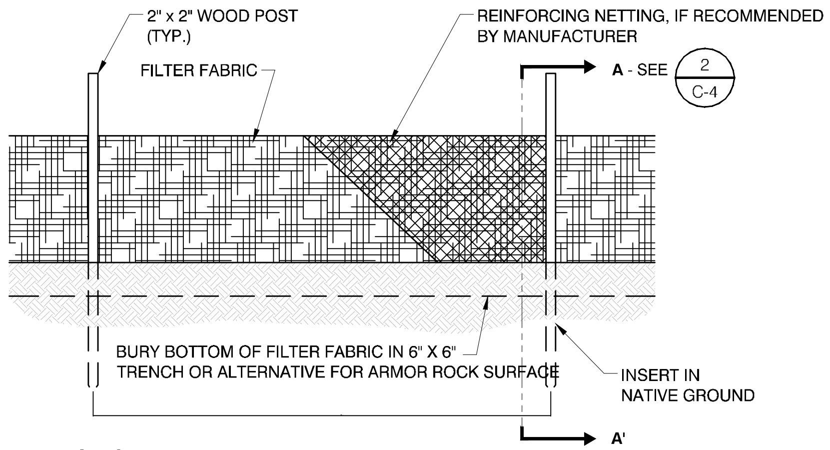
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

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)

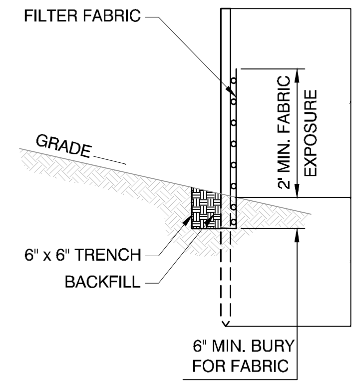
1/25/2011 2:33:30 PM TGRIGA k:\jobs\050332-port_of_portland\05033201 terminal 4_phase 1\wheeler bay repair\ab-c-1_c-4.dwg



NOTES:

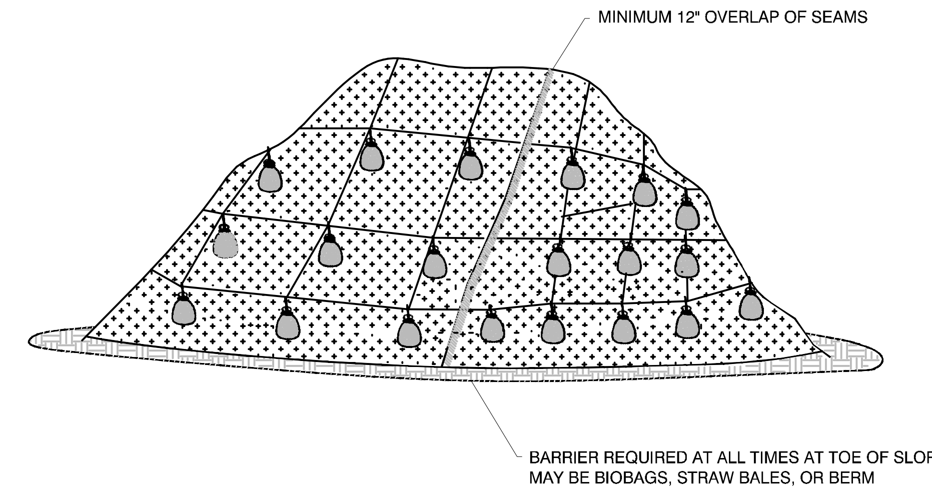
1. INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS 36 IN. WIDE (MIN.) ROLL TO AVOID JOINTS. ATTACH TO STAKES USING STITCHED LOOPS.
3. SPLICE JOINTS AT SUPPORT POSTS ONLY, WITH A MIN. 6 IN. OVERLAP.
4. ANGLE ENDS OF SEDIMENT FENCE UPHILL TO 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

NO.	DATE	BY	REVISIONS	CK'D	APPVD
2	1/25/11	RWA	RECORD DRAWING		
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
B20027 — PROJECT NUMBER

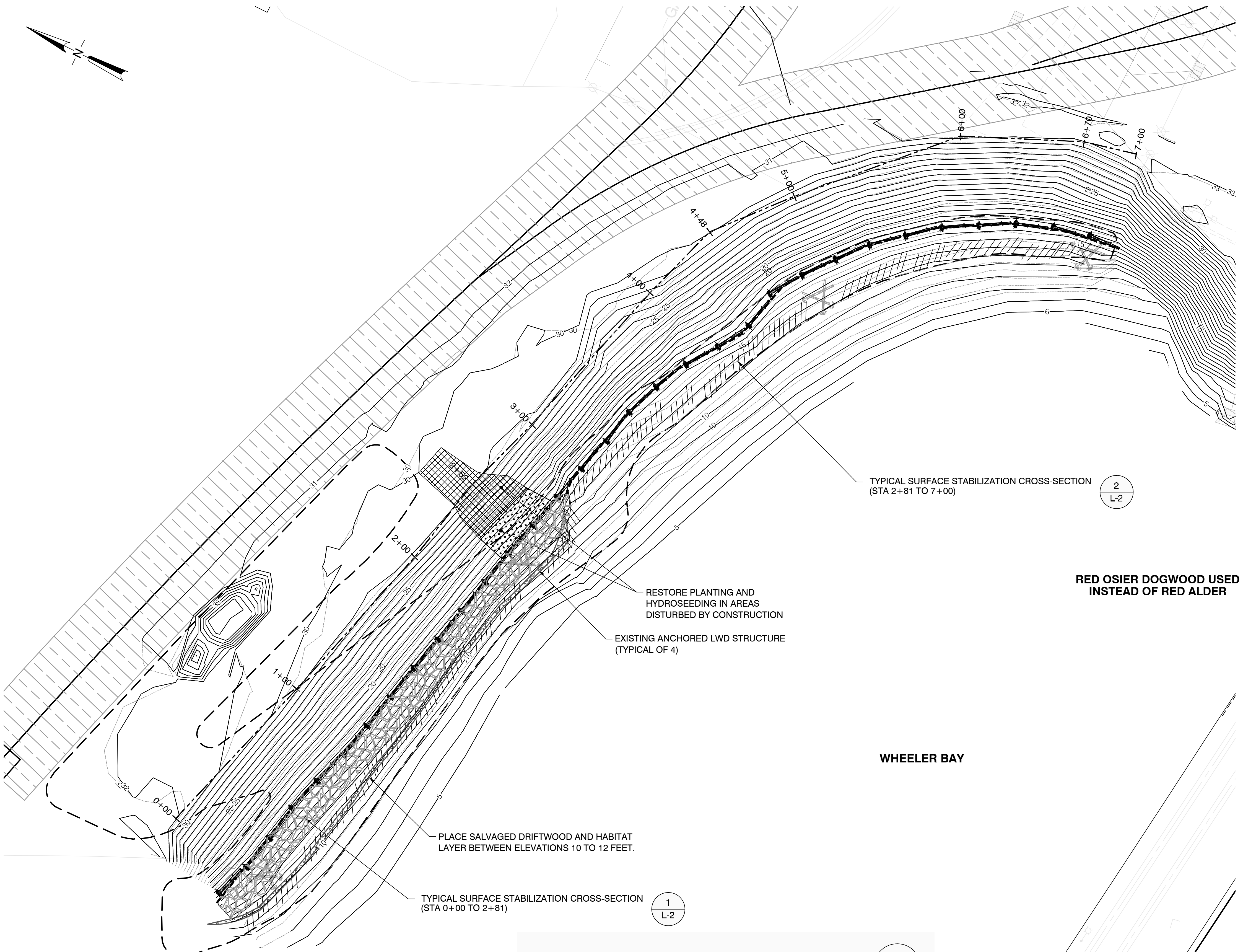
DESIGNED BY J. SCHOENEN
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

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)



SURFACE STABILIZATION AND PLANTING PLAN 1 L-1
SCALE : 1" = 30'

LEGEND:

- PROJECT BOUNDARY
- SHORELINE SLOPE REPAIR HYDROSEEDING AREA (OCT 2010) 5 L-3
- SHORELINE SLOPE REPAIR ARMOR ROCK LIMITS (OCT 2010) 1 C-2
- APPROX. AS-BUILT LOCATION OF ANCHORED LARGE WOODY DEBRIS WITH RIPARIAN PLANTING BEHIND 1 L-3 2 L-3
- APPROXIMATE AS-BUILT LOCATION OF RIPARIAN PLANTING ZONE FROM CONSTRUCTION DISTURBANCE 3 L-3
- UNANCHORED, SALVAGED DRIFTWOOD AT TOE OF ARMOR ROCK AND DOWNSLOPE OF ANCHORED LWD (TYPICAL SCHEMATIC)
- 25 PRE-CONSTRUCTION SURVEY CONTOURS (DATE: 07/29/10)
- 30 POST-CONSTRUCTION SURVEY CONTOURS (DATE:11/17/10)
- 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.

RED OSIER DOGWOOD USED INSTEAD OF RED ALDER

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.

NO.	DATE	BY	REVISIONS	CK'D	APPVD
2	1/25/11	RWA	RECORD DRAWING		
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
B20027 PROJECT NUMBER

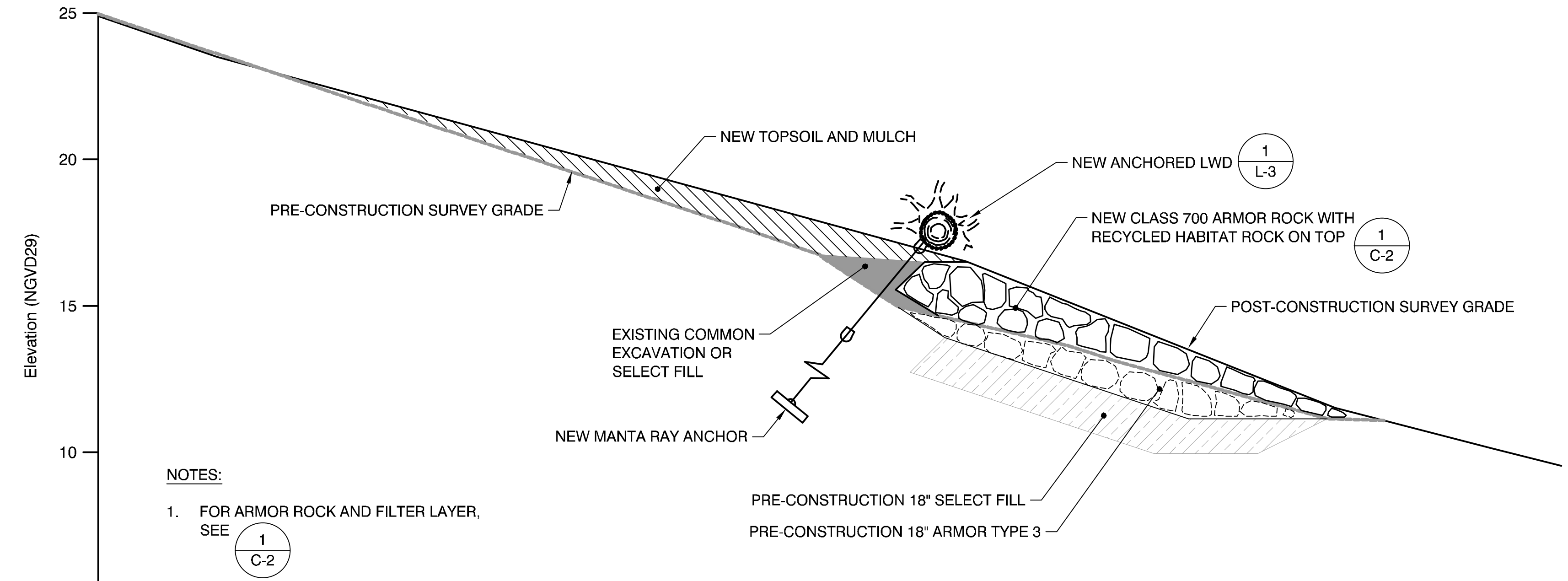
DESIGNED BY J. SCHOENEN
DRAWN BY T. GRIGA
CHECKED BY P. HUMMEL
DATE AUGUST 2010
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

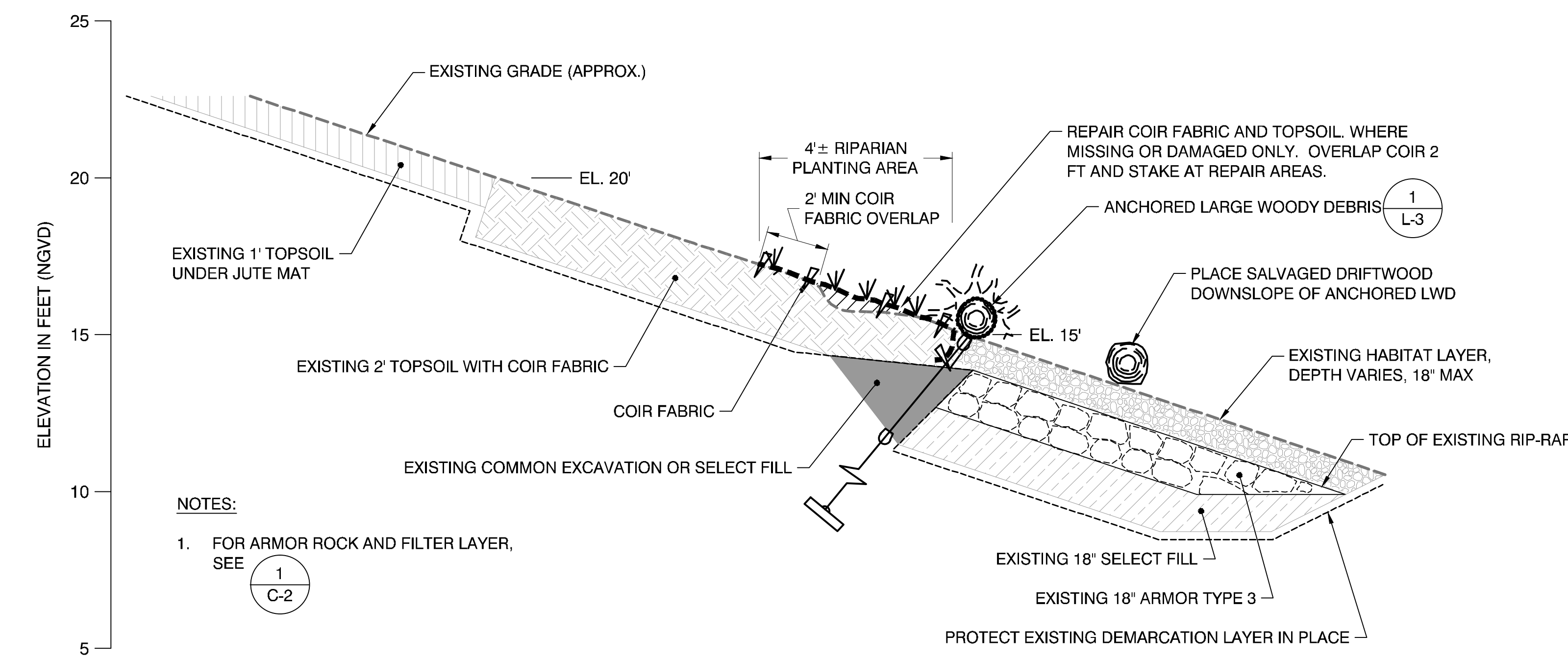
WHEELER BAY BANK REPAIRS
SURFACE STABILIZATION AND PLANTING PLAN

SUBMITTED BY ROGER ANDERSON PROJECT ENGINEER

TYPE CD DRAWING NO. T4 2010-500 6/8 (L-1)



(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

NO.	DATE	BY	REVISIONS	CK'D	APPVD
2	1/25/11	RWA	RECORD DRAWING		
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

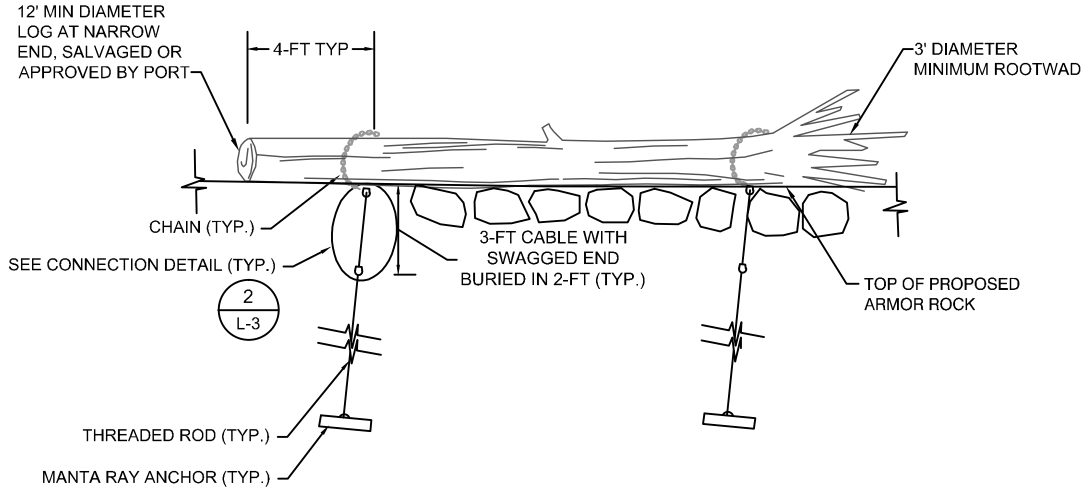
2010D015 DESIGN NUMBER
820027 PROJECT NUMBER

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"

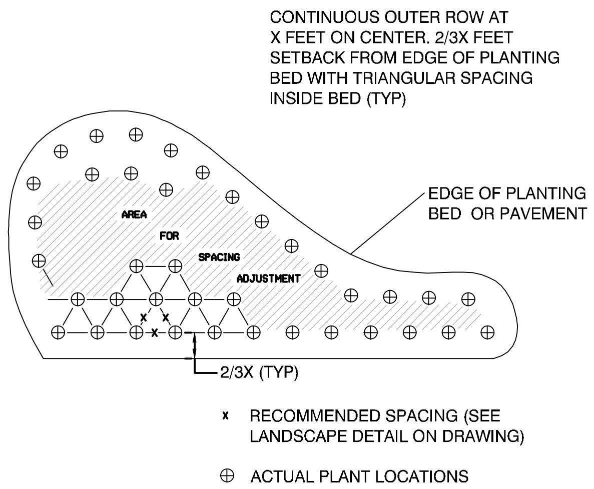
TERMINAL 4

WHEELER BAY BANK REPAIRS
SURFACE STABILIZATION AND PLANTING DETAILS

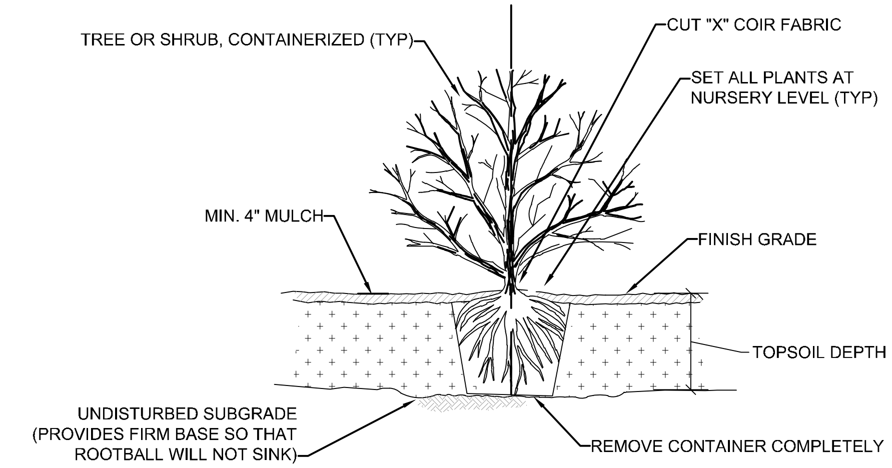
SUBMITTED BY ROGER ANDERSON PROJECT ENGINEER
TYPE CD
DRAWING NO. T4 2010-500 7/8 (L-2)



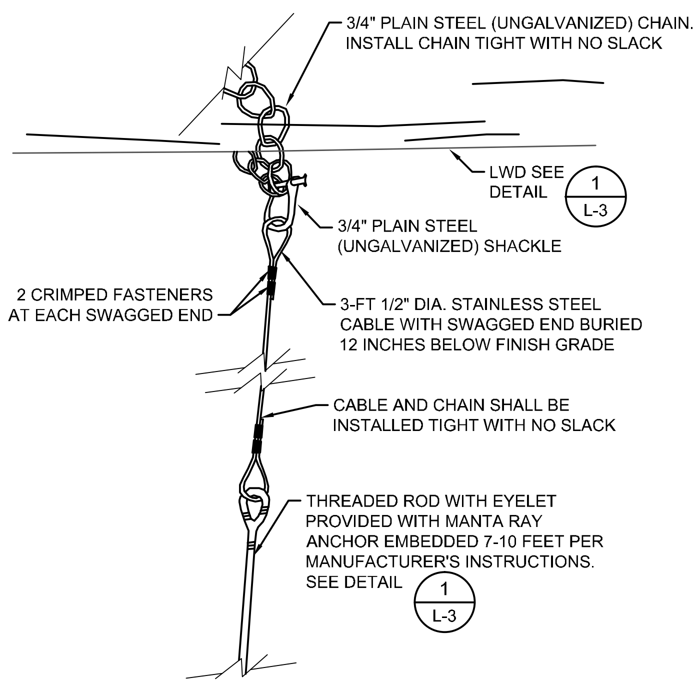
ANCHORED LWD PLACEMENT 1 / L-3
SCALE: NTS



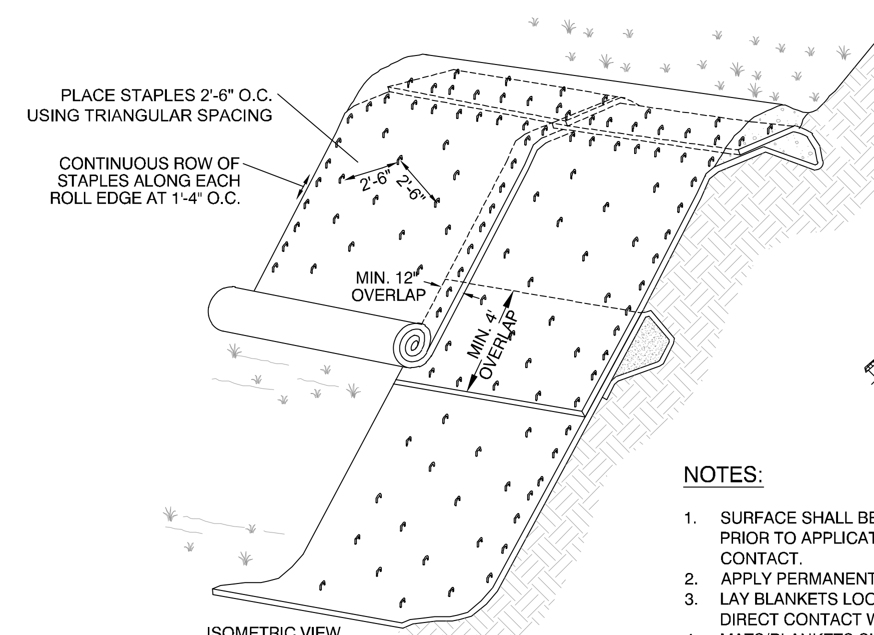
RIPARIAN PLANTING PATTERN 3 / L-3
NOT TO SCALE



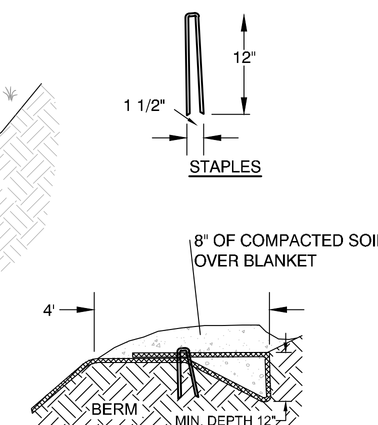
RIPARIAN PLANTING DETAIL 4 / L-3
SCALE: NTS



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

1/25/2011 2:33:52 PM TGRIGA k:\jobs\050332 port of portland\05033201 terminal 4_phase 1\wheeler bay repair\etc_l1_l3.dwg

NO.	DATE	BY	REVISIONS	CK'D	APPVD
2	1/25/11	RWA	RECORD DRAWING		
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
B20027 PROJECT NUMBER

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)

APPENDIX D
DOCUMENTATION OF IMPORT AND DISPOSAL MATERIAL VOLUMES

CEMEX 1823094523

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683
Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
TIGARD, OR 97224
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.96 ton
— DRIVER ON AT TARE & GROSS —

Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads

	lb	ton	tne
Gross:	55,900	27.95	25.36
Tare:	25,980	12.99	11.78
Net:	29,920	14.96	13.57

* Predetermined Tare

Scale: 2
In:
Out: 7:24 am
Today Loads: 2
Today Qty: 29.89 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094517

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683
Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
TIGARD, OR 97224
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.93 ton
— DRIVER ON AT TARE & GROSS —

Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads

	lb	ton	tne
Gross:	56,000	28.00	25.40
Tare:	26,140	13.07	11.86
Net:	29,860	14.93	13.54

* Predetermined Tare

Scale: 2
In:
Out: 6:59 am
Today Loads: 1
Today Qty: 14.93 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094547

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683

Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.46 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 8:54 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	54,900	27.45	24.90
Tare:	25,980	12.99	11.78
Net.	28,920	14.46	13.12

* Predetermined Tare

Today Loads: 4
Today Qty: 59.00 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623. ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094540

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683

Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.65 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 8:33 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	55,440	27.72	25.15
Tare:	26,140	13.07	11.86
Net.	29,300	14.65	13.29

* Predetermined Tare

Today Loads: 3
Today Qty: 44.54 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623. ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094566

ghed At: Fisher East Quarry
) SE 192nd Avenue
couver, WA 98683 Location: 1823

r: 40816377	Dispatch:	50,085.00	Date: 10/05/2010

) To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
ruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
#: P-WHEELER BAY RE PO: JEFF
duct: 1307763 - CLASS 700 RIP RAP
rier: 743782 - PACIFICROC
icle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
ctor / Trailer1 / Trailer 2: -/- -/-

: 14.92 ton
ighmaster:
MEX
puty Weighmaster:
ndy Roads
ale: 2
t: 10:17 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	55,820	27.91	25.32
Tare:	25,980	12.99	11.78
Net:	29,840	14.92	13.54

* Predetermined Tare

Today Loads: 6
Today Qty: 88.72 ton

MEX'S STANDARD TERMS AND
DITIONS INCORPORATED HEREIN.

Carl Jahn

nature of Receiving Agent Driver:

TRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094584

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.60 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 11:09 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	55,340	27.67	25.10
Tare:	26,140	13.07	11.86
Net.	29,200	14.60	13.24

* Predetermined Tare

Today Loads: 7
Today Qty: 103.32 ton

CEMEX'S STANDARD TERMS AND
CONDITIONS INCORPORATED HEREIN.

Carl Jahn

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094558

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.80 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 9:53 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	55,740	27.87	25.28
Tare:	26,140	13.07	11.86
Net:	29,600	14.80	13.43

* Predetermined Tare

Today Loads: 5
Today Qty: 73.80 ton

CEMEX'S STANDARD TERMS AND
CONDITIONS INCORPORATED HEREIN.

Carl Jahn

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094612

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683

Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.87 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 12:40 pm

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	55,880	27.94	25.35
Tare:	26,140	13.07	11.86
Net:	29,740	14.87	13.49

* Predetermined Tare

Today Loads: 9
Today Qty: 132.83 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094615

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683

Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 13.87 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 1
In:
Out: 1:07 pm

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	53,720	26.86	24.37
Tare:	25,980	12.99	11.78
Net:	27,740	13.87	12.58

* Predetermined Tare

Today Loads: 10
Today Qty: 146.70 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Signature of Receiving Agent Driver

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094594

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683

Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.64 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 11:38 am

--- DRIVER ON AT TARE & GROSS ---

	lb	ton	tne
Gross:	55,260	27.63	25.07
Tare:	25,980	12.99	11.78
Net:	29,280	14.64	13.28

* Predetermined Tare

Today Loads: 8
Today Qty: 117.96 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094639

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683
Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.89 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,920	27.96	25.36
Tare:	26,140	13.07	11.86
Net:	29,780	14.89	13.51

Scale: 2 * Predetermined Tare
In: Today Loads: 13
Out: 3:19 pm Today Qty: 190.28 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN

Carl Jahn

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094629

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683
Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.03 ton --- DRIVER ON AT TARE & GROSS ---

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	54,040	27.02	24.51
Tare:	25,980	12.99	11.7
Net:	28,060	14.03	12.7

Scale: 1 * Predetermined Tare
In: Today Loads: 1
Out: 2:24 pm Today Qty: 175.39 to

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Jahn

Signature of Receiving Agent Drive

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094624

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683
Location: 1823

Order: 40816377 Dispatch: 50,085.00 Date: 10/05/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.66 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,460	27.73	25.16
Tare:	26,140	13.07	11.86
Net:	29,320	14.66	13.30

Scale: 2 * Predetermined Tare
In: Today Loads: 11
Out: 1:56 pm Today Qty: 161.36 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Jahn

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094765

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 **Location: 1823**

Order: 40816377 **Dispatch:** 50,161.00 **Date:** 10/06/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1 1019
Job #: P-WHEELER BAY RE **PO:** JEFF 300
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.93 ton — DRIVER ON AT TARE & GROSS —

		lb	ton	tne
Weighmaster: CEMEX	Gross:	56,000	28.00	25.40
Deputy Weighmaster: Candy Roads	Tare:	26,140	13.07	11.86
	Net:	29,860	14.93	13.54

* Predetermined Tare

Scale: 2
In: **Today Loads:** 2
Out: 12:18 pm **Today Qty:** 29.88 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094731

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 **Location: 1823**

Order: 40816377 **Dispatch:** 50,161.00 **Date:** 10/06/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4 1019
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE **PO:** JEFF 300
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.93 ton — DRIVER ON AT TARE & GROSS —

		lb	ton	tne
Weighmaster: CEMEX	Gross:	56,000	28.00	25.40
Deputy Weighmaster: Candy Roads	Tare:	26,140	13.07	11.86
	Net:	29,860	14.93	13.54

* Predetermined Tare

Scale: 2
In: **Today Loads:** 1
Out: 10:49 am **Today Qty:** 14.93 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094824

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,161.00 Date: 10/06/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
1019
300
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.49 ton — DRIVER ON AT TARE & GROSS —

		lb	ton	tne
Weighmaster: CEMEX	Gross:	55,120	27.56	25.00
Deputy Weighmaster:	Tare:	26,140	13.07	11.86
Candy Roads	Net:	28,980	14.49	13.15

Scale: 2 * Predetermined Tare
In: Today Loads: 4
Out: 2:51 pm Today Qty: 59.22 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl John

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094800

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,161.00 Date: 10/06/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
1019
Job #: P-WHEELER BAY RE PO: JEFF
300
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.87 ton — DRIVER ON AT TARE & GROSS —

		lb	ton	tne
Weighmaster: CEMEX	Gross:	55,880	27.94	25.35
Deputy Weighmaster:	Tare:	26,140	13.07	11.86
Candy Roads	Net:	29,740	14.87	13.49

Scale: 2 * Predetermined Tare
In: Today Loads: 3
Out: 1:34 pm Today Qty: 44.73 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl John

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823095043

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683
Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.83 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 1:17 pm

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	55,800	27.90	25.31
Tare:	26,140	13.07	11.86
Net:	29,660	14.83	13.45

* Predetermined Tare

Today Loads: 9
Today Qty: 133.33 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623. ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823095081

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683
Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.79 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Candy Roads
Scale: 2
In:
Out: 2:33 pm

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	55,720	27.86	25.27
Tare:	26,140	13.07	11.86
Net:	29,580	14.79	13.42

* Predetermined Tare

Today Loads: 11
Today Qty: 163.12 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623. ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX **1823094957**

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.82 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX

Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,780	27.89	25.30
Tare:	26,140	13.07	11.86
Net:	29,640	14.82	13.44

* Predetermined Tare

Scale: 2
In:
Out: 10:34 am
Today Loads: 5
Today Qty: 73.84 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson
Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX **1823094895**

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.60 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX

Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,340	27.67	25.10
Tare:	26,140	13.07	11.86
Net:	29,200	14.60	13.24

* Predetermined Tare

Scale: 2
In:
Out: 8:48 am
Today Loads: 3
Today Qty: 44.04 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson
Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX **1823094998**

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.91 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX

Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,960	27.98	25.38
Tare:	26,140	13.07	11.86
Net:	29,820	14.91	13.53

* Predetermined Tare

Scale: 2
In:
Out: 11:53 am
Today Loads: 7
Today Qty: 103.74 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson
Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094860

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 **Location: 1823**

Order: 40816377 **Dispatch:** 50,159.00 **Date:** 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE **PO:** JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.56 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,100	27.55	24.99
Tare:	25,980	12.99	11.78
Net:	29,120	14.56	13.21

* Predetermined Tare

Scale: 2
In:
Out: 7:22 am
Today Loads: 2
Today Qty: 29.44 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094966

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 **Location: 1823**

Order: 40816377 **Dispatch:** 50,159.00 **Date:** 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE **PO:** JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.99 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,960	27.98	25.38
Tare:	25,980	12.99	11.78
Net:	29,980	14.99	13.60

* Predetermined Tare

Scale: 2
In:
Out: 10:48 am
Today Loads: 6
Today Qty: 88.83 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094852

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 **Location: 1823**

Order: 40816377 **Dispatch:** 50,159.00 **Date:** 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE **PO:** JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2112311 - P1-452SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.88 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,900	27.95	25.36
Tare:	26,140	13.07	11.86
Net:	29,760	14.88	13.50

* Predetermined Tare

Scale: 2
In:
Out: 7:06 am
Today Loads: 1
Today Qty: 14.88 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johnson

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823095047

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
1019
300
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 15.00 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,980	27.99	25.39
Tare:	25,980	12.99	11.78
Net:	30,000	15.00	13.61

* Predetermined Tare

Scale: 2
In:
Out: 1:28 pm
Today Loads: 10
Today Qty: 148.33 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Jahn
Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823095089

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
1019
300
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.86 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,700	27.85	25.27
Tare:	25,980	12.99	11.78
Net:	29,720	14.86	13.48

* Predetermined Tare

Scale: 2
In:
Out: 2:53 pm
Today Loads: 12
Today Qty: 177.98 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Jahn
Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823095003

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683 Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
1019
300
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.76 ton — DRIVER ON AT TARE & GROSS —

Weighmaster: CEMEX
Deputy Weighmaster: Candy Roads

	lb	ton	tne
Gross:	55,500	27.75	25.17
Tare:	25,980	12.99	11.78
Net:	29,520	14.76	13.39

* Predetermined Tare

Scale: 2
In:
Out: 12:05 pm
Today Loads: 8
Today Qty: 118.50 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Jahn
Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX 1823094909

Weighed At: Fisher East Quarry
4900 SE 192nd Avenue
Vancouver, WA 98683

Location: 1823

Order: 40816377 Dispatch: 50,159.00 Date: 10/07/2010
Ship To: 3034947 - NORTHWEST EARTHMOVERS INC
XPW-WHEELER BAY REPAIRS
N LOMBARD ST & N ROBERTS AVE
PORTLAND, OR 97203
Instruct: N LOMBARD ST & N ROBERTS AVE
TERMINAL 4
JEFF/200/RA **565 F1
Job #: P-WHEELER BAY RE PO: JEFF
Product: 1307763 - CLASS 700 RIP RAP
Carrier: 743782 - PACIFICROC
Vehicle: 2136962 - P1-3248SO,RINKER PORTLAND REGION
Tractor / Trailer1 / Trailer 2: -/- -/-

Qty: 14.98 ton

--- DRIVER ON AT TARE & GROSS ---

Weighmaster:
CEMEX

Deputy Weighmaster:
Candy Roads

	lb	ton	tne
Gross:	55,940	27.97	25.37
Tare:	25,980	12.99	11.78
Net:	29,960	14.98	13.59

* Predetermined Tare

Scale: 2
In:
Out: 9:09 am

Today Loads: 4
Today Qty: 59.02 ton

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

Carl Johns

Signature of Receiving Agent

Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

CEMEX

Date	Plant #	Plant Name	Ticket Time
Project #	Job #	PO #	Zone / Map ID
Customer #	Sold to		Truck #
Delivery Address			Hauler/Truck Description
			WeighMaster
Instructions			[illegible] 52.45

LOAD QUANTITY	CUMULATIVE QUANTITY	# OF LOADS	PRODUCT CODE	PRODUCT DESCRIPTION	UNIT PRICE	AMOUNT

SUB-TOTAL	TAX	TICKET TOTAL

The undersigned promises to pay all costs, including reasonable attorney's fees, incurred in collecting any sums owed.

All accounts not paid within 30 days of delivery will bear interest at the rate of 18% per annum.

Not Responsible for Reactive Aggregate or Color Quality. No Claim Allowed Unless Made at Time Material is Delivered.

A $40.00 Service Charge and Loss of the Cash Discount will be collected on all Returned Checks.

Standby

Time ______________ Initials ________

PROPERTY DAMAGE RELEASE (TO BE SIGNED IF DELIVERY IS TO BE MADE INSIDE CURB LINE)
Dear Customer: The driver of this truck who is presenting this RELEASE to you for your signature is of the opinion that the size and weight of his truck may possibly cause damage to the premises and/or adjacent property if he places the material in this load where you desire it. It is our wish to help you in every way that we can, but in order to do this the driver is requesting that you sign this RELEASE relieving him and this supplier from any responsibility from any damage that may occur to the premises and/or adjacent property, buildings, sidewalks, drive-ways, curbs, etc. by the delivery of this material and that you also agree to help him remove mud from the wheels of his vehicle so that he will not litter the public street. Further, as additional consideration, the undersigned agrees to indemnify and hold harmless the driver of this truck and this supplier for any and all damage to the premises and/or adjacent property which may be claimed by anyone to have arisen out of delivery of this order.
SIGNED

NOTICE: MY SIGNATURE BELOW INDICATES THAT I HAVE READ THE HEALTH WARNING NOTICE AND SUPPLIER WILL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED WHEN DELIVERING INSIDE CURB LINE

LOAD RECEIVED BY: Ⓧ ______________________
AUTHORIZED SIGNATURE

The signature above signifies receipt and acceptance of the listed materials and acknowledgement of and agreement to the terms and conditions on the face and reverse side of this ticket.

CEMEX

Date	Plant #	Plant Name	Ticket Time
Project #	Job #	PO #	Zone / Map ID
Customer #	Sold to		Truck #
Delivery Address			Hauler/Truck Description
			WeighMaster
Instructions			

LOAD QUANTITY	CUMULATIVE QUANTITY	# OF LOADS	PRODUCT CODE	PRODUCT DESCRIPTION	UNIT PRICE	AMOUNT

SUB-TOTAL	TAX	TICKET TOTAL

The undersigned promises to pay all costs, including reasonable attorney's fees, incurred in collecting any sums owed.

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Not Responsible for Reactive Aggregate or Color Quality. No Claim Allowed Unless Made at Time Material is Delivered.

A $40.00 Service Charge and Loss of the Cash Discount will be collected on all Returned Checks.

Standby
Time______________ Initials ________

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SIGNED

NOTICE: MY SIGNATURE BELOW INDICATES THAT I HAVE READ THE HEALTH WARNING NOTICE AND SUPPLIER WILL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED WHEN DELIVERING INSIDE CURB LINE

LOAD RECEIVED BY: Ⓧ [signature]
AUTHORIZED SIGNATURE

The signature above signifies receipt and acceptance of the listed materials and acknowledgement of and agreement to the terms and conditions on the face and reverse side of this ticket.

77UNIVERSAL 10/08

ADDITIONAL JOB SITE COPY

[illegible]

CEMEX

Date	Plant #	Plant Name	Ticket Time
[illegible]	[illegible]	[illegible]	[illegible]
Project #	**Job #**	**PO #**	**Zone** / **Map ID**
[illegible]			[illegible]
Customer #	**Sold to**		**Truck #**
[illegible]	[illegible]		[illegible]
Delivery Address			**Hauler/Truck Description**
[illegible]			[illegible]
[illegible] N ROBERTS AVE	PORTLAND, OR [illegible]		**WeighMaster**
Instructions			
[illegible]			[illegible]

LOAD QUANTITY	CUMULATIVE QUANTITY	# OF LOADS	PRODUCT CODE	PRODUCT DESCRIPTION	UNIT PRICE	AMOUNT
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		

SUB-TOTAL	TAX	TICKET TOTAL

The undersigned promises to pay all costs, including reasonable attorney's fees, incurred in collecting any sums owed.

All accounts not paid within 30 days of delivery will bear interest at the rate of 18% per annum.

Not Responsible for Reactive Aggregate or Color Quality. No Claim Allowed Unless Made at Time Material is Delivered.

A $40.00 Service Charge and Loss of the Cash Discount will be collected on all Returned Checks.

Standby
Time ______________ Initials ________

PROPERTY DAMAGE RELEASE (TO BE SIGNED IF DELIVERY IS TO BE MADE INSIDE CURB LINE)
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SIGNED

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LOAD RECEIVED BY: Ⓧ ____________________
AUTHORIZED SIGNATURE

The signature above signifies receipt and acceptance of the listed materials and acknowledgement of and agreement to the terms and conditions on the face and reverse side of this ticket.

77UNIVERSAL 10/08

91105804

CEMEX

[illegible]

141 1234558

Date	Plant #	Plant Name	Ticket Time
[illegible]	[illegible]	[illegible]	[illegible]
Project #	**Job #**	**PO #**	**Zone** / **Map ID**
[illegible]		[illegible]	[illegible] / [illegible]
Customer #	**Sold to**		**Truck #**
3089247	NORTHWEST E[illegible]VERS INC		2179780
Delivery Address			**Hauler/Truck Description**
XXP[illegible] BAY REPAIRS			P[illegible] PORTLAND R[illegible]
N LOMBARD ST & N ROBERTS AVE	PORTLAND, OR, 97203		**WeighMaster**

Instructions

N [illegible] ST & N ROBERTS AVE

[illegible]

	LB	Metric	Ton
Gross	103,300	46.86	51.65
Tare	36,080	17.73	18.04
Net	64,220	29.13	32.11

LOAD QUANTITY	CUMULATIVE QUANTITY	# OF LOADS	PRODUCT CODE	PRODUCT DESCRIPTION	UNIT PRICE	AMOUNT
32.11 TON	64.32	2	1241212 - SELECT FILL			

1019

P.C. 300

SUB-TOTAL	TAX	TICKET TOTAL

The undersigned promises to pay all costs, including reasonable attorney's fees, incurred in collecting any sums owed.

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Not Responsible for Reactive Aggregate or Color Quality. No Claim Allowed Unless Made at Time Material is Delivered.

A $40.00 Service Charge and Loss of the Cash Discount will be collected on all Returned Checks.

Standby
Time ______________ Initials ________

PROPERTY DAMAGE RELEASE (TO BE SIGNED IF DELIVERY IS TO BE MADE INSIDE CURB LINE)
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SIGNED

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LOAD RECEIVED BY: ⓧ ____________________
AUTHORIZED SIGNATURE

The signature above signifies receipt and acceptance of the listed materials and acknowledgement of and agreement to the terms and conditions on the face and reverse side of this ticket.

[illegible]

77UNIVERSAL 10/08

91105782

CEMEX

1481294536

Date	Plant #	Plant Name	Ticket Time
[illegible]	1191	English Pit SAG	7:03 am

Project #	Job #	PO #	Zone	Map ID
[illegible]	JEFF		TP0115	51 565

Customer #	Sold to	Truck #
3024957	NORTHWEST EARTHMOVERS INC	[illegible]

Delivery Address: [illegible] WHEELER BAY REPAIRS; [illegible] ST & N ROBERTS AVE, PORTLAND, OR, 97203

Hauler/Truck Description:

WeighMaster: [illegible] RINKER PORTLAND RE

Instructions:

N LOMBARD ST & N ROBERTS AVE

JEFF [illegible]

	LB	Metric	Ton
Gross:	102,900	46.67	51.45
Tare:	39,080	17.73	19.54
Net:	63,820	28.95	31.91

LOAD QUANTITY	CUMULATIVE QUANTITY	# OF LOADS	PRODUCT CODE	PRODUCT DESCRIPTION	UNIT PRICE	AMOUNT
31.91 TON	31.91	1-1	1341312 - SELECT FILL			

1017?

P.C. 3.00

SUB-TOTAL	TAX	TICKET TOTAL

The undersigned promises to pay all costs, including reasonable attorney's fees, incurred in collecting any sums owed.

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Standby Time ____________ Initials ________

PROPERTY DAMAGE RELEASE (TO BE SIGNED IF DELIVERY IS TO BE MADE INSIDE CURB LINE)
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SIGNED

NOTICE: MY SIGNATURE BELOW INDICATES THAT I HAVE READ THE HEALTH WARNING NOTICE AND SUPPLIER WILL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED WHEN DELIVERING INSIDE CURB LINE

LOAD RECEIVED BY: ⓧ [illegible]
AUTHORIZED SIGNATURE

The signature above signifies receipt and acceptance of the listed materials and acknowledgement of and agreement to the terms and conditions on the face and reverse side of this ticket.

8:00

ENDICOTT-WOODS ENTERPRISES, INC.
P.O. BOX 1537
TUALATIN, OREGON 97062
503-625-3525
CCB #94954

Endicott-Woods Enterprises, Inc.
Trucking & Excavating

DATE: 10-20-16	TRUCK NO.: N174	EMPLOYEE:
CUSTOMER: NorthWest Earth		PHONE:
CUSTOMER ADDRESS:		
JOB ADDRESS: Port of Portland		
PO#	JOB #	LOT#

TIME:	START TIME	STOP TIME	TOTAL TIME	RATE
LABOR				
SOLO				
TRUCK & TRAILER				
TRUCK & PUP				
EQUIPMENT				
EQUIPMENT				

JOB DESCRIPTION ______________________

YARDS/TONS	LOADS	MATERIAL	RATE	COST
25 yd		Sandy loam		

NOT RESPONSIBLE FOR DAMAGE TO SIDEWALKS, DRIVEWAYS OR PROPERTY BEHIND CURB LINE.
CUSTOMER HAS READ AND AGREES TO THE TERMS PRINTED ON THE BACK OF THIS TICKET.

CUSTOMER SIGNATURE [illegible]

THANK YOU FOR YOUR BUSINESS.

WHITE - FILE   YELLOW - BILLING   PINK - CUSTOMER

ENDICOTT-WOODS ENTERPRISES, INC.
P.O. BOX 1537
TUALATIN, OREGON 97062
503-625-3525
CCB #94954

Endicott-Woods Enterprises, Inc.
Trucking & Excavating

DATE: 10-20-10	TRUCK NO.: N181	EMPLOYEE:
CUSTOMER: Northwest Earth		PHONE:
CUSTOMER ADDRESS:		
JOB ADDRESS: Port of Portland		
PO#	JOB #	LOT#

TIME:	START TIME	STOP TIME	TOTAL TIME	RATE
LABOR				
SOLO				
TRUCK & TRAILER				
TRUCK & PUP				
EQUIPMENT				
EQUIPMENT				

JOB DESCRIPTION ______________________

YARDS/TONS	LOADS	MATERIAL	RATE	COST
25 yd		Sandy loam		

NOT RESPONSIBLE FOR DAMAGE TO SIDEWALKS, DRIVEWAYS OR PROPERTY BEHIND CURB LINE.
CUSTOMER HAS READ AND AGREES TO THE TERMS PRINTED ON THE BACK OF THIS TICKET.

CUSTOMER SIGNATURE [illegible]

THANK YOU FOR YOUR BUSINESS.

WHITE - FILE   YELLOW - BILLING   PINK - CUSTOMER

APPENDIX E
IMPORT MATERIAL CHARACTERIZATION RESULTS AND VALIDATION

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Tuesday, September 28, 2010

John Verduin
Anchor Environmental, LLC Portland
6650 SW Redwood Lane Ste. 333
Portland, OR 97224

RE: T4 / [none]

Enclosed are the results of analyses for work order A10I165, which was received by the laboratory on 9/14/2010 at 12:45:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: dthomas@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories

Darwin Thomas, Business Development Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

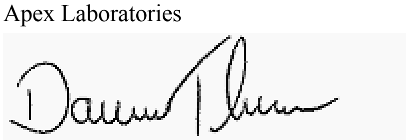
Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Select Fill-100914-1	A10I165-01	Soil	09/14/10 11:20	09/14/10 12:45

Apex Laboratories



Darwin Thomas, Business Development Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

ANALYTICAL CASE NARRATIVE

Work Order: A10I165

-- Chlordane isomer names --

The names for the chlordane isomers have changed between the draft and final versions of this report. Apex's previous naming scheme was to use alpha and gamma chlordane to indicate CAS numbers 5103-71-9 and 5103-74-2. The analytes requested on the Anchor work plan were alpha and beta chlordane, and there is some confusion in the literature as to which isomer corresponds to which name. To avoid further confusion, Apex will use the cis and trans names from now on, as these indicate the actual structural differences between the isomer molecules.

cis-Chlordane = 5103-71-9
trans-Chlordane = 5103-74-2

Evan Holloway
Quality Assurance Manager
September, 24 2010

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

ANALYTICAL SAMPLE RESULTS

Diesel Range (C10-C22) and Oil Range (>C22-C40) Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Select Fill-100914-1 (A10I165-01RE1)			**Matrix: Soil**		**Batch: 1009278**			
Diesel Range Organics	ND	4.42	22.1	mg/kg dry	1	09/18/10 13:57	NWTPH-Dx	
Oil Range Organics	**19.6**	8.84	44.2	"	"	"	"	J
Surrogate: o-Terphenyl (Surr)			*Recovery: 84 %*	*Limits: 50-150 %*	"	"	"	

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Select Fill-100914-1 (A10I165-01RE1)			**Matrix: Soil**		**Batch: 1009290**			C-07
Aroclor 1016	ND	3.89	7.77	ug/kg dry	1	09/21/10 05:05	EPA 8082A	
Aroclor 1221	ND	3.89	7.77	"	"	"	"	
Aroclor 1232	ND	3.89	7.77	"	"	"	"	
Aroclor 1242	ND	3.89	7.77	"	"	"	"	
Aroclor 1248	ND	3.89	7.77	"	"	"	"	
Aroclor 1254	ND	3.89	7.77	"	"	"	"	
Aroclor 1260	ND	3.89	7.77	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)			*Recovery: 125 %*	*Limits: 50-125 %*	"	"	"	*Q-23*
Decachlorobiphenyl (Surr)			*109 %*	*Limits: 55-130 %*	"	"	"	

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Anchor Environmental, LLC Portland
6650 SW Redwood Lane Ste. 333
Portland, OR 97224

Project: **T4**
Project Number: [none]
Project Manager: John Verduin

Reported:
09/28/10 10:20

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Select Fill-100914-1 (A10I165-01RE1)			**Matrix: Soil**		**Batch: 1009296**			C-05
Aldrin	ND	0.768	2.61	ug/kg dry	1	09/20/10 18:22	EPA 8081B	
alpha-BHC	ND	0.768	2.61	"	"	"	"	
beta-BHC	ND	0.768	2.61	"	"	"	"	
delta-BHC	ND	0.768	2.61	"	"	"	"	
gamma-BHC (Lindane)	ND	0.768	2.61	"	"	"	"	
cis-Chlordane	ND	0.768	2.61	"	"	"	"	
trans-Chlordane	ND	0.768	2.61	"	"	"	"	
4,4'-DDD	ND	0.768	2.61	"	"	"	"	
4,4'-DDE	ND	0.768	2.61	"	"	"	"	
4,4'-DDT	ND	2.61	2.61	"	"	"	"	
Dieldrin	ND	0.768	2.61	"	"	"	"	
Endosulfan I	ND	0.768	2.61	"	"	"	"	
Endosulfan II	ND	0.768	2.61	"	"	"	"	
Endosulfan sulfate	ND	0.768	2.61	"	"	"	"	
Endrin	ND	0.768	2.61	"	"	"	"	
Endrin Aldehyde	ND	0.768	2.61	"	"	"	"	
Endrin ketone	ND	0.768	2.61	"	"	"	"	
Heptachlor	ND	0.768	2.61	"	"	"	"	
Heptachlor epoxide	ND	0.768	2.61	"	"	"	"	
Methoxychlor	ND	7.68	7.68	"	"	"	"	
Chlordane (Technical)	ND	15.4	30.7	"	"	"	"	
Toxaphene (Total)	ND	15.4	30.7	"	"	"	"	
cis-Nonachlor	ND	0.768	2.61	"	"	"	"	
2,4'-DDD	ND	0.768	2.61	"	"	"	"	
2,4'-DDE	ND	0.768	2.61	"	"	"	"	
2,4'-DDT	ND	0.768	2.61	"	"	"	"	
Hexachlorobenzene	ND	0.768	2.61	"	"	"	"	
Hexachlorobutadiene	ND	2.61	2.61	"	"	"	"	
Oxychlordane	ND	0.768	2.61	"	"	"	"	
trans-Nonachlor	ND	0.768	2.61	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)			*Recovery: 74 %*	*Limits: 50-125 %*	"	"	"	
Decachlorobiphenyl (Surr)			*97 %*	*Limits: 55-130 %*	"	"	"	

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Darwin Thomas, Business Development Director

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Select Fill-100914-1 (A10I165-01RE1)			**Matrix: Soil**		**Batch: 1009287**			
Acenaphthene	ND	0.00102	0.00204	mg/kg dry	1	09/20/10 12:57	EPA 8270D P/P/P	
Acenaphthylene	ND	0.00102	0.00204	"	"	"	"	
Anthracene	ND	0.00102	0.00204	"	"	"	"	
Benz(a)anthracene	ND	0.00255	0.00255	"	"	"	"	R-01
Benzo(a)pyrene	**0.00182**	0.00153	0.00306	"	"	"	"	J
Benzo(b)fluoranthene	**0.00154**	0.00102	0.00204	"	"	"	"	J
Benzo(k)fluoranthene	ND	0.00102	0.00204	"	"	"	"	
Benzo(g,h,i)perylene	**0.00104**	0.00102	0.00204	"	"	"	"	J
Chrysene	ND	0.00255	0.00255	"	"	"	"	R-01
Dibenz(a,h)anthracene	ND	0.00102	0.00204	"	"	"	"	
Fluoranthene	ND	0.00102	0.00204	"	"	"	"	
Fluorene	ND	0.00102	0.00204	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00102	0.00204	"	"	"	"	
1-Methylnaphthalene	ND	0.00204	0.00408	"	"	"	"	
2-Methylnaphthalene	ND	0.00204	0.00408	"	"	"	"	
Naphthalene	ND	0.00204	0.00408	"	"	"	"	
Phenanthrene	ND	0.00102	0.00204	"	"	"	"	
Pyrene	ND	0.00102	0.00204	"	"	"	"	
Dibenzofuran	ND	0.00102	0.00204	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	0.0255	0.0510	"	"	"	"	
Butyl benzyl phthalate	ND	0.00764	0.0153	"	"	"	"	
Diethylphthalate	ND	0.00510	0.0102	"	"	"	"	
Dimethylphthalate	ND	0.00510	0.0102	"	"	"	"	
Di-n-butylphthalate	ND	0.00510	0.0102	"	"	"	"	
Di-n-octyl phthalate	ND	0.00968	0.0194	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 99 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*103 %*	*Limits: 45-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*124 %*	*Limits: 30-125 %*	"	"	"	

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Anchor Environmental, LLC Portland	Project:	**T4**	
6650 SW Redwood Lane Ste. 333	Project Number:	[none]	**Reported:**
Portland, OR 97224	Project Manager:	John Verduin	09/28/10 10:20

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Select Fill-100914-1 (A10I165-01)			**Matrix: Soil**		**Batch: 1009370**			
Antimony	**0.207**	0.109	1.09	mg/kg dry	10	09/23/10 13:11	EPA 6020	J
Arsenic	**1.22**	0.218	2.18	"	"	"	"	J
Beryllium	ND	0.218	1.09	"	"	"	"	
Cadmium	**0.120**	0.109	1.09	"	"	"	"	J
Chromium	**6.52**	0.109	2.18	"	"	"	"	
Copper	**13.5**	0.435	4.35	"	"	"	"	
Lead	**2.41**	0.109	1.09	"	"	"	"	
Mercury	ND	0.0327	0.0871	"	"	"	"	
Nickel	**15.8**	0.218	2.18	"	"	"	"	
Selenium	ND	0.435	2.18	"	"	"	"	
Silver	ND	0.109	1.09	"	"	"	"	
Thallium	ND	0.109	1.09	"	"	"	"	
Zinc	**33.2**	1.09	4.35	"	"	"	"	

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Anchor Environmental, LLC Portland	Project:	**T4**	
6650 SW Redwood Lane Ste. 333	Project Number:	[none]	**Reported:**
Portland, OR 97224	Project Manager:	John Verduin	09/28/10 10:20

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Select Fill-100914-1 (A10I165-01)			**Matrix: Soil**		**Batch: 1009414**			
Grain Size	Complete	0.00	0.00	N/A	1	09/24/10 17:50	ASTM D 422	GS-01

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Select Fill-100914-1 (A10I165-01)			**Matrix: Soil**		**Batch: 1009284**			
% Solids	**94.9**	1.00	1.00	% by Weight	1	09/18/10 14:46	ASTM D2216	A-01a

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel Range (C10-C22) and Oil Range (>C22-C40) Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009278 - EPA 3546 (Fuels)							**Soil**					
Blank (1009278-BLK1)						Prepared: 09/17/10 09:23	Analyzed: 09/17/10 16:19					
NWTPH-Dx												
Diesel Range Organics	ND	4.00	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil Range Organics	ND	8.00	40.0	"	"	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 87 %*	*Limits: 50-150 %*			*Dilution: 1x*					
LCS (1009278-BS1)						Prepared: 09/17/10 09:23	Analyzed: 09/17/10 16:41					
NWTPH-Dx												
Diesel Range Organics	81.7	4.00	20.0	mg/kg wet	1	83.3	---	98	70-130%	---	---	
Oil Range Organics	80.4	8.00	40.0	"	"	"	---	97	"	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 89 %*	*Limits: 50-150 %*			*Dilution: 1x*					
Duplicate (1009278-DUP1)						Prepared: 09/17/10 09:23	Analyzed: 09/18/10 03:04					
QC Source Sample: Other (A10I145-07)												
NWTPH-Dx												
Diesel Range Organics	**12.0**	4.67	23.4	mg/kg dry	1	---	8.33	---	---	36	30%	Q-04, J
Oil Range Organics	**159**	9.35	46.7	"	"	---	107	---	---	40	30%	Q-04
Surr: o-Terphenyl (Surr)			*Recovery: 86 %*	*Limits: 50-150 %*			*Dilution: 1x*					
Duplicate (1009278-DUP2)						Prepared: 09/17/10 09:23	Analyzed: 09/18/10 07:29					
QC Source Sample: Other (A10I189-35)												
NWTPH-Dx												
Diesel Range Organics	**18.1**	4.68	23.4	mg/kg dry	1	---	22.8	---	---	23	30%	J
Oil Range Organics	**9.63**	9.36	46.8	"	"	---	12.1	---	---	23	30%	J
Surr: o-Terphenyl (Surr)			*Recovery: 86 %*	*Limits: 50-150 %*			*Dilution: 1x*					

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Anchor Environmental, LLC Portland	Project:	**T4**	
6650 SW Redwood Lane Ste. 333	Project Number:	[none]	**Reported:**
Portland, OR 97224	Project Manager:	John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009290 - EPA 3546							**Soil**					
Blank (1009290-BLK2)						Prepared: 09/17/10 12:21	Analyzed: 09/21/10 03:01					C-07
EPA 8082A												
Aroclor 1016	ND	5.00	10.0	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*108 %*	*Limits:*	*50-125 %*	*Dilution:*	*1x*					*Q-23*
Decachlorobiphenyl (Surr)			*100 %*		*55-130 %*		*"*					
LCS (1009290-BS2)						Prepared: 09/17/10 12:21	Analyzed: 09/21/10 03:19					C-07
EPA 8082A												
Aroclor 1016	277	5.00	10.0	ug/kg wet	1	250	---	111	40-140%	---	---	Q-23
Aroclor 1260	268	5.00	10.0	"	"	"	---	107	60-130%	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*108 %*	*Limits:*	*50-125 %*	*Dilution:*	*1x*					*Q-23*
Decachlorobiphenyl (Surr)			*100 %*		*55-130 %*		*"*					
Duplicate (1009290-DUP2)						Prepared: 09/17/10 12:21	Analyzed: 09/21/10 04:48					C-07
QC Source Sample: Other (A10I061-04RE1)												
EPA 8082A												
Aroclor 1016	ND	5.23	10.5	ug/kg dry	1	---	ND	---	---		30%	
Aroclor 1221	ND	5.23	10.5	"	"	---	ND	---	---		30%	
Aroclor 1232	ND	5.23	10.5	"	"	---	ND	---	---		30%	
Aroclor 1242	ND	5.23	10.5	"	"	---	ND	---	---		30%	
Aroclor 1248	ND	5.23	10.5	"	"	---	ND	---	---		30%	
Aroclor 1254	ND	5.23	10.5	"	"	---	ND	---	---		30%	
Aroclor 1260	ND	5.23	10.5	"	"	---	ND	---	---		30%	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*55 %*	*Limits:*	*50-125 %*	*Dilution:*	*1x*					*Q-23*
Decachlorobiphenyl (Surr)			*83 %*		*55-130 %*		*"*					
Matrix Spike (1009290-MS2)						Prepared: 09/17/10 12:21	Analyzed: 09/21/10 05:41					C-07
QC Source Sample: Other (A10I218-01RE1)												
EPA 8082A												
Aroclor 1016	226	5.04	10.1	ug/kg dry	1	252	ND	90	40-140%	---	---	Q-23
Aroclor 1260	214	5.04	10.1	"	"	"	ND	85	60-130%	---	---	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009290 - EPA 3546							**Soil**					
Matrix Spike (1009290-MS2)					Prepared: 09/17/10 12:21		Analyzed: 09/21/10 05:41					C-07
QC Source Sample: Other (A10I218-01RE1)												
Surr: 2,4,5,6-TCMX (Surr)	*Recovery: 100 %*		*Limits: 50-125 %*			*Dilution: 1x*						*Q-23*
Decachlorobiphenyl (Surr)	*88 %*		*55-130 %*			*"*						

Anchor Environmental, LLC Portland
6650 SW Redwood Lane Ste. 333
Portland, OR 97224

Project: **T4**
Project Number: [none]
Project Manager: John Verduin

Reported:
09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009296 - EPA 3546/3640A (GPC)							**Soil**					
Blank (1009296-BLK1)						Prepared: 09/17/10 11:43	Analyzed: 09/20/10 17:39					C-05
EPA 8081B												
Aldrin	ND	0.500	1.70	ug/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	0.500	1.70	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.500	1.70	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.500	1.70	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.500	1.70	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.500	1.70	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.500	1.70	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.500	1.70	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.500	1.70	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	1.70	1.70	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Endrin	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Heptachlor epoxide	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Methoxychlor	**1.13**	0.500	5.00	"	"	---	---	---	---	---	---	J
Chlordane (Technical)	ND	10.0	20.0	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	10.0	20.0	"	"	---	---	---	---	---	---	
cis-Nonachlor	ND	0.500	1.70	"	"	---	---	---	---	---	---	
2,4'-DDD	ND	0.500	1.70	"	"	---	---	---	---	---	---	
2,4'-DDE	ND	0.500	1.70	"	"	---	---	---	---	---	---	
2,4'-DDT	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Hexachlorobenzene	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	1.70	1.70	"	"	---	---	---	---	---	---	
Mirex	ND	0.500	1.70	"	"	---	---	---	---	---	---	
Oxychlordane	ND	0.500	1.70	"	"	---	---	---	---	---	---	
trans-Nonachlor	ND	0.500	1.70	"	"	---	---	---	---	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 61 % Limits: 50-125 % Dilution: 1x
Decachlorobiphenyl (Surr) 97 % 55-130 % "

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Batch 1009296 - EPA 3546/3640A (GPC) — **Soil**

LCS (1009296-BS1) Prepared: 09/17/10 11:43 Analyzed: 09/20/10 17:53 C-05

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 8081B												
Aldrin	93.3	0.500	1.70	ug/kg wet	1	133	---	70	45-140%	---	---	
alpha-BHC	95.5	0.500	1.70	"	"	"	---	72	60-125%	---	---	
beta-BHC	103	0.500	1.70	"	"	"	---	77	"	---	---	
delta-BHC	116	0.500	1.70	"	"	"	---	87	55-130%	---	---	
gamma-BHC (Lindane)	103	0.500	1.70	"	"	"	---	78	60-125%	---	---	
cis-Chlordane	124	0.500	1.70	"	"	"	---	93	60-120%	---	---	
trans-Chlordane	122	0.500	1.70	"	"	"	---	92	65-125%	---	---	
4,4'-DDD	137	0.500	1.70	"	"	"	---	103	30-135%	---	---	
4,4'-DDE	128	0.500	1.70	"	"	"	---	96	70-125%	---	---	
4,4'-DDT	151	0.500	1.70	"	"	"	---	113	45-140%	---	---	
Dieldrin	143	0.500	1.70	"	"	"	---	107	65-125%	---	---	
Endosulfan I	126	0.500	1.70	"	"	"	---	94	15-135%	---	---	
Endosulfan II	151	0.500	1.70	"	"	"	---	113	35-140%	---	---	
Endosulfan sulfate	149	0.500	1.70	"	"	"	---	112	60-135%	---	---	
Endrin	116	0.500	1.70	"	"	"	---	87	"	---	---	
Endrin Aldehyde	128	0.500	1.70	"	"	"	---	96	30-145%	---	---	
Endrin ketone	158	0.500	1.70	"	"	"	---	118	65-135%	---	---	
Heptachlor	108	0.500	1.70	"	"	"	---	81	50-140%	---	---	
Heptachlor epoxide	118	0.500	1.70	"	"	"	---	88	65-130%	---	---	
Methoxychlor	150	0.500	5.00	"	"	"	---	112	55-145%	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 60 % Limits: 50-125 % Dilution: 1x
Decachlorobiphenyl (Surr) 92 % 55-130 % "

LCS (1009296-BS2) Prepared: 09/17/10 11:43 Analyzed: 09/20/10 18:08 C-05

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 8081B												
cis-Nonachlor	176	0.500	1.70	ug/kg wet	1	167	---	105	50-150%	---	---	
2,4'-DDD	168	0.500	1.70	"	"	"	---	101	30-135%	---	---	
2,4'-DDE	145	0.500	1.70	"	"	"	---	87	50-140%	---	---	
2,4'-DDT	215	0.500	1.70	"	"	"	---	129	45-140%	---	---	
Hexachlorobenzene	124	0.500	1.70	"	"	"	---	74	50-150%	---	---	
Hexachlorobutadiene	112	0.500	1.70	"	"	"	---	67	"	---	---	
Mirex	187	0.500	1.70	"	"	"	---	112	"	---	---	
Oxychlordane	152	0.500	1.70	"	"	"	---	91	"	---	---	
trans-Nonachlor	154	0.500	1.70	"	"	"	---	93	"	---	---	

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Darwin Thomas, Business Development Director

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009296 - EPA 3546/3640A (GPC)							Soil					
LCS (1009296-BS2)				Prepared: 09/17/10 11:43			Analyzed: 09/20/10 18:08					C-05
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*76 %*	*Limits: 50-125 %*		*Dilution:*	*1x*					
Decachlorobiphenyl (Surr)			*99 %*	*55-130 %*			*"*					
Duplicate (1009296-DUP1)				Prepared: 09/17/10 11:43			Analyzed: 09/20/10 18:37					C-05
QC Source Sample: Select Fill-100914-1 (A10I165-01RE1)												
EPA 8081B												
Aldrin	ND	0.764	2.60	ug/kg dry	1	---	ND	---	---		25%	
alpha-BHC	ND	0.764	2.60	"	"	---	ND	---	---		25%	
beta-BHC	ND	0.764	2.60	"	"	---	ND	---	---		25%	
delta-BHC	ND	0.764	2.60	"	"	---	ND	---	---		25%	
gamma-BHC (Lindane)	ND	0.764	2.60	"	"	---	ND	---	---		25%	
cis-Chlordane	ND	0.764	2.60	"	"	---	ND	---	---		25%	
trans-Chlordane	ND	0.764	2.60	"	"	---	ND	---	---		25%	
4,4'-DDD	ND	0.764	2.60	"	"	---	ND	---	---		25%	
4,4'-DDE	ND	0.764	2.60	"	"	---	ND	---	---		25%	
4,4'-DDT	ND	2.60	2.60	"	"	---	ND	---	---		25%	
Dieldrin	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Endosulfan I	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Endosulfan II	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Endosulfan sulfate	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Endrin	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Endrin Aldehyde	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Endrin ketone	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Heptachlor	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Heptachlor epoxide	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Methoxychlor	ND	7.64	7.64	"	"	---	ND	---	---		25%	
Chlordane (Technical)	ND	15.3	30.6	"	"	---	ND	---	---		25%	
Toxaphene (Total)	ND	15.3	30.6	"	"	---	ND	---	---		25%	
cis-Nonachlor	ND	0.764	2.60	"	"	---	ND	---	---		25%	
2,4'-DDD	ND	0.764	2.60	"	"	---	ND	---	---		25%	
2,4'-DDE	ND	0.764	2.60	"	"	---	ND	---	---		25%	
2,4'-DDT	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Hexachlorobenzene	ND	0.764	2.60	"	"	---	ND	---	---		25%	
Hexachlorobutadiene	ND	2.60	2.60	"	"	---	ND	---	---		25%	
Oxychlordane	ND	0.764	2.60	"	"	---	ND	---	---		25%	

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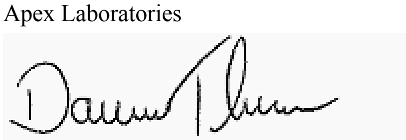

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Anchor Environmental, LLC Portland	Project:	**T4**	
6650 SW Redwood Lane Ste. 333	Project Number:	[none]	**Reported:**
Portland, OR 97224	Project Manager:	John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009296 - EPA 3546/3640A (GPC)							**Soil**					
Duplicate (1009296-DUP1)						Prepared: 09/17/10 11:43	Analyzed: 09/20/10 18:37					C-05
QC Source Sample: Select Fill-100914-1 (A10I165-01RE1)												
trans-Nonachlor	ND	0.764	2.60	ug/kg dry	"	---	ND	---	---		25%	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 79 %*	*Limits: 50-125 %*		*Dilution: 1x*						
Decachlorobiphenyl (Surr)			*122 %*	*55-130 %*		*"*						
Matrix Spike (1009296-MS1)						Prepared: 09/17/10 11:43	Analyzed: 09/20/10 19:05					C-05
QC Source Sample: Other (A10I218-01RE1)												
EPA 8081B												
Aldrin	128	2.57	8.75	ug/kg dry	1	137	ND	94	45-140%	---	---	
alpha-BHC	121	2.57	8.75	"	"	"	ND	88	60-125%	---	---	
beta-BHC	120	2.57	8.75	"	"	"	ND	88	"	---	---	
delta-BHC	151	2.57	8.75	"	"	"	ND	110	55-130%	---	---	
gamma-BHC (Lindane)	120	2.57	8.75	"	"	"	ND	87	60-125%	---	---	
cis-Chlordane	155	2.57	8.75	"	"	"	ND	113	60-120%	---	---	
trans-Chlordane	151	2.57	8.75	"	"	"	ND	110	65-125%	---	---	
4,4'-DDD	173	2.57	8.75	"	"	"	ND	126	30-135%	---	---	
4,4'-DDE	165	2.57	8.75	"	"	"	ND	120	70-125%	---	---	
4,4'-DDT	127	2.57	8.75	"	"	"	ND	92	45-140%	---	---	
Dieldrin	163	2.57	8.75	"	"	"	ND	119	65-125%	---	---	
Endosulfan I	155	2.57	8.75	"	"	"	ND	113	15-135%	---	---	
Endosulfan II	171	2.57	8.75	"	"	"	ND	125	35-140%	---	---	
Endosulfan sulfate	172	2.57	8.75	"	"	"	ND	125	60-135%	---	---	
Endrin	140	2.57	8.75	"	"	"	ND	102	"	---	---	
Endrin Aldehyde	151	2.57	8.75	"	"	"	ND	110	35-145%	---	---	
Endrin ketone	174	2.57	8.75	"	"	"	ND	127	65-135%	---	---	
Heptachlor	114	2.57	8.75	"	"	"	ND	83	50-140%	---	---	
Heptachlor epoxide	152	2.57	8.75	"	"	"	ND	110	65-130%	---	---	
Methoxychlor	173	2.57	25.7	"	"	"	ND	126	55-145%	---	---	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 70 %*	*Limits: 50-125 %*		*Dilution: 1x*						
Decachlorobiphenyl (Surr)			*103 %*	*55-130 %*		*"*						
Matrix Spike (1009296-MS2)						Prepared: 09/17/10 11:43	Analyzed: 09/20/10 19:20					C-05
QC Source Sample: Other (A10I218-01RE1)												
EPA 8081B												
cis-Nonachlor	175	2.53	8.62	ug/kg dry	1	169	ND	103	50-150%	---	---	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009296 - EPA 3546/3640A (GPC)							**Soil**					
Matrix Spike (1009296-MS2)						Prepared: 09/17/10 11:43	Analyzed: 09/20/10 19:20					C-05
QC Source Sample: Other (A10I218-01RE1)												
2,4'-DDD	204	2.53	8.62	ug/kg dry	"	"	ND	120	30-135%	---	---	
2,4'-DDE	158	2.53	8.62	"	"	"	ND	93	50-140%	---	---	
2,4'-DDT	75.7	2.53	8.62	"	"	"	ND	45	45-140%	---	---	
Hexachlorobenzene	113	2.53	8.62	"	"	"	ND	67	50-150%	---	---	
Hexachlorobutadiene	76.9	2.53	8.62	"	"	"	ND	45	"	---	---	Q-02
Mirex	177	2.53	8.62	"	"	"	ND	105	"	---	---	
Oxychlordane	142	2.53	8.62	"	"	"	ND	84	"	---	---	
trans-Nonachlor	160	2.53	8.62	"	"	"	ND	95	"	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 59 % Limits: 50-125 % Dilution: 1x

Decachlorobiphenyl (Surr) 104 % 55-130 % "

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009287 - EPA 3546							**Soil**					
Blank (1009287-BLK1)						Prepared: 09/17/10 11:34	Analyzed: 09/20/10 11:12					
EPA 8270D P/P/P												
Acenaphthene	ND	0.00100	0.00200	mg/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.00150	0.00300	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.00200	0.00400	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.00200	0.00400	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.00200	0.00400	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.00100	0.00200	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	0.00750	0.0150	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	0.00500	0.0100	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	0.00500	0.0100	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	0.00500	0.0100	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	0.00950	0.0190	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*84 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*93 %*		*45-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*113 %*		*30-125 %*		*"*					
LCS (1009287-BS1)						Prepared: 09/17/10 11:34	Analyzed: 09/20/10 11:47					
EPA 8270D P/P/P												
Acenaphthene	0.181	0.00100	0.00200	mg/kg wet	1	0.200	---	90	45-120%	---	---	
Acenaphthylene	0.195	0.00100	0.00200	"	"	"	---	97	"	---	---	
Anthracene	0.200	0.00100	0.00200	"	"	"	---	100	55-120%	---	---	
Benz(a)anthracene	0.205	0.00100	0.00200	"	"	"	---	103	50-120%	---	---	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Batch 1009287 - EPA 3546 — **Soil**

LCS (1009287-BS1) — Prepared: 09/17/10 11:34 Analyzed: 09/20/10 11:47

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Benzo(a)pyrene	0.183	0.00150	0.00300	mg/kg wet	"	"	---	92	"	---	---	
Benzo(b)fluoranthene	0.205	0.00100	0.00200	"	"	"	---	102	45-120%	---	---	
Benzo(k)fluoranthene	0.200	0.00100	0.00200	"	"	"	---	100	45-125%	---	---	
Benzo(g,h,i)perylene	0.193	0.00100	0.00200	"	"	"	---	96	40-125%	---	---	
Chrysene	0.205	0.00100	0.00200	"	"	"	---	102	55-120%	---	---	
Dibenz(a,h)anthracene	0.205	0.00100	0.00200	"	"	"	---	102	40-125%	---	---	
Fluoranthene	0.218	0.00100	0.00200	"	"	"	---	109	55-120%	---	---	
Fluorene	0.195	0.00100	0.00200	"	"	"	---	97	50-120%	---	---	
Indeno(1,2,3-cd)pyrene	0.188	0.00100	0.00200	"	"	"	---	94	40-120%	---	---	
1-Methylnaphthalene	0.194	0.00200	0.00400	"	"	"	---	97	45-120%	---	---	Q-23
2-Methylnaphthalene	0.196	0.00200	0.00400	"	"	"	---	98	"	---	---	Q-23
Naphthalene	0.174	0.00200	0.00400	"	"	"	---	87	40-120%	---	---	
Phenanthrene	0.192	0.00100	0.00200	"	"	"	---	96	50-120%	---	---	
Pyrene	0.221	0.00100	0.00200	"	"	"	---	111	45-120%	---	---	
Dibenzofuran	0.189	0.00100	0.00200	"	"	"	---	95	50-120%	---	---	
Bis(2-ethylhexyl)phthalate	0.189	0.0250	0.0500	"	"	"	---	95	45-125%	---	---	
Butyl benzyl phthalate	0.199	0.00750	0.0150	"	"	"	---	99	50-125%	---	---	
Diethylphthalate	0.205	0.00500	0.0100	"	"	"	---	103	50-120%	---	---	
Dimethylphthalate	0.197	0.00500	0.0100	"	"	"	---	99	"	---	---	
Di-n-butylphthalate	0.216	0.00500	0.0100	"	"	"	---	108	55-120%	---	---	
Di-n-octyl phthalate	0.200	0.00950	0.0190	"	"	"	---	100	40-130%	---	---	

Surr: Nitrobenzene-d5 (Surr) — Recovery: 90 % — Limits: 35-120 % — Dilution: 1x
2-Fluorobiphenyl (Surr) — 93 % — 45-120 % — "
p-Terphenyl-d14 (Surr) — 112 % — 30-125 % — "

Duplicate (1009287-DUP1) — Prepared: 09/17/10 11:34 Analyzed: 09/20/10 13:32 — A-02

QC Source Sample: Select Fill-100914-1 (A10I165-01)
EPA 8270D P/P/P

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acenaphthene	ND	0.00105	0.00211	mg/kg dry	1	---	ND	---	---		30%	
Acenaphthylene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	
Anthracene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	
Benz(a)anthracene	ND	0.00211	0.00211	"	"	---	ND	---	---		30%	
Benzo(a)pyrene	ND	0.00158	0.00316	"	"	---	ND	---	---		30%	
Benzo(b)fluoranthene	**0.00142**	0.00105	0.00211	"	"	---	ND	---	---		30%	J
Benzo(k)fluoranthene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009287 - EPA 3546							**Soil**					
Duplicate (1009287-DUP1)						Prepared: 09/17/10 11:34	Analyzed: 09/20/10 13:32					A-02
QC Source Sample: Select Fill-100914-1 (A10I165-01)												
Benzo(g,h,i)perylene	ND	0.00105	0.00211	mg/kg dry	"	---	ND	---	---		30%	A-01, EST
Chrysene	ND	0.00211	0.00211	"	"	---	ND	---	---		30%	
Dibenz(a,h)anthracene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	A-01, EST
Fluoranthene	**0.00111**	0.00105	0.00211	"	"	---	ND	---	---		30%	J
Fluorene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	
Indeno(1,2,3-cd)pyrene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	A-01, EST
1-Methylnaphthalene	ND	0.00211	0.00421	"	"	---	ND	---	---		30%	
2-Methylnaphthalene	ND	0.00211	0.00421	"	"	---	ND	---	---		30%	
Naphthalene	ND	0.00211	0.00421	"	"	---	ND	---	---		30%	
Phenanthrene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	
Pyrene	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	
Dibenzofuran	ND	0.00105	0.00211	"	"	---	ND	---	---		30%	
Bis(2-ethylhexyl)phthalate	ND	0.0263	0.0527	"	"	---	ND	---	---		30%	
Butyl benzyl phthalate	**0.0116**	0.00790	0.0158	"	"	---	ND	---	---		30%	J
Diethylphthalate	ND	0.00527	0.0105	"	"	---	ND	---	---		30%	
Dimethylphthalate	ND	0.00527	0.0105	"	"	---	ND	---	---		30%	
Di-n-butylphthalate	**0.00579**	0.00527	0.0105	"	"	---	ND	---	---		30%	J
Di-n-octyl phthalate	ND	0.0100	0.0200	"	"	---	ND	---	---		30%	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 129 %*	*Limits: 35-120 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*127 %*	*45-120 %*		*"*						
p-Terphenyl-d14 (Surr)			*159 %*	*30-125 %*		*"*						

Apex Laboratories

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Darwin Thomas, Business Development Director

Apex Labs

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Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Anchor Environmental, LLC Portland	Project:	**T4**	
6650 SW Redwood Lane Ste. 333	Project Number:	[none]	**Reported:**
Portland, OR 97224	Project Manager:	John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009370 - EPA 3051A							**Soil**					
Blank (1009370-BLK1)						Prepared: 09/22/10 16:49	Analyzed: 09/23/10 13:33					
EPA 6020												
Antimony	**0.230**	0.100	1.00	mg/kg wet	10	---	---	---	---	---	---	J
Arsenic	ND	0.200	2.00	"	"	---	---	---	---	---	---	
Beryllium	ND	0.200	1.00	"	"	---	---	---	---	---	---	
Cadmium	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Chromium	ND	0.100	2.00	"	"	---	---	---	---	---	---	
Copper	ND	0.400	4.00	"	"	---	---	---	---	---	---	
Lead	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Mercury	ND	0.0300	0.0800	"	"	---	---	---	---	---	---	
Nickel	ND	0.200	2.00	"	"	---	---	---	---	---	---	
Selenium	ND	0.400	2.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Thallium	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Zinc	ND	1.00	4.00	"	"	---	---	---	---	---	---	
LCS (1009370-BS1)						Prepared: 09/22/10 16:49	Analyzed: 09/23/10 13:08					
EPA 6020												
Antimony	29.9	0.100	1.00	mg/kg wet	10	25.0	---	120	80-120%	---	---	
Arsenic	52.1	0.200	2.00	"	"	50.0	---	104	"	---	---	
Beryllium	25.4	0.200	1.00	"	"	25.0	---	101	"	---	---	
Cadmium	50.1	0.100	1.00	"	"	50.0	---	100	"	---	---	
Chromium	50.5	0.100	2.00	"	"	"	---	101	"	---	---	
Copper	52.2	0.400	4.00	"	"	"	---	104	"	---	---	
Lead	47.6	0.100	1.00	"	"	"	---	95	"	---	---	
Mercury	2.03	0.0300	0.0800	"	"	2.00	---	101	"	---	---	
Nickel	53.2	0.200	2.00	"	"	50.0	---	106	"	---	---	
Selenium	25.3	0.400	2.00	"	"	25.0	---	101	"	---	---	
Silver	25.6	0.100	1.00	"	"	"	---	102	"	---	---	
Thallium	24.0	0.100	1.00	"	"	"	---	96	"	---	---	
Zinc	51.4	1.00	4.00	"	"	50.0	---	103	"	---	---	
Duplicate (1009370-DUP1)						Prepared: 09/22/10 16:49	Analyzed: 09/23/10 13:39					
QC Source Sample: Other (A10I287-01)												
EPA 6020												
Antimony	**0.190**	0.136	1.36	mg/kg dry	10	---	0.252	---	---	28	40%	J
Arsenic	**4.99**	0.271	2.71	"	"	---	4.72	---	---	6	40%	

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Darwin Thomas, Business Development Director

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503-718-2323 Phone
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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009370 - EPA 3051A							**Soil**					
Duplicate (1009370-DUP1)						Prepared: 09/22/10 16:49	Analyzed: 09/23/10 13:39					
QC Source Sample: Other (A10I287-01)												
Beryllium	**0.882**	0.271	1.36	mg/kg dry	"	---	0.837	---	---	5	40%	J
Cadmium	ND	0.136	1.36	"	"	---	ND	---	---		40%	
Chromium	**56.1**	0.136	2.71	"	"	---	50.4	---	---	11	40%	
Copper	**37.2**	0.543	5.43	"	"	---	36.0	---	---	3	40%	
Lead	**6.20**	0.136	1.36	"	"	---	6.47	---	---	4	40%	
Mercury	ND	0.0407	0.109	"	"	---	ND	---	---		40%	
Nickel	**22.1**	0.271	2.71	"	"	---	21.2	---	---	4	40%	
Selenium	ND	0.543	2.71	"	"	---	ND	---	---		40%	
Silver	ND	0.136	1.36	"	"	---	ND	---	---		40%	
Thallium	ND	0.136	1.36	"	"	---	ND	---	---		40%	
Zinc	**41.6**	1.36	5.43	"	"	---	38.3	---	---	8	40%	
Matrix Spike (1009370-MS1)						Prepared: 09/22/10 16:49	Analyzed: 09/23/10 13:42					
QC Source Sample: Other (A10I287-01)												
EPA 6020												
Antimony	33.9	0.135	1.35	mg/kg dry	10	33.7	0.252	100	75-125%	---	---	
Arsenic	70.7	0.270	2.70	"	"	67.4	4.72	98	"	---	---	
Beryllium	35.1	0.270	1.35	"	"	33.7	0.837	102	"	---	---	
Cadmium	66.2	0.135	1.35	"	"	67.4	ND	98	"	---	---	
Chromium	121	0.135	2.70	"	"	"	50.4	105	"	---	---	
Copper	111	0.539	5.39	"	"	"	36.0	112	"	---	---	
Lead	66.9	0.135	1.35	"	"	"	6.47	90	"	---	---	
Mercury	2.63	0.0404	0.108	"	"	2.70	ND	97	"	---	---	
Nickel	91.5	0.270	2.70	"	"	67.4	21.2	104	"	---	---	
Selenium	30.7	0.539	2.70	"	"	33.7	ND	91	"	---	---	
Silver	33.6	0.135	1.35	"	"	"	ND	100	"	---	---	
Thallium	31.2	0.135	1.35	"	"	"	ND	93	"	---	---	
Zinc	108	1.35	5.39	"	"	67.4	38.3	104	"	---	---	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1009284 - Dry Weight							**Soil**					
Duplicate (1009284-DUP1)					Prepared: 09/17/10 10:37		Analyzed: 09/18/10 14:46					
QC Source Sample: Select Fill-100914-1 (A10I165-01)												
ASTM D2216												
% Solids	**95.1**	1.00	1.00	% by Weight	1	---	94.9	---	---	0.2	20%	A-01a

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

SAMPLE PREPARATION INFORMATION

Diesel Range (C10-C22) and Oil Range (>C22-C40) Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1009278							
A10I165-01RE1	Soil	NWTPH-Dx	09/14/10 11:20	09/17/10 09:23	14.31g/5mL	15g/5mL	1.05

Polychlorinated Biphenyls by EPA 8082A

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1009290							
A10I165-01RE1	Soil	EPA 8082A	09/14/10 11:20	09/17/10 12:21	13.56g/5mL	10g/5mL	0.74

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1009296							
A10I165-01RE1	Soil	EPA 8081B	09/14/10 11:20	09/17/10 11:43	20.57g/10mL	15g/5mL	1.46

Semivolatile Organic Compounds by EPA 8270D

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1009287							
A10I165-01RE1	Soil	EPA 8270D P/P/P	09/14/10 11:20	09/17/10 11:34	20.68g/2mL	10g/2mL	0.48

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1009370							
A10I165-01	Soil	EPA 6020	09/14/10 11:20	09/22/10 16:49	0.484g/50mL	0.5g/50mL	1.03

Grain Size by ASTM D 422

Prep: ASTM D 421

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1009414							
A10I165-01	Soil	ASTM D 422	09/14/10 11:20	09/24/10 14:48	1N/A/1N/A	1N/A/1mL	NA

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Dry Weight

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1009284							
A10I165-01	Soil	ASTM D2216	09/14/10 11:20	09/17/10 10:37	1N/A/1N/A	1N/A/1mL	NA

Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

Notes and Definitions

Qualifiers:

A-01	Internal Standard recovery 43% (Limit 50-200%). Analytes are reported as Estimated Values.
A-01a	Value used to dry weight correct analytical results.
A-02	Low but acceptable Internal Standard recoveries caused Surrogates recoveries to be biased high. Analyte data was Non Detect. All passed in original sample.
C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A. Sample Final Volume includes the GPC dilution factor.
C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
EST	Result reported as an Estimated Value. Internal Standard Failed.
GS-01	See final pages of this report for Particle Size Analysis results and accumulation curve.
J	Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-02	Spike recovery is outside of established control limits due to sample matrix interference.
Q-04	Percent recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
Q-23	Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Data is likely biased high.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.

For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

Apex Labs

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

APEX LABS **CHAIN OF CUSTODY** Lab # A10I165 gpc 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Anchor QEA LLC | Project Mgr: John Verduin | Project Name: T4 | Project #:

Address: 6650 SW Redwood Lane, Suite 333, Portland, OR | Phone: 206-287-9130 | Fax: | Email: jverduin@anchorqea.com

Sampled by: John J Renda

Site Location: OR WA | Other:

ANALYSIS REQUEST

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs	8270 SIM PAHs PSEP	8082 PCBs PSEP	8081 Chlor. Pest PSEP	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn	TCLP Metals (8)	1280-COLS	1280-Z	Grain size D422-63	In situ moisture D2216				
Select fill-100914-1		9/14/10	1120	Soil	2		X						X	X	X		X					X	X				

Normal Turn Around Time (TAT) = 7-10 Business Days YES NO

TAT Requested (circle): 24 HR 48 HR 72 HR 4 DAY 5 DAY Other: ______

SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 9/14/10	Signature: [signature] Date: 9/14	Signature: Date:	Signature: Date:
Printed Name: John J Renda Time: 1245	Printed Name: Josie Time: 1245	Printed Name: Time:	Printed Name: Time:
Company: Anchor QEA LLC	Company: Apex	Company:	Company:

Apex Labs

12232 S.W. Garden Place
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503-718-2323 Phone
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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	09/28/10 10:20

APEX LABS COOLER RECEIPT FORM

Client: Anchor Element WO#: A10 I165

Project/Project #: T4

Delivery Info:

Date/Time Received: 9/4/10 @ 12:45 By: Josie

Delivered by: Apex Courier ___ Client X FedEx ___ UPS ___ DHL ___ Other ___

Courier/Client Name or Air Bill # ___

Cooler Inspection Inspected by: Kendra 9/4 @ 13:00

Chain of Custody:

Included? Yes X No ___ Signed/Dated by Client? Yes X No ___

Signed/Dated by Apex Personnel? Yes X No ___

Coolers: No. of Coolers: 1

	Cooler #1	Cooler #2	Cooler #3	Cooler #4
Temperature (deg. C)	1.2			
Received on Ice? (Y/N) Y				
Temp. Blanks? (Y/N) N				
Ice Type: (Gel/Real/Other) Real				
Condition:	good			

Samples Inspection: Inspected by: Kendra 9/4 @ 13:00

All Samples Intact? Yes X No ___ Comments: ___

Bottle Labels/COCs agree? Yes X No ___ Comments: ___

Containers Appropriate for Analysis? Yes X No ___ Comments: ___

Do VOA Vials have Visible Headspace? Yes ___ No ___ NA X

Comments ___

Water Samples: pH Checked and Appropriate (except VOAs): Yes ___ No ___ NA X

Comments: ___

Additional Information:

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422

Sample ID: Select Fill-100914-1 (A10I165-01)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				*26.2*
Retained on No. 4 sieve		4.75	73.8	26.2
Sand				*69.19*
Coarse sand, passing No. 4 sieve and retained on No. 10 sieve		2.00	58.77	15.02
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	45.49	13.28
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	34.18	11.31
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	14.34	19.84
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	6.29	8.05
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	5.28	1.00
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	4.6	0.68
Silt and Clay (Measurements in the Clay fraction are noted)				*4.41*
Silt passing No. 200 sieve and retained on No. 230 sieve		0.0630	4.3	0.3
Hydrometer Test			4.3	0
Hydrometer Test		0.0519	2.48	1.83
Hydrometer Test		0.0372	1.47	1.01
Hydrometer Test		0.0263	1.47	0
Hydrometer Test		0.0187	1.13	0.34
Hydrometer Test		0.0138	0.78	0.35
Hydrometer Test		0.0097	0.79	0
Hydrometer Test		0.0069	0.8	0
Hydrometer Test		0.0056	0.48	0.3
Hydrometer Test	Clay	0.0048	0.48	0
Hydrometer Test	Clay	0.0034	0.48	0
Hydrometer Test	Clay	0.0028	0.46	0.02
Hydrometer Test	Clay	0.0014	0.19	0.27

Grain Size Summary	**Percent of Total Sample**
Gravel	26.2
Sand	69.2
Coarse sand	28.3
Medium sand	39.2
Fine sand	1.7
Silt	4.1
Clay	0.3

Case Narrative for Sample ID: Select Fill-100914-1 (A10I165-01)

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

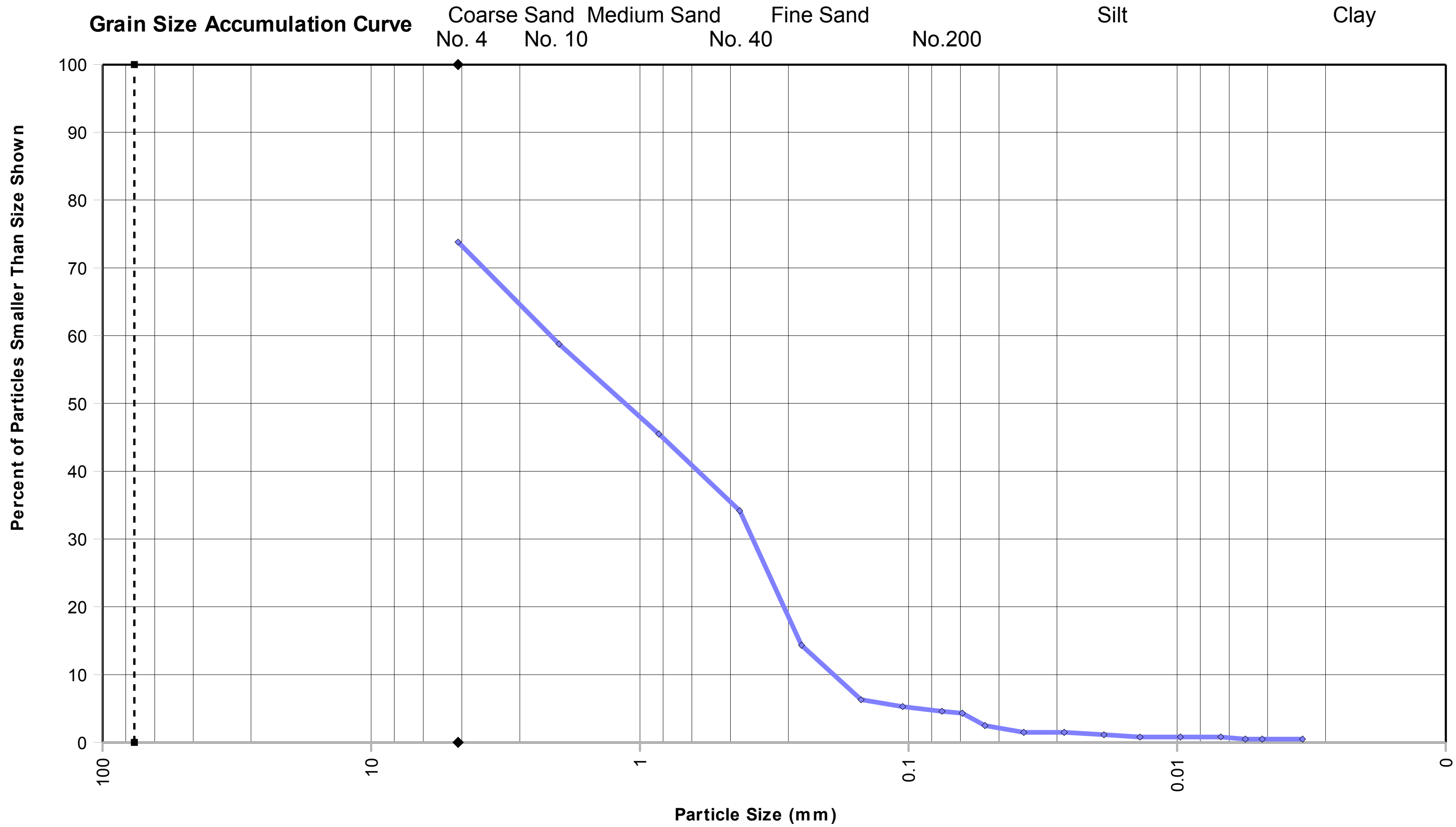
The assumed specific gravity used in the calculations was 2.65.

An excessive amount of organic material was present in this sample.

This type of material may have broken down in the sieving process, affecting grain size analysis.

REGISTERED PROFESSIONAL
OREGON
JILL BETTS
EXPIRES 4-30-11
G 2054
GEOLOGIST

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422



Sample ID:	Select Fill-100914-1 (A10I165-01)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Angular	Hard and Durable	SAND with Gravel

Apex Labs

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Wednesday, October 20, 2010

John Verduin
Anchor Environmental, LLC Portland
6650 SW Redwood Lane Ste. 333
Portland, OR 97224

RE: T4 / [none]

Enclosed are the results of analyses for work order A10J143, which was received by the laboratory on 10/12/2010 at 8:30:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: dthomas@apex-labs.com, or by phone at 503-718-2323.

Apex Labs

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SL-101210-EW	A10J143-01	Soil	10/12/10 07:30	10/12/10 08:30

Apex Laboratories

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Darwin Thomas, Business Development Director

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL CASE NARRATIVE

Work Order: A10J143

-- Sample homogenization --

Sample SL-101210-EW was extracted and analyzed for NWTPH-Dx. Results for the oil range were below detection limit in the sample, but 104 mg/kg in the duplicate extraction. The sample was flagged as non-homogenous due to the presence of small clay-like lumps that were unevenly distributed within the sample. These type of wet clumps often contain higher concentrations of analyte, especially oils, than the majority of the sample matrix.

Upon request, Apex performed an extensive homogenization procedure in order to provide more precise analytical data. A 4 and an 8 ounce jar were combined in a stainless steel bowl and mixed thoroughly, then ground in a mortar and pestle to distribute the clay-like substances evenly. Any rocks, roots or other organic materials were removed, and any remaining clumps broken up. The sample was then homogenized a second time. Apex believes that this is the most thorough homogenization procedure that can be performed on the sample without drying and sieving to a specific particle size.

This combined sample was used for the reanalysis of NWTPH-Dx and all follow up analyses. NWTPH-Dx results for the homogenized sample were below the reporting limit. Results for all three extractions of the sample are included in this report for comparison purposes.

Evan Holloway
QA Manager
October 13, 2010

Amended Report:

A10J143-01, 8081 Pesticides, 4,4'-DDT MDL Change:
The original MDL for 4,4'-DDT was raised to equal the MRL due to a persistant contamination peak on the confirmation column which does not allow for confimation of 4,4'-DDT at the MDL. When hits between the MDL and MRL are seen, it is Apex policy to raise the MDL to the MRL. In this case, the non-confirmed hit for 4,4'-DDT was below the client listed screening level. The MDL has been lowered to just above the non-confrimed 4,4'-DDT hit.

A10J143-01, 8270D Phthalates, Reanalysis by SIM:
Sample A10J143-01 was originally analyzed by 8270D Full Scan following Gel Permeation Cleanup (GPC). The 4x dilution done on the GPC raised the reported MDL above the client listed screening levels for Butyl Benzyl Phthalate, Di-n-Butyl Phthalate and Di-n-Octyl Phthalate. In addition, the Extraction Blank and Sample had hits of Bis-2-Ethylhexyl Phthalate of 99.2 and 138 ug/kg, with a screening level of 100ug/kg. The non-GPC cleaned up extracts were analyzed using 8270D SIM analysis, (without the 4x GPC dilution) resulting in lower MDL and MRLs for the sample, which met the requested screening levels. In addition, the levels of Bis-2-Ethylhexyl Phthalate in the Sample and Blank were also below screening levels.

David G. Jack
Technical Director

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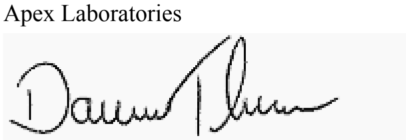

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Darwin Thomas, Business Development Director

Apex Laboratories
October 20, 2010

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Diesel Range (C10-C22) and Oil Range (>C22-C40) Hydrocarbons by NWTPH-Dx - Silica Gel Cleanup

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01)			**Matrix: Soil**		**Batch: 1010199**			A-01a, Q-37, X
Diesel Range Organics	ND	11.7	26.5	mg/kg dry	1	10/12/10 11:28	NWTPH-Dx(SG)	
Oil Range Organics	**39.2**	10.6	52.9	"	"	"	"	J, F-03
Surrogate: o-Terphenyl (Surr)			*Recovery: 86 %*	*Limits: 50-150 %*	"	"	"	
SL-101210-EW (A10J143-01RE1)			**Matrix: Soil**		**Batch: 1010214**			X
Diesel Range Organics	ND	11.5	26.1	mg/kg dry	1	10/12/10 22:05	NWTPH-Dx(SG)	
Oil Range Organics	**23.1**	10.5	52.3	"	"	"	"	J, F-03
Surrogate: o-Terphenyl (Surr)			*Recovery: 80 %*	*Limits: 50-150 %*	"	"	"	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01)			**Matrix: Soil**		**Batch: 1010233**			C-07
Aroclor 1016	ND	0.00277	0.00554	mg/kg dry	1	10/14/10 14:40	EPA 8082A	
Aroclor 1221	ND	0.00277	0.00554	"	"	"	"	
Aroclor 1232	ND	0.00277	0.00554	"	"	"	"	
Aroclor 1242	ND	0.00277	0.00554	"	"	"	"	
Aroclor 1248	ND	0.00277	0.00554	"	"	"	"	
Aroclor 1254	ND	0.00277	0.00554	"	"	"	"	
Aroclor 1260	ND	0.00277	0.00554	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)			*Recovery: 44 %*	*Limits: 50-125 %*	"	"	"	*S-03*
Decachlorobiphenyl (Surr)			*45 %*	*Limits: 55-130 %*	"	"	"	*S-03*

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01RE1)			**Matrix: Soil**		**Batch: 1010248**			C-05, R-04
Aldrin	ND	0.00109	0.00372	mg/kg dry	1	10/14/10 14:17	EPA 8081B	
alpha-BHC	ND	0.00109	0.00372	"	"	"	"	
beta-BHC	ND	0.00109	0.00372	"	"	"	"	
delta-BHC	ND	0.00109	0.00372	"	"	"	"	
gamma-BHC (Lindane)	ND	0.00109	0.00372	"	"	"	"	
cis-Chlordane	ND	0.00109	0.00372	"	"	"	"	
trans-Chlordane	ND	0.00109	0.00372	"	"	"	"	
4,4'-DDD	ND	0.00109	0.00372	"	"	"	"	
4,4'-DDE	ND	0.00109	0.00372	"	"	"	"	
4,4'-DDT	ND	0.00197	0.00372	"	"	"	"	
Dieldrin	ND	0.00109	0.00372	"	"	"	"	
Endosulfan I	ND	0.00109	0.00372	"	"	"	"	
Endosulfan II	ND	0.00109	0.00372	"	"	"	"	
Endosulfan sulfate	ND	0.00109	0.00372	"	"	"	"	
Endrin	ND	0.00109	0.00372	"	"	"	"	
Endrin Aldehyde	ND	0.00109	0.00372	"	"	"	"	
Endrin ketone	ND	0.00109	0.00372	"	"	"	"	
Heptachlor	ND	0.00109	0.00372	"	"	"	"	
Heptachlor epoxide	ND	0.00109	0.00372	"	"	"	"	
Methoxychlor	ND	0.0109	0.0109	"	"	"	"	
Chlordane (Technical)	ND	0.0219	0.0438	"	"	"	"	
Toxaphene (Total)	ND	0.0219	0.0438	"	"	"	"	
cis-Nonachlor	ND	0.00109	0.00372	"	"	"	"	
2,4'-DDD	ND	0.00109	0.00372	"	"	"	"	
2,4'-DDE	ND	0.00109	0.00372	"	"	"	"	
2,4'-DDT	ND	0.00109	0.00372	"	"	"	"	
Hexachlorobenzene	ND	0.00109	0.00372	"	"	"	"	
Hexachlorobutadiene	ND	0.00109	0.00372	"	"	"	"	
Oxychlordane	ND	0.00109	0.00372	"	"	"	"	
trans-Nonachlor	ND	0.00109	0.00372	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)		*Recovery: 61 %*		*Limits: 50-125 %*	"	"	"	
Decachlorobiphenyl (Surr)		*86 %*		*Limits: 55-130 %*	"	"	"	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01RE1)			**Matrix: Soil**		**Batch: 1010246**			C-05
Acenaphthene	ND	0.00306	0.00612	mg/kg dry	1	10/14/10 15:53	EPA 8270D P/P/P	
Acenaphthylene	ND	0.00306	0.00612	"	"	"	"	
Anthracene	ND	0.00306	0.00612	"	"	"	"	
Benz(a)anthracene	**0.0101**	0.00306	0.00612	"	"	"	"	
Benzo(a)pyrene	**0.0141**	0.00459	0.00918	"	"	"	"	
Benzo(b)fluoranthene	**0.0155**	0.00306	0.00612	"	"	"	"	
Benzo(k)fluoranthene	**0.00594**	0.00306	0.00612	"	"	"	"	J
Benzo(g,h,i)perylene	**0.0138**	0.00306	0.00612	"	"	"	"	
Chrysene	**0.0137**	0.00306	0.00612	"	"	"	"	
Dibenz(a,h)anthracene	**0.00323**	0.00306	0.00612	"	"	"	"	J
Fluoranthene	**0.0205**	0.00306	0.00612	"	"	"	"	
Fluorene	ND	0.00306	0.00612	"	"	"	"	
Indeno(1,2,3-cd)pyrene	**0.0117**	0.00306	0.00612	"	"	"	"	
1-Methylnaphthalene	ND	0.00612	0.0122	"	"	"	"	
2-Methylnaphthalene	ND	0.00612	0.0122	"	"	"	"	
Naphthalene	ND	0.00612	0.0122	"	"	"	"	
Phenanthrene	**0.00548**	0.00306	0.00612	"	"	"	"	J
Pyrene	**0.0203**	0.00306	0.00612	"	"	"	"	
Dibenzofuran	ND	0.00306	0.00612	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 46 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*56 %*	*Limits: 45-120 %*	"	"	"	
Phenol-d6 (Surr)			*53 %*	*Limits: 40-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*102 %*	*Limits: 30-125 %*	"	"	"	
2-Fluorophenol (Surr)			*41 %*	*Limits: 35-120 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*80 %*	*Limits: 35-125 %*	"	"	"	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Phthalates by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01)			**Matrix: Soil**		**Batch: 1010231**			
Diethylphthalate	ND	0.00764	0.0153	mg/kg dry	1	10/20/10 12:19	EPA 8270D (SIM)	
Dimethylphthalate	ND	0.00764	0.0153	"	"	"	"	
Di-n-butylphthalate	ND	0.00764	0.0153	"	"	"	"	
Di-n-octyl phthalate	ND	0.00764	0.0153	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**0.0282**	0.00764	0.0153	"	"	"	"	B
Butyl benzyl phthalate	**0.00870**	0.00764	0.0153	"	"	"	"	J, B, B-02
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 66 %*	*Limits: 35-120 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*77 %*	*Limits: 45-120 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*85 %*	*Limits: 30-120 %*	"	"	"	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01)			**Matrix: Soil**		**Batch: 1010194**			
Arsenic	**3.49**	0.242	2.42	mg/kg dry	10	10/12/10 13:21	EPA 6020	
Cadmium	**0.338**	0.121	1.21	"	"	"	"	J
Chromium	**14.5**	0.121	2.42	"	"	"	"	
Cobalt	**11.0**	0.242	1.21	"	"	"	"	
Copper	**19.1**	0.483	4.83	"	"	"	"	
Iron	**22400**	60.4	302	"	50	10/12/10 13:29	"	
Lead	**10.1**	0.121	1.21	"	10	10/12/10 13:21	"	
Mercury	**0.0451**	0.0362	0.0967	"	"	"	"	J
Nickel	**14.8**	0.242	2.42	"	"	"	"	
Selenium	ND	0.483	2.42	"	"	"	"	
Silver	ND	0.121	1.21	"	"	"	"	
Zinc	**72.6**	1.21	4.83	"	"	"	"	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01)			**Matrix: Soil**		**Batch: 1010280**			
Total Organic Carbon	**4040**	100	200	mg/kg	1	10/17/10 18:10	SM 5310B MOD	

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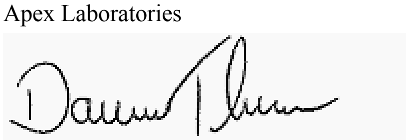

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6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01)			**Matrix: Soil**		**Batch: 1010335**			
Grain Size	Complete	0.00	0.00	N/A	1	10/19/10 14:42	ASTM D 422	GS-01

Anchor Environmental, LLC Portland
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Portland, OR 97224

Project: **T4**
Project Number: [none]
Project Manager: John Verduin

Reported:
10/20/10 17:07

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SL-101210-EW (A10J143-01)			**Matrix: Soil**		**Batch: 1010209**			
% Solids	**85.5**	1.00	1.00	% by Weight	1	10/13/10 10:06	ASTM D2216	DW-01

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Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel Range (C10-C22) and Oil Range (>C22-C40) Hydrocarbons by NWTPH-Dx - Silica Gel Cleanup

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010199 - EPA 3546 (Fuels)							**Soil**					
Blank (1010199-BLK1)					Prepared: 10/12/10 09:36 Analyzed: 10/12/10 11:28							
NWTPH-Dx(SG)												
Diesel Range Organics	ND	8.83	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil Range Organics	ND	8.00	40.0	"	"	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 89 %*	*Limits: 50-150 %*		*Dilution: 1x*						
LCS (1010199-BS1)					Prepared: 10/12/10 09:36 Analyzed: 10/12/10 11:52							
NWTPH-Dx(SG)												
Diesel Range Organics	84.9	8.83	20.0	mg/kg wet	1	83.3	---	102	70-130%	---	---	
Oil Range Organics	85.7	8.00	40.0	"	"	"	---	103	"	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 93 %*	*Limits: 50-150 %*		*Dilution: 1x*						
Duplicate (1010199-DUP1)					Prepared: 10/12/10 09:36 Analyzed: 10/12/10 11:52							A-01a, X
QC Source Sample: SL-101210-EW (A10J143-01)												
NWTPH-Dx(SG)												
Diesel Range Organics	ND	12.6	28.4	mg/kg dry	1	---	ND	---	---		30%	
Oil Range Organics	**103**	11.4	56.9	"	"	---	39.2	---	---	90	30%	F-03
Surr: o-Terphenyl (Surr)			*Recovery: 91 %*	*Limits: 50-150 %*		*Dilution: 1x*						
Batch 1010214 - EPA 3546 (Fuels)							**Soil**					
Blank (1010214-BLK1)					Prepared: 10/12/10 14:41 Analyzed: 10/12/10 19:10							
NWTPH-Dx(SG)												
Diesel Range Organics	ND	8.83	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil Range Organics	ND	8.00	40.0	"	"	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 90 %*	*Limits: 50-150 %*		*Dilution: 1x*						
LCS (1010214-BS1)					Prepared: 10/12/10 14:41 Analyzed: 10/12/10 19:32							
NWTPH-Dx(SG)												
Diesel Range Organics	79.6	8.83	20.0	mg/kg wet	1	83.3	---	95	70-130%	---	---	
Oil Range Organics	84.3	8.00	40.0	"	"	"	---	101	"	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 96 %*	*Limits: 50-150 %*		*Dilution: 1x*						
Duplicate (1010214-DUP1)					Prepared: 10/12/10 14:41 Analyzed: 10/12/10 21:22							
QC Source Sample: Other (A10J089-27)												
NWTPH-Dx(SG)												
Diesel Range Organics	ND	138	312	mg/kg dry	10	---	ND	---	---		30%	

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6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel Range (C10-C22) and Oil Range (>C22-C40) Hydrocarbons by NWTPH-Dx - Silica Gel Cleanup

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010214 - EPA 3546 (Fuels)							**Soil**					
Duplicate (1010214-DUP1)						Prepared: 10/12/10 14:41	Analyzed: 10/12/10 21:22					
QC Source Sample: Other (A10J089-27)												
Oil Range Organics	**443**	125	625	mg/kg dry	"	---	1150	---	---	89	30%	Q-04, J
Surr: o-Terphenyl (Surr)			*Recovery: 92 %*	*Limits: 50-150 %*		*Dilution: 10x*						*S-05*

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Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010233 - EPA 3546							**Soil**					
Blank (1010233-BLK1)						Prepared: 10/13/10 12:36	Analyzed: 10/14/10 14:05					C-07
EPA 8082A												
Aroclor 1016	ND	0.00250	0.00500	mg/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00250	0.00500	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00250	0.00500	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.00250	0.00500	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.00250	0.00500	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.00250	0.00500	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.00250	0.00500	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 80 %*	*Limits: 50-125 %*		*Dilution: 1x*						
Decachlorobiphenyl (Surr)			*110 %*	*55-130 %*		*"*						
LCS (1010233-BS1)						Prepared: 10/13/10 12:36	Analyzed: 10/14/10 14:23					C-07
EPA 8082A												
Aroclor 1016	0.119	0.00250	0.00500	mg/kg wet	1	0.125	---	95	40-140%	---	---	
Aroclor 1260	0.129	0.00250	0.00500	"	"	"	---	103	60-130%	---	---	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 85 %*	*Limits: 50-125 %*		*Dilution: 1x*						
Decachlorobiphenyl (Surr)			*114 %*	*55-130 %*		*"*						
Duplicate (1010233-DUP1)						Prepared: 10/13/10 12:36	Analyzed: 10/14/10 14:58					C-07
QC Source Sample: SL-101210-EW (A10J143-01)												
EPA 8082A												
Aroclor 1016	ND	0.00287	0.00574	mg/kg dry	1	---	ND	---	---		30%	
Aroclor 1221	ND	0.00287	0.00574	"	"	---	ND	---	---		30%	
Aroclor 1232	ND	0.00287	0.00574	"	"	---	ND	---	---		30%	
Aroclor 1242	ND	0.00287	0.00574	"	"	---	ND	---	---		30%	
Aroclor 1248	ND	0.00287	0.00574	"	"	---	ND	---	---		30%	
Aroclor 1254	ND	0.00287	0.00574	"	"	---	ND	---	---		30%	
Aroclor 1260	ND	0.00287	0.00574	"	"	---	ND	---	---		30%	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 51 %*	*Limits: 50-125 %*		*Dilution: 1x*						
Decachlorobiphenyl (Surr)			*51 %*	*55-130 %*		*"*						*S-03*
Matrix Spike (1010233-MS1)						Prepared: 10/13/10 12:36	Analyzed: 10/14/10 15:16					C-07
QC Source Sample: SL-101210-EW (A10J143-01)												
EPA 8082A												
Aroclor 1016	0.0732	0.00289	0.00577	mg/kg dry	1	0.144	ND	51	40-140%	---	---	
Aroclor 1260	0.0749	0.00289	0.00577	"	"	"	ND	52	60-130%	---	---	Q-02

Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010233 - EPA 3546							**Soil**					
Matrix Spike (1010233-MS1)						Prepared: 10/13/10 12:36	Analyzed: 10/14/10 15:16					C-07
QC Source Sample: SL-101210-EW (A10J143-01)												
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*46 %*	*Limits:*	*50-125 %*		*Dilution: 1x*					*S-03*
Decachlorobiphenyl (Surr)			*47 %*		*55-130 %*		*"*					*S-03*

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010248 - EPA 3546/3640A (GPC)							**Soil**					
Blank (1010248-BLK1)						Prepared: 10/13/10 12:27	Analyzed: 10/14/10 13:34					C-05
EPA 8081B												
Aldrin	ND	0.000500	0.00170	mg/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.00170	0.00170	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Endrin	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Heptachlor epoxide	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Methoxychlor	ND	0.00500	0.00500	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
cis-Nonachlor	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
2,4'-DDD	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
2,4'-DDE	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
2,4'-DDT	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Hexachlorobenzene	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Oxychlordane	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
trans-Nonachlor	ND	0.000500	0.00170	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery:*	*56 %*	*Limits:*	*50-125 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*95 %*		*55-130 %*		*"*					
LCS (1010248-BS1)						Prepared: 10/13/10 12:27	Analyzed: 10/14/10 13:49					C-05

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Darwin Thomas, Business Development Director

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Batch 1010248 - EPA 3546/3640A (GPC) — **Soil**

LCS (1010248-BS1) — Prepared: 10/13/10 12:27 Analyzed: 10/14/10 13:49 — C-05

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 8081B												
Aldrin	0.0504	0.000500	0.00170	mg/kg wet	1	0.0667	---	76	45-140%	---	---	
alpha-BHC	0.0480	0.000500	0.00170	"	"	"	---	72	60-125%	---	---	
beta-BHC	0.0508	0.000500	0.00170	"	"	"	---	76	"	---	---	
delta-BHC	0.0524	0.000500	0.00170	"	"	"	---	79	55-130%	---	---	
gamma-BHC (Lindane)	0.0518	0.000500	0.00170	"	"	"	---	78	60-125%	---	---	
cis-Chlordane	0.0554	0.000500	0.00170	"	"	"	---	83	60-120%	---	---	
trans-Chlordane	0.0572	0.000500	0.00170	"	"	"	---	86	65-125%	---	---	
4,4'-DDD	0.0746	0.000500	0.00170	"	"	"	---	112	30-135%	---	---	
4,4'-DDE	0.0649	0.000500	0.00170	"	"	"	---	97	70-125%	---	---	
4,4'-DDT	0.0691	0.00170	0.00170	"	"	"	---	104	45-140%	---	---	
Dieldrin	0.0633	0.000500	0.00170	"	"	"	---	95	65-125%	---	---	
Endosulfan I	0.0596	0.000500	0.00170	"	"	"	---	89	15-135%	---	---	
Endosulfan II	0.0705	0.000500	0.00170	"	"	"	---	106	35-140%	---	---	
Endosulfan sulfate	0.0700	0.000500	0.00170	"	"	"	---	105	60-135%	---	---	
Endrin	0.0629	0.000500	0.00170	"	"	"	---	94	"	---	---	
Endrin Aldehyde	0.0687	0.000500	0.00170	"	"	"	---	103	30-145%	---	---	
Endrin ketone	0.0769	0.000500	0.00170	"	"	"	---	115	65-135%	---	---	
Heptachlor	0.0515	0.000500	0.00170	"	"	"	---	77	50-140%	---	---	
Heptachlor epoxide	0.0561	0.000500	0.00170	"	"	"	---	84	65-130%	---	---	
Methoxychlor	0.0827	0.00500	0.00500	"	"	"	---	124	55-145%	---	---	

Surr: 2,4,5,6-TCMX (Surr) — Recovery: 66 % — Limits: 50-125 % — Dilution: 1x
Decachlorobiphenyl (Surr) — 108 % — 55-130 % — "

LCS (1010248-BS2) — Prepared: 10/13/10 12:27 Analyzed: 10/14/10 14:03 — C-05

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 8081B												
cis-Nonachlor	0.0734	0.000500	0.00170	mg/kg wet	1	0.0833	---	88	50-150%	---	---	
2,4'-DDD	0.0761	0.000500	0.00170	"	"	"	---	91	30-135%	---	---	
2,4'-DDE	0.0611	0.000500	0.00170	"	"	"	---	73	50-140%	---	---	
2,4'-DDT	0.0768	0.000500	0.00170	"	"	"	---	92	45-140%	---	---	
Hexachlorobenzene	0.0542	0.000500	0.00170	"	"	"	---	65	50-150%	---	---	
Hexachlorobutadiene	0.0489	0.000500	0.00170	"	"	"	---	59	"	---	---	
Oxychlordane	0.0594	0.000500	0.00170	"	"	"	---	71	"	---	---	
trans-Nonachlor	0.0611	0.000500	0.00170	"	"	"	---	73	"	---	---	

Surr: 2,4,5,6-TCMX (Surr) — Recovery: 61 % — Limits: 50-125 % — Dilution: 1x

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010248 - EPA 3546/3640A (GPC)							**Soil**					
LCS (1010248-BS2)				Prepared: 10/13/10 12:27			Analyzed: 10/14/10 14:03					C-05
Surr: Decachlorobiphenyl (Surr)		*Recovery: 95 %*		*Limits: 55-130 %*			*Dilution: 1x*					
Duplicate (1010248-DUP1)				Prepared: 10/13/10 12:27			Analyzed: 10/14/10 14:32					C-05, R-04
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
EPA 8081B												
Aldrin	ND	0.00113	0.00383	mg/kg dry	1	---	ND	---	---		25%	
alpha-BHC	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
beta-BHC	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
delta-BHC	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
gamma-BHC (Lindane)	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
cis-Chlordane	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
trans-Chlordane	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
4,4'-DDD	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
4,4'-DDE	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
4,4'-DDT	ND	0.00383	0.00383	"	"	---	ND	---	---		25%	
Dieldrin	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Endosulfan I	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Endosulfan II	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Endosulfan sulfate	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Endrin	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Endrin Aldehyde	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Endrin ketone	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Heptachlor	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Heptachlor epoxide	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Methoxychlor	ND	0.0113	0.0113	"	"	---	ND	---	---		25%	
Chlordane (Technical)	ND	0.0225	0.0451	"	"	---	ND	---	---		25%	
Toxaphene (Total)	ND	0.0225	0.0451	"	"	---	ND	---	---		25%	
cis-Nonachlor	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
2,4'-DDD	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
2,4'-DDE	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
2,4'-DDT	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Hexachlorobenzene	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Hexachlorobutadiene	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
Oxychlordane	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	
trans-Nonachlor	ND	0.00113	0.00383	"	"	---	ND	---	---		25%	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010248 - EPA 3546/3640A (GPC)							**Soil**					
Duplicate (1010248-DUP1)					Prepared: 10/13/10 12:27	Analyzed: 10/14/10 14:32						C-05, R-04
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
Surr: 2,4,5,6-TCMX (Surr)		*Recovery: 63 %*		*Limits: 50-125 %*		*Dilution: 1x*						
Decachlorobiphenyl (Surr)		*84 %*		*55-130 %*		*"*						
Matrix Spike (1010248-MS1)					Prepared: 10/13/10 12:27	Analyzed: 10/14/10 14:46						C-05
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
EPA 8081B												
Aldrin	0.117	0.00227	0.00773	mg/kg dry	1	0.152	ND	77	45-140%	---	---	
alpha-BHC	0.119	0.00227	0.00773	"	"	"	ND	78	60-125%	---	---	
beta-BHC	0.133	0.00227	0.00773	"	"	"	ND	88	"	---	---	
delta-BHC	0.126	0.00227	0.00773	"	"	"	ND	83	55-130%	---	---	
gamma-BHC (Lindane)	0.122	0.00227	0.00773	"	"	"	ND	80	60-125%	---	---	
cis-Chlordane	0.129	0.00227	0.00773	"	"	"	ND	85	60-120%	---	---	
trans-Chlordane	0.131	0.00227	0.00773	"	"	"	ND	86	65-125%	---	---	
4,4'-DDD	0.149	0.00227	0.00773	"	"	"	ND	99	30-135%	---	---	
4,4'-DDE	0.138	0.00227	0.00773	"	"	"	ND	91	70-125%	---	---	
4,4'-DDT	0.149	0.00773	0.00773	"	"	"	ND	98	45-140%	---	---	
Dieldrin	0.133	0.00227	0.00773	"	"	"	ND	88	65-125%	---	---	
Endosulfan I	0.131	0.00227	0.00773	"	"	"	ND	86	15-135%	---	---	
Endosulfan II	0.150	0.00227	0.00773	"	"	"	ND	99	35-140%	---	---	
Endosulfan sulfate	0.148	0.00227	0.00773	"	"	"	ND	97	60-135%	---	---	
Endrin	0.141	0.00227	0.00773	"	"	"	ND	93	"	---	---	
Endrin Aldehyde	0.137	0.00227	0.00773	"	"	"	ND	91	35-145%	---	---	
Endrin ketone	0.161	0.00227	0.00773	"	"	"	ND	106	65-135%	---	---	
Heptachlor	0.127	0.00227	0.00773	"	"	"	ND	83	50-140%	---	---	
Heptachlor epoxide	0.128	0.00227	0.00773	"	"	"	ND	85	65-130%	---	---	
Methoxychlor	0.184	0.0227	0.0227	"	"	"	ND	121	55-145%	---	---	
Surr: 2,4,5,6-TCMX (Surr)		*Recovery: 66 %*		*Limits: 50-125 %*		*Dilution: 1x*						
Decachlorobiphenyl (Surr)		*93 %*		*55-130 %*		*"*						
Matrix Spike (1010248-MS2)					Prepared: 10/13/10 12:27	Analyzed: 10/14/10 15:01						C-05
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
EPA 8081B												
cis-Nonachlor	0.182	0.00232	0.00787	mg/kg dry	1	0.193	ND	94	50-150%	---	---	
2,4'-DDD	0.198	0.00232	0.00787	"	"	"	ND	103	30-135%	---	---	

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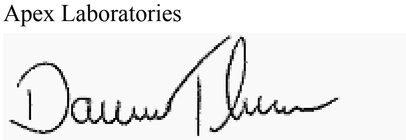

Darwin Thomas, Business Development Director

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010248 - EPA 3546/3640A (GPC)							**Soil**					
Matrix Spike (1010248-MS2)						Prepared: 10/13/10 12:27	Analyzed: 10/14/10 15:01					C-05
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
2,4'-DDE	0.166	0.00232	0.00787	mg/kg dry	"	"	ND	86	50-140%	---	---	
2,4'-DDT	0.201	0.00232	0.00787	"	"	"	ND	104	45-140%	---	---	
Hexachlorobenzene	0.148	0.00232	0.00787	"	"	"	ND	77	50-150%	---	---	
Hexachlorobutadiene	0.114	0.00232	0.00787	"	"	"	ND	59	"	---	---	
Oxychlordane	0.164	0.00232	0.00787	"	"	"	ND	85	"	---	---	
trans-Nonachlor	0.168	0.00232	0.00787	"	"	"	ND	87	"	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 63 % Limits: 50-125 % Dilution: 1x
Decachlorobiphenyl (Surr) 89 % 55-130 % "

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010246 - EPA 3546/3640A (GPC)							**Soil**					
Blank (1010246-BLK1)					Prepared: 10/13/10 12:23		Analyzed: 10/14/10 14:44					C-05
EPA 8270D P/P/P												
Acenaphthene	ND	0.00267	0.00533	mg/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.00400	0.00800	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	0.00533	0.0107	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.00533	0.0107	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.00533	0.0107	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.00533	0.0107	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.00267	0.00533	"	"	---	---	---	---	---	---	

Surr:		Recovery:	Limits:	Dilution:
Surr:	*Nitrobenzene-d5 (Surr)*	*62 %*	*35-120 %*	*1x*
	2-Fluorobiphenyl (Surr)	*62 %*	*45-120 %*	*"*
	Phenol-d6 (Surr)	*58 %*	*40-120 %*	*"*
	p-Terphenyl-d14 (Surr)	*99 %*	*30-125 %*	*"*
	2-Fluorophenol (Surr)	*59 %*	*35-120 %*	*"*
	2,4,6-Tribromophenol (Surr)	*61 %*	*35-125 %*	*"*

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (1010246-BS1)					Prepared: 10/13/10 12:23		Analyzed: 10/14/10 15:18					C-05
EPA 8270D P/P/P												
Acenaphthene	0.0848	0.00267	0.00533	mg/kg wet	1	0.133	---	64	45-120%	---	---	
Acenaphthylene	0.0851	0.00267	0.00533	"	"	"	---	64	"	---	---	
Anthracene	0.0965	0.00267	0.00533	"	"	"	---	72	55-120%	---	---	
Benz(a)anthracene	0.131	0.00267	0.00533	"	"	"	---	99	50-120%	---	---	
Benzo(a)pyrene	0.124	0.00400	0.00800	"	"	"	---	93	"	---	---	
Benzo(b)fluoranthene	0.122	0.00267	0.00533	"	"	"	---	92	45-120%	---	---	

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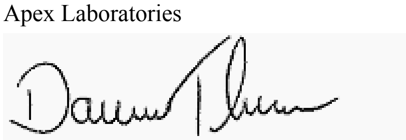

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Batch 1010246 - EPA 3546/3640A (GPC) — **Soil**

LCS (1010246-BS1) Prepared: 10/13/10 12:23 Analyzed: 10/14/10 15:18 C-05

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Benzo(k)fluoranthene	0.116	0.00267	0.00533	mg/kg wet	"	"	---	87	45-125%	---	---	
Benzo(b+k)fluoranthene(s)	0.237	0.00533	0.0107	"	"	0.267	---	89	"	---	---	
Benzo(g,h,i)perylene	0.138	0.00267	0.00533	"	"	0.133	---	103	40-125%	---	---	
Chrysene	0.126	0.00267	0.00533	"	"	"	---	94	55-120%	---	---	
Dibenz(a,h)anthracene	0.142	0.00267	0.00533	"	"	"	---	107	40-125%	---	---	
Fluoranthene	0.115	0.00267	0.00533	"	"	"	---	87	55-120%	---	---	
Fluorene	0.0818	0.00267	0.00533	"	"	"	---	61	50-120%	---	---	
Indeno(1,2,3-cd)pyrene	0.140	0.00267	0.00533	"	"	"	---	105	40-120%	---	---	
1-Methylnaphthalene	0.0783	0.00533	0.0107	"	"	"	---	59	45-120%	---	---	
2-Methylnaphthalene	0.0756	0.00533	0.0107	"	"	"	---	57	"	---	---	
Naphthalene	0.0803	0.00533	0.0107	"	"	"	---	60	40-120%	---	---	
Phenanthrene	0.0944	0.00267	0.00533	"	"	"	---	71	50-120%	---	---	
Pyrene	0.121	0.00267	0.00533	"	"	"	---	91	45-120%	---	---	
Dibenzofuran	0.0784	0.00267	0.00533	"	"	"	---	59	50-120%	---	---	

Surr:	Recovery:	Limits:	Dilution:
Nitrobenzene-d5 (Surr)	*63 %*	*35-120 %*	*1x*
2-Fluorobiphenyl (Surr)	*61 %*	*45-120 %*	*"*
Phenol-d6 (Surr)	*63 %*	*40-120 %*	*"*
p-Terphenyl-d14 (Surr)	*88 %*	*30-125 %*	*"*
2-Fluorophenol (Surr)	*61 %*	*35-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*71 %*	*35-125 %*	*"*

Duplicate (1010246-DUP1) Prepared: 10/13/10 12:23 Analyzed: 10/14/10 16:27 C-05

QC Source Sample: SL-101210-EW (A10J143-01RE1)

EPA 8270D P/P/P

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acenaphthene	ND	0.00296	0.00593	mg/kg dry	1	---	ND	---	---		30%	
Acenaphthylene	ND	0.00296	0.00593	"	"	---	ND	---	---		30%	
Anthracene	ND	0.00296	0.00593	"	"	---	ND	---	---		30%	
Benz(a)anthracene	**0.00986**	0.00296	0.00593	"	"	---	0.0101	---	---	2	30%	
Benzo(a)pyrene	**0.0139**	0.00444	0.00889	"	"	---	0.0141	---	---	1	30%	
Benzo(b)fluoranthene	**0.0144**	0.00296	0.00593	"	"	---	0.0155	---	---	7	30%	
Benzo(k)fluoranthene	**0.00574**	0.00296	0.00593	"	"	---	0.00594	---	---	3	30%	J
Benzo(b+k)fluoranthene(s)	**0.0251**	0.00593	0.0119	"	"	---	0.0241	---	---	4	30%	
Benzo(g,h,i)perylene	**0.0153**	0.00296	0.00593	"	"	---	0.0138	---	---	10	30%	
Chrysene	**0.0123**	0.00296	0.00593	"	"	---	0.0137	---	---	11	30%	
Dibenz(a,h)anthracene	ND	0.00296	0.00593	"	"	---	0.00323	---	---		30%	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010246 - EPA 3546/3640A (GPC)							**Soil**					
Duplicate (1010246-DUP1)					Prepared: 10/13/10 12:23		Analyzed: 10/14/10 16:27					C-05
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
Fluoranthene	**0.0189**	0.00296	0.00593	mg/kg dry	"	---	0.0205	---	---	8	30%	
Fluorene	ND	0.00296	0.00593	"	"	---	ND	---	---		30%	
Indeno(1,2,3-cd)pyrene	**0.0114**	0.00296	0.00593	"	"	---	0.0117	---	---	3	30%	
1-Methylnaphthalene	ND	0.00593	0.0119	"	"	---	ND	---	---		30%	
2-Methylnaphthalene	ND	0.00593	0.0119	"	"	---	ND	---	---		30%	
Naphthalene	ND	0.00593	0.0119	"	"	---	ND	---	---		30%	
Phenanthrene	**0.00423**	0.00296	0.00593	"	"	---	0.00548	---	---	26	30%	J
Pyrene	**0.0180**	0.00296	0.00593	"	"	---	0.0203	---	---	12	30%	
Dibenzofuran	ND	0.00296	0.00593	"	"	---	ND	---	---		30%	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 40 %*	*Limits: 35-120 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*43 %*	*45-120 %*		*"*						*S-06*
Phenol-d6 (Surr)			*46 %*	*40-120 %*		*"*						
p-Terphenyl-d14 (Surr)			*95 %*	*30-125 %*		*"*						
2-Fluorophenol (Surr)			*38 %*	*35-120 %*		*"*						
2,4,6-Tribromophenol (Surr)			*86 %*	*35-125 %*		*"*						
Matrix Spike (1010246-MS1)					Prepared: 10/13/10 12:23		Analyzed: 10/14/10 17:01					C-05
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
EPA 8270D P/P/P												
Acenaphthene	0.227	0.00601	0.0120	mg/kg dry	1	0.301	ND	76	45-120%	---	---	
Acenaphthylene	0.233	0.00601	0.0120	"	"	"	ND	78	"	---	---	
Anthracene	0.277	0.00601	0.0120	"	"	"	ND	92	55-120%	---	---	
Benz(a)anthracene	0.349	0.00601	0.0120	"	"	"	0.0101	113	50-120%	---	---	
Benzo(a)pyrene	0.326	0.00902	0.0180	"	"	"	0.0141	104	"	---	---	
Benzo(b)fluoranthene	0.308	0.00601	0.0120	"	"	"	0.0155	97	45-120%	---	---	
Benzo(k)fluoranthene	0.293	0.00601	0.0120	"	"	"	0.00594	96	45-125%	---	---	
Benzo(b+k)fluoranthene(s)	0.597	0.0120	0.0241	"	"	0.601	0.0241	95	"	---	---	
Benzo(g,h,i)perylene	0.372	0.00601	0.0120	"	"	0.301	0.0138	119	40-125%	---	---	
Chrysene	0.323	0.00601	0.0120	"	"	"	0.0137	103	55-120%	---	---	
Dibenz(a,h)anthracene	0.346	0.00601	0.0120	"	"	"	0.00323	114	40-125%	---	---	
Fluoranthene	0.350	0.00601	0.0120	"	"	"	0.0205	110	55-120%	---	---	
Fluorene	0.237	0.00601	0.0120	"	"	"	ND	79	50-120%	---	---	
Indeno(1,2,3-cd)pyrene	0.355	0.00601	0.0120	"	"	"	0.0117	114	40-120%	---	---	
1-Methylnaphthalene	0.188	0.0120	0.0241	"	"	"	ND	63	45-120%	---	---	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010246 - EPA 3546/3640A (GPC)							**Soil**					
Matrix Spike (1010246-MS1)						Prepared: 10/13/10 12:23	Analyzed: 10/14/10 17:01					C-05
QC Source Sample: SL-101210-EW (A10J143-01RE1)												
2-Methylnaphthalene	0.180	0.0120	0.0241	mg/kg dry	"	"	ND	60	"	---	---	
Naphthalene	0.177	0.0120	0.0241	"	"	"	ND	59	40-120%	---	---	
Phenanthrene	0.268	0.00601	0.0120	"	"	"	0.00548	87	50-120%	---	---	
Pyrene	0.360	0.00601	0.0120	"	"	"	0.0203	113	45-120%	---	---	
Dibenzofuran	0.222	0.00601	0.0120	"	"	"	ND	74	50-120%	---	---	

Surr:	Recovery	Limits	Dilution
Nitrobenzene-d5 (Surr)	*61 %*	*35-120 %*	*1x*
2-Fluorobiphenyl (Surr)	*70 %*	*45-120 %*	*"*
Phenol-d6 (Surr)	*69 %*	*40-120 %*	*"*
p-Terphenyl-d14 (Surr)	*110 %*	*30-125 %*	*"*
2-Fluorophenol (Surr)	*57 %*	*35-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*88 %*	*35-125 %*	*"*

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Phthalates by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010231 - EPA 3546							**Soil**					
Blank (1010231-BLK1)						Prepared: 10/13/10 12:23	Analyzed: 10/20/10 11:26					
EPA 8270D (SIM)												
Diethylphthalate	ND	0.00666	0.0133	mg/kg wet	1	---	---	---	---	---	---	
Dimethylphthalate	ND	0.00666	0.0133	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	0.00666	0.0133	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	0.00666	0.0133	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	**0.0303**	0.00666	0.0133	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	**0.00917**	0.00666	0.0133	"	"	---	---	---	---	---	---	J, B-02
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*88 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*88 %*		*45-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*91 %*		*30-120 %*		*"*					
LCS (1010231-BS1)						Prepared: 10/13/10 12:23	Analyzed: 10/20/10 11:53					
EPA 8270D (SIM)												
Diethylphthalate	0.125	0.00666	0.0133	mg/kg wet	1	0.133	---	94	40-125%	---	---	
Dimethylphthalate	0.128	0.00666	0.0133	"	"	"	---	96	25-125%	---	---	
Di-n-butylphthalate	0.128	0.00666	0.0133	"	"	"	---	96	55-125%	---	---	
Di-n-octyl phthalate	0.121	0.00666	0.0133	"	"	"	---	91	35-125%	---	---	
Bis(2-ethylhexyl)phthalate	0.133	0.00666	0.0133	"	"	"	---	100	40-125%	---	---	B
Butyl benzyl phthalate	0.120	0.00666	0.0133	"	"	"	---	90	45-125%	---	---	B
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*91 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*90 %*		*45-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*88 %*		*30-120 %*		*"*					
Duplicate (1010231-DUP1)						Prepared: 10/13/10 12:23	Analyzed: 10/20/10 12:45					
QC Source Sample: SL-101210-EW (A10J143-01)												
EPA 8270D (SIM)												
Diethylphthalate	ND	0.00740	0.0148	mg/kg dry	1	---	ND	---	---		25%	
Dimethylphthalate	ND	0.00740	0.0148	"	"	---	ND	---	---		25%	
Di-n-butylphthalate	ND	0.00740	0.0148	"	"	---	ND	---	---		25%	
Di-n-octyl phthalate	ND	0.00740	0.0148	"	"	---	ND	---	---		25%	
Bis(2-ethylhexyl)phthalate	**0.0266**	0.00740	0.0148	"	"	---	0.0282	---	---	6	25%	B
Butyl benzyl phthalate	ND	0.00740	0.0148	"	"	---	0.00870	---	---		25%	
Surr: Nitrobenzene-d5 (Surr)		*Recovery:*	*57 %*	*Limits:*	*35-120 %*		*Dilution: 1x*					
2-Fluorobiphenyl (Surr)			*62 %*		*45-120 %*		*"*					
p-Terphenyl-d14 (Surr)			*79 %*		*30-120 %*		*"*					

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Phthalates by EPA 8270D SIM

Batch 1010231 - EPA 3546 — **Soil**

Matrix Spike (1010231-MS1) Prepared: 10/13/10 12:23 Analyzed: 10/20/10 13:12

QC Source Sample: SL-101210-EW (A10J143-01)

EPA 8270D (SIM)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Diethylphthalate	0.267	0.0150	0.0300	mg/kg dry	1	0.301	ND	89	40-125%	---	---	
Dimethylphthalate	0.264	0.0150	0.0300	"	"	"	ND	88	25-125%	---	---	
Di-n-butylphthalate	0.279	0.0150	0.0300	"	"	"	ND	93	55-125%	---	---	
Di-n-octyl phthalate	0.266	0.0150	0.0300	"	"	"	ND	88	35-125%	---	---	
Bis(2-ethylhexyl)phthalate	0.310	0.0150	0.0300	"	"	"	0.0282	94	40-125%	---	---	B
Butyl benzyl phthalate	0.253	0.0150	0.0300	"	"	"	0.00870	81	45-125%	---	---	B

Surr:	Recovery	Limits	Dilution
Nitrobenzene-d5 (Surr)	*64 %*	*35-120 %*	*1x*
2-Fluorobiphenyl (Surr)	*73 %*	*45-120 %*	*"*
p-Terphenyl-d14 (Surr)	*85 %*	*30-120 %*	*"*

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010194 - EPA 3051A							**Soil**					
Blank (1010194-BLK1)						Prepared: 10/12/10 08:48 Analyzed: 10/12/10 12:08						
EPA 6020												
Arsenic	ND	0.200	2.00	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Chromium	ND	0.100	2.00	"	"	---	---	---	---	---	---	
Cobalt	ND	0.200	1.00	"	"	---	---	---	---	---	---	
Copper	ND	0.400	4.00	"	"	---	---	---	---	---	---	
Iron	ND	10.0	50.0	"	"	---	---	---	---	---	---	
Lead	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Mercury	ND	0.0300	0.0800	"	"	---	---	---	---	---	---	
Nickel	ND	0.200	2.00	"	"	---	---	---	---	---	---	
Selenium	ND	0.400	2.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	1.00	"	"	---	---	---	---	---	---	
Zinc	ND	1.00	4.00	"	"	---	---	---	---	---	---	
LCS (1010194-BS1)						Prepared: 10/12/10 08:48 Analyzed: 10/12/10 12:11						
EPA 6020												
Arsenic	55.3	0.200	2.00	mg/kg wet	10	50.0	---	111	80-120%	---	---	
Cadmium	55.0	0.100	1.00	"	"	"	---	110	"	---	---	
Chromium	52.9	0.100	2.00	"	"	"	---	106	"	---	---	
Cobalt	54.7	0.200	1.00	"	"	"	---	109	"	---	---	
Copper	56.5	0.400	4.00	"	"	"	---	113	"	---	---	
Iron	5330	10.0	50.0	"	"	5000	---	107	"	---	---	
Lead	54.1	0.100	1.00	"	"	50.0	---	108	"	---	---	
Mercury	2.14	0.0300	0.0800	"	"	2.00	---	107	"	---	---	
Nickel	55.7	0.200	2.00	"	"	50.0	---	111	"	---	---	
Selenium	29.0	0.400	2.00	"	"	25.0	---	116	"	---	---	
Silver	28.3	0.100	1.00	"	"	"	---	113	"	---	---	
Zinc	54.7	1.00	4.00	"	"	50.0	---	109	"	---	---	
LCS (1010194-BS2)						Prepared: 10/12/10 08:48 Analyzed: 10/13/10 11:49						
EPA 6020												
Arsenic	51.4	0.200	2.00	mg/kg wet	10	50.0	---	103	80-120%	---	---	
Cadmium	51.1	0.100	1.00	"	"	"	---	102	"	---	---	
Chromium	48.0	0.100	2.00	"	"	"	---	96	"	---	---	
Copper	51.1	0.400	4.00	"	"	"	---	102	"	---	---	
Iron	4890	10.0	50.0	"	"	5000	---	98	"	---	---	

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Darwin Thomas, Business Development Director

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503-718-0333 Fax

Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010194 - EPA 3051A							**Soil**					
LCS (1010194-BS2)					Prepared: 10/12/10 08:48		Analyzed: 10/13/10 11:49					
Lead	50.6	0.100	1.00	mg/kg wet	"	50.0	---	101	"	---	---	
Mercury	2.10	0.0300	0.0800	"	"	2.00	---	105	"	---	---	
Nickel	51.2	0.200	2.00	"	"	50.0	---	102	"	---	---	
Selenium	26.7	0.400	2.00	"	"	25.0	---	107	"	---	---	
Silver	25.8	0.100	1.00	"	"	"	---	103	"	---	---	
Zinc	50.8	1.00	4.00	"	"	50.0	---	102	"	---	---	
Duplicate (1010194-DUP1)					Prepared: 10/12/10 08:48		Analyzed: 10/12/10 12:54					
QC Source Sample: Other (A10J125-08)												
EPA 6020												
Arsenic	**1.07**	0.218	2.18	mg/kg dry	10	---	1.13	---	---	6	40%	J
Cadmium	**0.272**	0.109	1.09	"	"	---	0.208	---	---	27	40%	J
Chromium	**5.23**	0.109	2.18	"	"	---	5.33	---	---	2	40%	
Cobalt	**8.23**	0.218	1.09	"	"	---	7.82	---	---	5	40%	
Copper	**13.2**	0.435	4.35	"	"	---	13.1	---	---	1	40%	
Lead	**3.07**	0.109	1.09	"	"	---	3.03	---	---	1	40%	
Mercury	ND	0.0326	0.0871	"	"	---	ND	---	---		40%	
Nickel	**7.86**	0.218	2.18	"	"	---	7.80	---	---	0.8	40%	
Selenium	ND	0.435	2.18	"	"	---	ND	---	---		40%	
Silver	ND	0.109	1.09	"	"	---	ND	---	---		40%	
Zinc	**44.5**	1.09	4.35	"	"	---	42.9	---	---	4	40%	
Duplicate (1010194-DUP2)					Prepared: 10/12/10 08:48		Analyzed: 10/12/10 13:12					
QC Source Sample: Other (A10J125-08)												
EPA 6020												
Iron	**22000**	54.4	272	mg/kg dry	50	---	23000	---	---	4	40%	Q-16
Matrix Spike (1010194-MS1)					Prepared: 10/12/10 08:48		Analyzed: 10/12/10 13:06					
QC Source Sample: Other (A10J125-08)												
EPA 6020												
Arsenic	58.2	0.220	2.20	mg/kg dry	10	55.0	1.13	104	75-125%	---	---	
Cadmium	57.0	0.110	1.10	"	"	"	0.208	103	"	---	---	
Chromium	60.3	0.110	2.20	"	"	"	5.33	100	"	---	---	
Cobalt	63.4	0.220	1.10	"	"	"	7.82	101	"	---	---	
Copper	72.8	0.440	4.40	"	"	"	13.1	109	"	---	---	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010194 - EPA 3051A							**Soil**					
Matrix Spike (1010194-MS1)						Prepared: 10/12/10 08:48	Analyzed: 10/12/10 13:06					
QC Source Sample: Other (A10J125-08)												
Lead	56.7	0.110	1.10	mg/kg dry	"	"	3.03	98	"	---	---	
Mercury	2.13	0.0330	0.0879	"	"	2.20	ND	97	"	---	---	
Nickel	64.8	0.220	2.20	"	"	55.0	7.80	104	"	---	---	
Selenium	29.3	0.440	2.20	"	"	27.5	ND	107	"	---	---	
Silver	29.3	0.110	1.10	"	"	"	ND	107	"	---	---	
Zinc	102	1.10	4.40	"	"	55.0	42.9	107	"	---	---	
Matrix Spike (1010194-MS2)						Prepared: 10/12/10 08:48	Analyzed: 10/12/10 12:39					
QC Source Sample: Other (A10J137-01)												
EPA 6020												
Arsenic	62.1	0.233	2.33	mg/kg dry	10	58.3	2.70	102	75-125%	---	---	
Cadmium	59.6	0.117	1.17	"	"	"	0.210	102	"	---	---	
Chromium	80.2	0.117	2.33	"	"	"	20.3	103	"	---	---	
Cobalt	82.5	0.233	1.17	"	"	"	17.6	111	"	---	---	
Copper	90.1	0.466	4.66	"	"	"	27.2	108	"	---	---	
Lead	61.4	0.117	1.17	"	"	"	3.55	99	"	---	---	
Mercury	2.26	0.0350	0.0932	"	"	2.33	ND	97	"	---	---	
Nickel	105	0.233	2.33	"	"	58.3	42.7	107	"	---	---	
Selenium	30.4	0.466	2.33	"	"	29.1	ND	104	"	---	---	
Silver	30.3	0.117	1.17	"	"	"	ND	104	"	---	---	
Zinc	115	1.17	4.66	"	"	58.3	52.0	108	"	---	---	
Matrix Spike (1010194-MS3)						Prepared: 10/12/10 08:48	Analyzed: 10/12/10 12:48					
QC Source Sample: Other (A10J137-01)												
EPA 6020												
Iron	37700	58.3	291	mg/kg dry	50	5830	31600	104	75-125%	---	---	Q-16
Matrix Spike (1010194-MS4)						Prepared: 10/12/10 08:48	Analyzed: 10/12/10 13:15					
QC Source Sample: Other (A10J125-08)												
EPA 6020												
Iron	28300	55.0	275	mg/kg dry	50	5500	23000	96	75-125%	---	---	Q-16

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010280 - PSEP TOC							**Soil**					
Blank (1010280-BLK1)						Prepared: 10/15/10 12:06	Analyzed: 10/17/10 18:10					
SM 5310B MOD												
Total Organic Carbon	ND	100	200	mg/kg	1	---	---	---	---	---	---	
LCS (1010280-BS1)						Prepared: 10/15/10 12:06	Analyzed: 10/17/10 18:10					
SM 5310B MOD												
Total Organic Carbon	5930			mg/kg	1	6250	---	95	85-115%	---	---	
Duplicate (1010280-DUP1)						Prepared: 10/15/10 12:06	Analyzed: 10/17/10 18:10					
QC Source Sample: Other (A10J137-01)												
SM 5310B MOD												
Total Organic Carbon	**776**	100	200	mg/kg	1	---	742	---	---	4	20%	

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1010209 - Dry Weight							**Soil**					
Duplicate (1010209-DUP1)					Prepared: 10/12/10 12:49		Analyzed: 10/13/10 10:06					
QC Source Sample: SL-101210-EW (A10J143-01)												
ASTM D2216												
% Solids	**84.4**	1.00	1.00	% by Weight	1	---	85.5	---	---	1	20%	DW-01

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

SAMPLE PREPARATION INFORMATION

Diesel Range (C10-C22) and Oil Range (>C22-C40) Hydrocarbons by NWTPH-Dx - Silica Gel Cleanup

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010199							
A10J143-01	Soil	NWTPH-Dx(SG)	10/12/10 07:30	10/12/10 09:36	13.26g/5mL	15g/5mL	1.13
Batch: 1010214							
A10J143-01RE1	Soil	NWTPH-Dx(SG)	10/12/10 07:30	10/12/10 17:42	13.42g/5mL	15g/5mL	1.12

Polychlorinated Biphenyls by EPA 8082A

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010233							
A10J143-01	Soil	EPA 8082A	10/12/10 07:30	10/13/10 12:36	21.12g/5mL	10g/5mL	0.47

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010248							
A10J143-01RE1	Soil	EPA 8081B	10/12/10 07:30	10/13/10 12:27	32.05g/20mL	15g/5mL	1.87

Semivolatile Organic Compounds by EPA 8270D

Prep: EPA 3546/3640A (GPC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010246							
A10J143-01RE1	Soil	EPA 8270D P/P/P	10/12/10 07:30	10/13/10 12:23	30.58g/8mL	10g/2mL	1.31

Phthalates by EPA 8270D SIM

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010231							
A10J143-01	Soil	EPA 8270D (SIM)	10/12/10 07:30	10/13/10 12:23	30.58g/2mL	15g/5mL	0.20

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010194							

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Anchor Environmental, LLC Portland 6650 SW Redwood Lane Ste. 333 Portland, OR 97224	Project: **T4** Project Number: [none] Project Manager: John Verduin	**Reported:** 10/20/10 17:07

SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A10J143-01	Soil	EPA 6020	10/12/10 07:30	10/12/10 08:48	0.484g/50mL	0.5g/50mL	1.03

Conventional Chemistry Parameters

Prep: PSEP TOC

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010280							
A10J143-01	Soil	SM 5310B MOD	10/12/10 07:30	10/15/10 12:06	5g/5g	5g/5mL	NA

Grain Size by ASTM D 422

Prep: ASTM D 421

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010335							
A10J143-01	Soil	ASTM D 422	10/12/10 07:30	10/18/10 17:58	1N/A/1N/A	1N/A/1mL	NA

Percent Dry Weight

Prep: Dry Weight

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1010209							
A10J143-01	Soil	ASTM D2216	10/12/10 07:30	10/12/10 12:49	1N/A/1N/A	1N/A/1mL	NA

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

Notes and Definitions

Qualifiers:

A-01a	Sample is non-homogeneous. Sample will be re-extracted due to high RPD value.
B	Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A. Sample Final Volume includes the GPC dilution factor.
C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
DW-01	ASTM D 2216 Dry Weight value used to dry weight correct analytical results.
F-03	The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
GS-01	See final pages of this report for Particle Size Analysis results and accumulation curve.
J	Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-02	Spike recovery is outside of established control limits due to sample matrix interference.
Q-04	Percent recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
Q-16	Reanalysis of an original Batch QC sample.
Q-37	Sample is non-homogenous. Sample results are Non-Detect and duplicate results have hits greater than the MRL. See Duplicate results.
R-04	Reporting levels elevated due to dilution necessary for analysis.
S-03	Duplicate extraction and analysis confirms surrogate failure due to a sample matrix effect.
S-05	Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
S-06	Surrogate recovery is outside of established control limits.
X	See Case Narrative.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.

Apex Laboratories

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Anchor Environmental, LLC Portland	Project:	**T4**		
6650 SW Redwood Lane Ste. 333	Project Number:	[none]		**Reported:**
Portland, OR 97224	Project Manager:	John Verduin		10/20/10 17:07

Blank Policy

Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.

For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

APEX LABS **CHAIN OF CUSTODY** Lab # A10J143 COC 1 of 1

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Anchor QEA, LLC | Project Mgr: John Verduin | Project Name: P.O.P - T4 | Project #

Address: 1423 3rd Avenue, Ste. 300, Seattle WA 98101 | Phone: 206-287-9130 | Fax: 206-287-9131 | Email: jverduin@anchorqea.com

Sampled by: Timothy J. Stone / Anchor QEA

Site Location: OR WA Other:

ANALYSIS REQUEST

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx *	NWTPH-Gx	BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs	8270 SIM PAHs (PSEP)	8082 PCBs (PSEP)	8081 Chlor. Pest (PSEP)	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn	TCLP Metals (8)	1200-COLS	1200-Z	Grainsize (422-63)	TS-%Moisture (D2216)	TOC (5310B)
SL-101210-EW		10/12/10	0730	S	3		X						X	X	X			X				X	X	X

Normal Turn Around Time (TAT) = 7-10 Business Days

TAT Requested (circle): 24 HR 48 HR 72 HR 4 DAY 5 DAY Other: ASAP

YES NO

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
* perform cleanups as required
* Report preliminary results as soon as available

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Timothy J Stone Date: 10/12/10	Signature: [signature] Date: 10/12/10	Signature: Date:	Signature: Date:
Printed Name: Timothy J Stone Time:	Printed Name: DAVID YNK Time: 8:30	Printed Name: Time:	Printed Name: Time:
Company: Anchor QEA, LLC	Company: Apex Labs	Company:	Company:

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503-718-2323 Phone
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Anchor Environmental, LLC Portland	Project: **T4**	
6650 SW Redwood Lane Ste. 333	Project Number: [none]	**Reported:**
Portland, OR 97224	Project Manager: John Verduin	10/20/10 17:07

APEX LABS COOLER RECEIPT FORM

Client: Anchor QEA Element WO#: A10 J143

Project/Project #: POP T4

Delivery info:

Date/Time Received: 10/12 @ 8:30 By: DMA Jack

Delivered by: Apex Courier ___ Client X FedEx ___ UPS ___ DHL ___ Other ___

Courier/Client Name or Air Bill # ___

Cooler Inspection Inspected by: D @ 10/12 8:55

Chain of Custody:

Included? Yes X No ___ Signed/Dated by Client? Yes X No ___

Signed/Dated by Apex Personnel? Yes X No ___

Coolers: No. of Coolers: 1

	Cooler #1	Cooler #2	Cooler #3	Cooler #4
Temperature (deg. C)	5.5			
Received on Ice? (Y/N)	Y			
Temp. Blanks? (Y/N)	N			
Ice Type: (Gel/Real/Other)	R			
Condition:	ok			

Samples Inspection: Inspected by: Kendra 10/12 @ 8:38

All Samples Intact? Yes X No ___ Comments: ___

Bottle Labels/COCs agree? Yes X No ___ Comments: ___

Containers Appropriate for Analysis? Yes X No ___ Comments: ___

Do VOA Vials have Visible Headspace? Yes ___ No ___ NA X

Comments ___

Water Samples: pH Checked and Appropriate (except VOAs): Yes ___ No ___ NA X

Comments: ___

Additional Information:

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422

Sample ID: SL-101210-EW (A10J143-01)

Grain Size Analysis Summary from Sieving and Hydrometer Testing		Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel				*2.54*
Retained on No. 4 sieve		4.75	97.46	2.54
Sand				*57.43*
Coarse sand, passing No. 4 sieve and retained on No. 10 sieve		2.00	96.17	1.29
Coarse sand, passing No.10 sieve and retained on No. 20 sieve		0.8500	93.32	2.85
Medium sand, passing No.20 sieve and retained on No. 40 sieve		0.4250	88.55	4.76
Medium sand, passing No.40 sieve and retained on No. 60 sieve		0.2500	82.9	5.65
Medium sand, passing No. 60 sieve and retained on No.100 sieve		0.1500	68.85	14.05
Fine sand, passing No. 100 sieve and retained on No.140 sieve		0.1060	53.05	15.80
Fine sand passing No. 140 sieve and retained on No. 200 sieve		0.0750	40.02	13.03
Silt and Clay (Measurements in the Clay fraction are noted)				*36.14*
Silt passing No. 200 sieve and retained on No. 230 sieve		0.0630	35.29	4.73
Hydrometer Test			35.29	0
Hydrometer Test		0.0502	26.61	8.67
Hydrometer Test		0.0364	21.15	5.46
Hydrometer Test		0.0260	17.25	3.9
Hydrometer Test		0.0187	13.34	3.9
Hydrometer Test		0.0137	11.78	1.56
Hydrometer Test		0.0098	8.71	3.07
Hydrometer Test		0.0070	7.25	1.46
Hydrometer Test		0.0056	7.5	0
Hydrometer Test	Clay	0.0049	6.04	1.21
Hydrometer Test	Clay	0.0034	5.61	0.43
Hydrometer Test	Clay	0.0028	4.63	0.98
Hydrometer Test	Clay	0.0014	3.88	0.76

Grain Size Summary	**Percent of Total Sample**
Gravel	2.5
Sand	57.4
Coarse sand	4.1
Medium sand	24.5
Fine sand	28.8
Silt	32.8
Clay	3.4

Case Narrative for Sample ID: SL-101210-EW (A10J143-01)

No difficulty dispersing the fraction passing the No. 10 sieve.

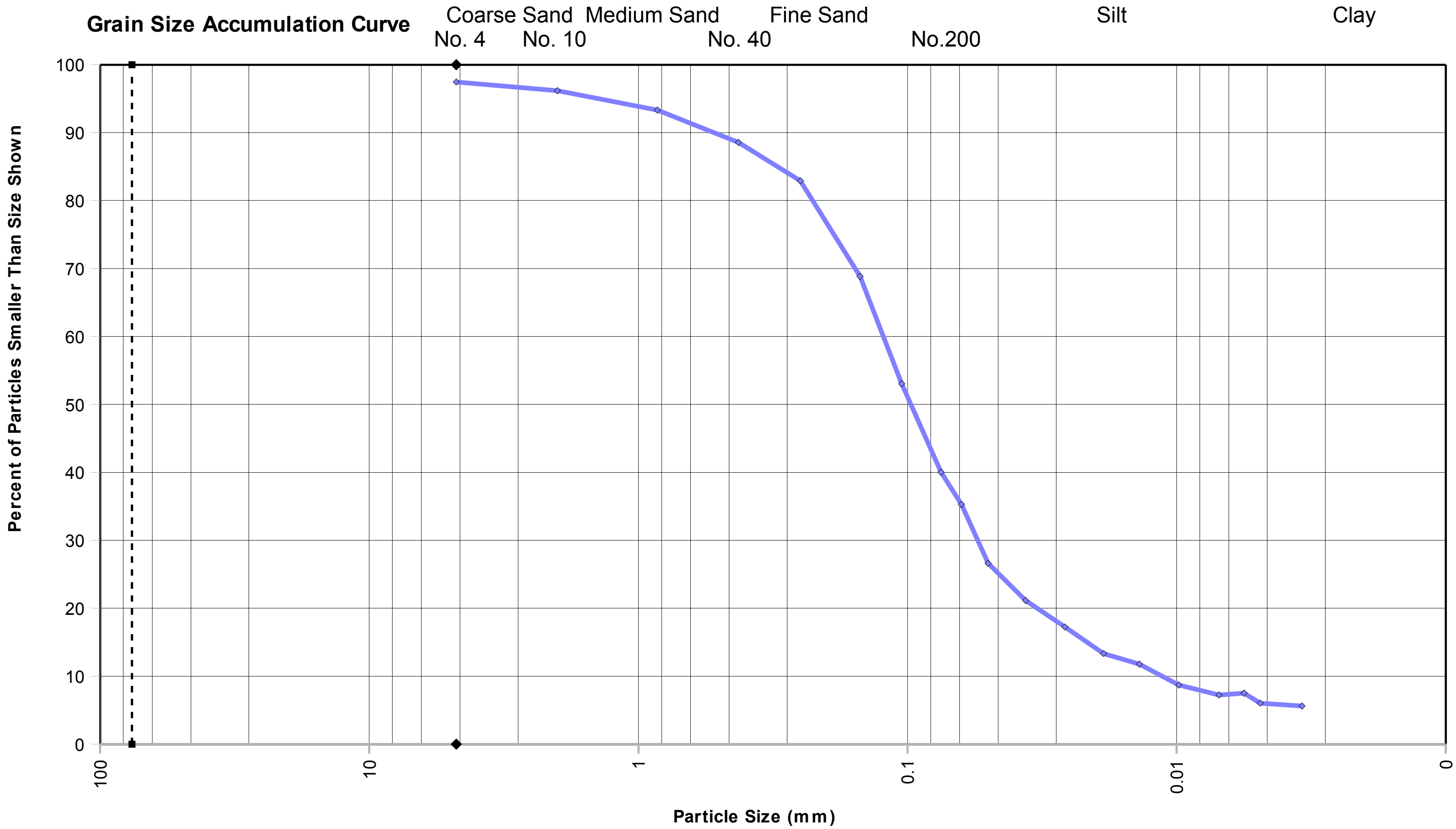
Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

The assumed specific gravity used in the calculations was 2.65.

Samples that are mainly sand require 100g of sample for hydrometer analysis. This sample was expected to be mostly silt, and so only 60 grams of sample was used. The silt and clay results may be slightly biased due to this deviation.

REGISTERED PROFESSIONAL
OREGON
JILL BETTS
EXPIRES 4-30-11
G 2054
GEOLOGIST

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422



Sample ID:	SL-101210-EW (A10J143-01)			
Specific Gravity	MAXIMUM PARTICLE SIZE	GRAVEL & SAND		SOIL DESCRIPTION
		PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Angular	Hard and durable	SAND with silt

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Data Validation Review Report – EPA Level 2

Project:	Port of Portland Wheeler Bay
Project Number:	050332-01
Date:	December 13, 2010

This report summarizes the review of analytical results for 2 soil samples collected September 14, 2010. The samples were collected by Anchor QEA, LLC and submitted to Apex Laboratories, LLC (Apex) in Tigard, Oregon. The samples were analyzed for the following analyses:

- Semivolatile organic compounds (SVOCs) by United States Environmental Protection Agency (USEPA) method 8270D and 8270D SIM
- Aroclor polychlorinated biphenyls (PCBs) by USEPA method 8082A
- Chlorinated pesticides by USEPA method 8081B
- Diesel range organics (DRO) and oil range organics (ORO) by NWTPHDx
- Grain size (GS) by ASTM method D422
- Total solids (TS) by ASTM method D2216
- Total organic carbon (TOC) by Standard Method (SM) 5310B Modified

Apex sample data group (SDG) numbers A10I165 and A10J143 were reviewed in this report. Samples reviewed in this report are presented in Table 1.

Table 1
Samples Reviewed

Sample ID	Lab ID	Matrix	Analyses Requested
Select Fill -100914-1	A10I165-01	Soil	SVOCs, PCBs, pesticides, DRO, ORO, GS, TS
SL-101210-EW	A10J143-01	Soil	SVOCs, PCBs, pesticides, DRO, ORO, GS, TS, TOC

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures and data quality objective sections of the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP). Laboratory results were reviewed following *USEPA Contract*

Laboratory Program National Functional Guidelines for Inorganics Data Review (USEPA 2004), *USEPA National Functional Guidelines for Organic Data Review* (USEPA 1999), and *USEPA National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2008) as guidelines, and applying laboratory and method QC criteria as stated in SW 846, Third Edition, *Test Methods for Evaluating Solid Waste*, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody forms were signed by Apex at the time of sample receipt; the samples were received cold and in good condition.

Holding Times and Sample Preservation and Analytical Methods

Samples were appropriately preserved and analyzed within holding times.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes with the following exceptions:

- Pesticides – Methoxychlor was detected in one of the method blanks at a level between the method detection limit (MDL) and the method reporting limit (MRL). This analyte was not detected in the associated sample so no data were qualified.
- Metals – Antimony was detected in one of the method blanks at a level between the MDL and the MRL. The associated sample result was not significantly greater than (>5x) the level detected in the method blank and has been qualified as a non-detect.
- SVOCs – Bis(2-ethylhexyl)phthalate was detected in one of the method blanks above the MRL and butyl benzyl phthalate was detected between the MDL and the MRL. The associated sample results were not significantly greater than (>5x) the levels detected in the method blank and have been qualified as non-detects.

See Table 2 for qualified data.

Field Quality Control

Rinse Blanks

No rinse blanks were collected in association with of the samples.

Field Duplicates

No field duplicates were collected in association with the samples.

Surrogate Recoveries

All surrogate recoveries were within the laboratory control limits with the following exceptions:

- SVOCs - The duplicate analysis of sample Select Fill-100914-1 resulted in the recovery of all three surrogates above control limits. Since the initial sample analysis resulted in surrogate recoveries within control limits and the detected results were between the MDL and the MRL, no data were qualified.
- PCBs – Both surrogates in the analysis of sample SL-101210-EW recovered below control limits. Associated sample results have been qualified "UJ" to indicate a potentially low bias. See Table 2 for qualified data.
- SVOCs – One of the base-neutral surrogates in the duplicate analysis of sample SL-101210-EW recovered below control limits. Since the other two base-neutral surrogates recovered within control limits, no data were qualified.

Compound Confirmation

No PCBs or pesticides were detected in the samples.

Laboratory Control Sample and LCS Duplicate

Laboratory control samples (LCSs) and LCS Duplicates (LCSDs) were analyzed at the required frequencies. All LCS/LCSD analyses yielded percent recoveries (%R)s and/or relative percent difference (RPD) values within laboratory control limits.

Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) samples were analyzed at the required frequencies or laboratory duplicates were analyzed in place of MSDs. All %Rs and/or RPD values were within laboratory control limits with the exception of Aroclor 1260 in the matrix spike performed on sample SL-101210-EW which recovered below control limits. Associated sample results have been qualified "UJ" to indicate a potentially low bias.

Laboratory Duplicates

Laboratory duplicates were analyzed at the required frequencies. RPD control limits do not apply if the sample and/or duplicate result is less than 5x the MRL. For results <5x the MRL, the difference between the sample and duplicate result must be <2x the MRL for solid matrices and <MRL for water matrices. All duplicate results were within control limits. The duplicate ORO result for sample SL-101210-EW was 104 mg/kg while the result from the initial analysis was 39.2 mg/kg. The sample was further homogenized and re-extracted upon request. The sample was not re-extracted in duplicate. Because the re-extracted result was from a more homogenized aliquot, it is considered more representative of the sample and should be reported.

Method Reporting Limits

Reporting limits were deemed acceptable as reported. All values were reported using the laboratory reporting limits. Values were reported as undiluted, or when reported as diluted, the reporting limit accurately reflects the dilution factor. Some reporting limits were elevated due to matrix interference.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD %R values, with the exceptions noted above. Precision was also acceptable as demonstrated by the laboratory duplicates, MS/MSD, and LCS/LCSD RPD values. Three results were qualified due to method blank contamination. Most data were deemed acceptable as reported; all other data are acceptable as qualified. Table 2 summarizes the qualifiers applied to samples reviewed in this report.

Data Qualifier Definitions

U Indicates the compound or analyte was analyzed for but not detected at or above the specified limit.

J Indicates an estimated value.

R Indicates data is rejected and unusable

UJ Indicates the compound or analyte was analyzed for but not detected and the specified limit reported is estimated

DNR Do not report

Table 3
Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
Select Fill-100914-1	Metals	Antimony	0.207J mg/kg	1.09U mg/kg	Method blank contamination
SL-101210-EW	NWTPHDx	ORO	39.2J mg/kg	DNR	Report from re-extracted analysis
	PCBs	Aroclor 1016	0.00554U mg/kg	0.00554UJ mg/kg	Low surrogate %Rs
		Aroclor 1221	0.00554U mg/kg	0.00554UJ mg/kg	
		Aroclor 1232	0.00554U mg/kg	0.00554UJ mg/kg	
		Aroclor 1242	0.00554U mg/kg	0.00554UJ mg/kg	
		Aroclor 1248	0.00554U mg/kg	0.00554UJ mg/kg	Low surrogate and MS %Rs
		Aroclor 1254	0.00554U mg/kg	0.00554UJ mg/kg	
		Aroclor 1260	0.00554U mg/kg	0.00554UJ mg/kg	
	SVOCs	Bis(2-ethylhexyl)phthalate	0.0282 mg/kg	0.0282U mg/kg	Method blank contamination
		Butyl benzyl phthalate	0.00870J mg/kg	0.0153U mg/kg	

REFERENCES

USEPA. 1983. Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA 600/4 79-020.

USEPA. 1986. Test methods for Evaluating Solid Waste: Physical/Chemical Methods. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 530/SW-846.

USEPA. 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation (OSRTI). EPA 540-R-04-004. October.

USEPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. USEPA 540/R-99/008. October.

USEPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. USEPA 540-R-08-01. June.

APPENDIX F
ASH CREEK ASSOCIATES, INC. LETTER RE: SURFACE SOIL SAMPLING – WHEELER BAY EROSION, TERMINAL 4 SLIP 1 UPLAND FACILITY, PORTLAND, OREGON

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

September 13, 2010

Mr. Kelly Madalinski
Port of Portland
7200 NE Airport Way
Portland, Oregon 97218

Re: Surface Soil Sampling – Wheeler Bay Erosion
Terminal 4 Slip 1 Upland Facility
Portland, Oregon
1066-07

Dear Mr. Madalinski:

This letter presents the results of surface soil sampling activities to support repair of erosion on the Wheeler Bay bank at the Terminal 4 Slip 1 Upland Facility (the Facility) in Portland, Oregon (Figures 1 and 2). The Port of Portland (Port) is under a Voluntary Cleanup Program (VCP) Agreement with the Oregon Department of Environmental Quality (DEQ) for Remedial Investigation (RI), Source Control Measures (SCMs), and Feasibility Study (FS) at the Facility (dated December 4, 2003).

BACKGROUND

Wheeler Bay Source Control Action. In summer/fall 2008, a source control action was completed at Wheeler Bay as part of the Phase I Removal Action at Terminal 4. The source control action combined shoreline stabilization with capping of impacted soils. In summary, the Wheeler Bay shoreline stabilization activities included the following:

- Site Grading – Site grading was conducted to reduce the overall slope of most of the Wheeler Bay shoreline from 2H:1V to 3H:1V.
- Armor Stone/Habitat Cover – From elevation 10 feet to 15 feet, armor stone (rip rap) was placed to resist erosive forces of river currents, boat wakes, and waves. The armor stone was covered with sand/gravel habitat material, habitat logs, and large woody debris to enhance the habitat for fish.
- Topsoil and Planting – Above elevation 15 feet, the slope was covered with a topsoil cap and erosion control fabric. The lower portion (between elevation 15 feet and 20 feet) was planted with cottonwood and willow trees. The portion above elevation 20 feet was planted with a native grass seed mix.

Erosion Observed. During a site visit the week of June 21, 2010, erosion was observed in the landscaped shoreline on the Wheeler Bay bank. The areas of erosion extended above elevation 15 feet NGVD into the willow planting area and were focused largely between stations 0+(-10) and 2+15 (the portion nearest the main river channel). At five locations (defined by the approximate center stations 0+(-07), 0+30, 1+00, 1+70, and 1+90), the demarcation layer installed to identify the top of the impacted soil beneath the cap was exposed. Stations 0+(-07) and 0+30 had the greatest visible erosion. Photographs of the erosion are included in Attachment A. Based on the observation of the exposed demarcation layer, in addition to erosion of the imported topsoil, it is possible that impacted soil from beneath the cap was eroded.

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The Port has designed a repair for the erosion of the bank and is in the process of planning the construction to complete the repair work. In general, the proposed repair consists of removal and stockpiling of eroded topsoil/habitat material, placement of armor stone to buttress and protect the topsoil, and replacement of the stockpiled soil/habitat material at the toe of the new armor. The work is expected to begin in October 2010.

Summary of Historical Sampling of Wheeler Bay Bank. Composite surface soil samples were collected along the bank of Wheeler Bay during the RI and source control action. The composite samples were analyzed for total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, metals, and phthalates. Some discrete samples were analyzed for selected chemicals. The results were summarized in the source control completion report (Ash Creek, 2009) and the corresponding tables and sample location plan are reproduced in Attachment B. TPH, PAHs, pesticides, metals, and phthalates were detected in one or more of the samples.

As part of the Wheeler Bay stabilization project, import materials were tested for lead. The concentration of lead in the topsoil and habitat material was 7.7 and 2.5 milligrams per kilogram (mg/kg), respectively.

SAMPLING ACTIVITIES

To support the planned erosion repair construction and assess if impacted soil was eroded from beneath the cap, sampling was completed below areas where the demarcation layer was exposed. On August 27, 2010, surface soil samples were collected in accordance with the United States Environmental Protection Agency (EPA)-approved work plan (Ash Creek, 2010).

Figure 3 shows the locations of the collected surface soil samples. The area of sampling was between elevation 10 feet and 15 feet (as determined based on as-constructed survey of the Wheeler Bay source control action) and between station 0+(-10) and 1+90. This level on the bank corresponds to the armor/habitat material area in the bank stabilization project. A total of 30 soil samples were collected as follows:

- Six composite samples:
    - S-42, station 0+00 to 1+00, approximately elevation 14 feet where visibly eroded material was present at thicknesses up to approximately 4 inches;
    - S-43, station 0+00 to 1+00, approximately 1 to 2 feet downhill from where visibly eroded material was present; the surface consisted of reworked habitat material;
    - S-44, station 0+00 to 1+00, approximately elevation 11 feet, near the toe of the original stabilized slope; the surface consisted of reworked habitat material;
    - S-45, station 1+00 to 2+00, approximately elevation 14 feet where visibly eroded material was present;
    - S-46, station 1+00 to 2+00, approximately 1 to 2 feet downhill from where visibly eroded material is present; the surface consisted of reworked habitat material; and
    - S-47, station 1+00 to 2+00, approximately elevation 11 feet, near the toe of the original stabilized slope; the surface consisted of reworked habitat material.
- 24 discrete samples: Each composite sample consisted of a combination of four discrete samples. Each discrete sample (numbered according to the composite sample number and labeled A through D) was also collected for a total of 24 discrete samples.

The locations of the composite and discrete sub-samples are shown on Figure 3. The locations generally corresponded to the planned locations with minor adjustments made to locate discrete samples beneath the areas with maximum observed erosion. The sample locations were recorded using a high-accuracy, handheld global positioning system (GPS) device (Trimble© GeoXH™).

Surface soil was collected from a depth of 0 to 4 inches at the four discrete sub-sample locations within each of the six composite sample areas. This sample interval was selected based on the observed thickness of the eroded soil and the anticipated depth to underlying armor stone. The samples were collected in accordance with Standard Operating Procedure (SOP) 2.2 (Attachment C) with the following modification: Prior to placement of samples into the sample container, soil was passed through a No. 4 sieve to remove gravel-size particles.

CHEMICAL ANALYSES

The soil samples were submitted to Specialty Analytical in Clackamas, Oregon. Composite soil samples S-42 and S-45 (samples collected from the eroded material) and discrete samples S-42A and S-42B (samples collected below the two areas of greatest observed erosion) were analyzed for total lead on a 1-day turnaround basis. Prior to chemical analysis, the laboratory passed the samples through a No. 10 sieve. The remaining samples were held pending results on these samples. Based on the analytical results from the first four samples (see below), no further analyses were completed.

ANALYTICAL RESULTS

Analytical results are listed in Table 1. A copy of the laboratory report is included in Attachment D. A quality assurance review of the data was completed and no qualifiers were attached to the data as a result of the review.

Table 1 also lists the presumed background concentration and relevant screening levels for lead. Except for the result for sample S-42A, the detected concentrations of lead are equal to or less than the presumed background concentration. The concentration of lead in sample S-42A is less than the relevant screening levels for human and ecological receptors.

CONCLUSIONS AND RECOMMENDATIONS

In 2008, a source control action was completed at the Wheeler Bay shoreline that consisted of bank stabilization and capping of soil with chemicals above relevant screening levels. In the summer of 2010, erosion of the bank was observed, and the demarcation layer placed to identify impacted soils was exposed in several places. Surface soil samples were collected in the areas of observed erosion and analyzed for lead, serving as an indicator of impacted soil. One of the four samples analyzed had a detected concentration of lead above the presumed background concentration of lead, but the detected concentrations were below relevant screening levels for human and ecological receptors. Based on these results, no further sampling is recommended, and the bank erosion repair should proceed as proposed.

Sincerely,

REGISTERED PROFESSIONAL ENGINEER
15,147 PE
OREGON
OCT. 2, 1990
HERBERT F. CLOUGH
EXPIRES: DEC. 31, 2011

Herbert F. Clough, P.E.
Principal

REFERENCES

Ash Creek, 2009. Wheeler Bay Source Control Completion Report, Terminal 4 Slip 1 Upland Facility. September 2009.

Ash Creek, 2010. Final Proposed Surface Soil Sampling – Wheeler Bay Erosion, Terminal 4 Slip 1 Upland Facility, Portland, Oregon. August 27, 2010.

ATTACHMENTS

Table 1 – Soil Analytical Results

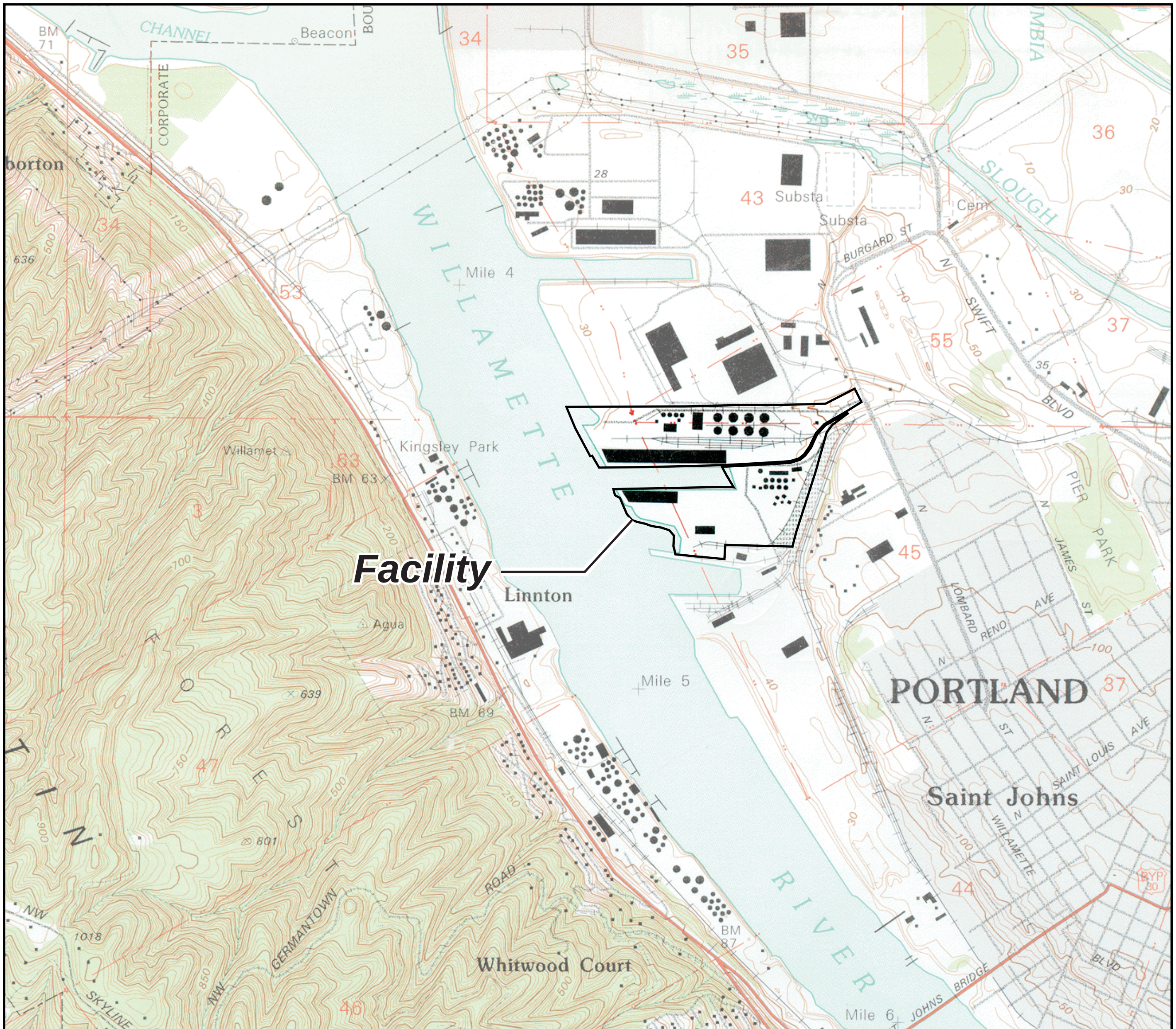
Figure 1 – Facility Location Map
Figure 2 – Facility Vicinity Plan
Figure 3 – Sampling Plan

Attachment A – Photograph Log
Attachment B – Wheeler Bay Bank Historical Sample Results
Attachment C – Standard Operating Procedure 2.2
Attachment D – Analytical Laboratory Report

Table 1
Soil Analytical Results: Lead
Wheeler Bay Erosion
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Sample	Sample Type	Station	Depth in Feet	Lead Concentration in mg/kg
S-42	Composite	0+(-10) to 0+90	0 - 0.3	17
S-42A	Grab	0+(-7)	0 - 0.3	38
S-42B	Grab	0+30	0 - 0.3	8.5
S-45	Composite	0+90 to 1+90	0 - 0.3	3.2
Presumed Background				17
DEQ RBC				800
DEQ SLV				80
PEC				128
Portland Harbor PRG				91

Notes:
1. Samples collected August 27, 2010.
2. Lead by EPA Method 6010.
3. mg/kg (ppm) = milligrams per kilogram (parts per million).
4. Presumed background from Portland Harbor Joint Source Control Strategy Table 3-1: Screening Level Values for Soil/Storm Water Sediment (7/16/07 Revision).
5. DEQ RBC = Oregon Department of Environmental Quality Risk-based concentration for Occupational Direct Contact (September 2009 Update).
6. DEQ SLV = Oregon DEQ Level II Screening Level Values (SLVs) for non-endangered terrestraial receptors (DEQ 2001)
7. PEC = Probable Effects Concentrations for aquatic receptors (MacDonald et al. 2000)
8. Portland Harbor PRG = Lower Willamette Group (LWG) Preliminary Remediation Goals (March 24, 2010) as confirmed for use in the Feasibility Study in U.S. EPA April 21, 2010 letter to the LWG.



Note: Base map prepared from the USGS 7.5-minute quadrangle of Linnton, Oregon, dated 1990.

0 2,000 4,000

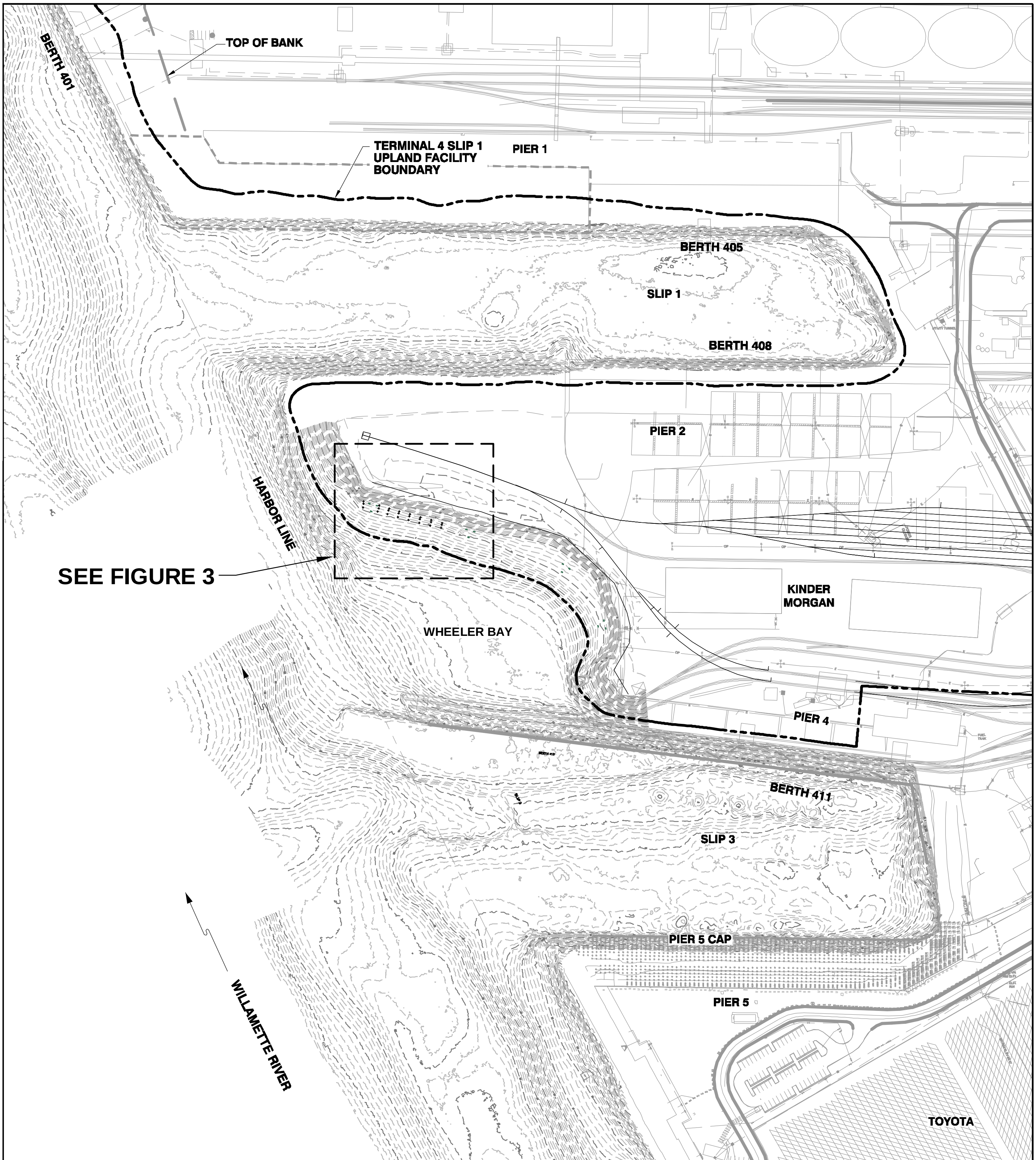
Approximate Scale in Feet

N

Facility Location Map

Surface Soil Sampling - Wheeler Bay Erosion
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc. Environmental and Geotechnical Consultants	Project Number	1066-07	Figure 1
	September 2010		

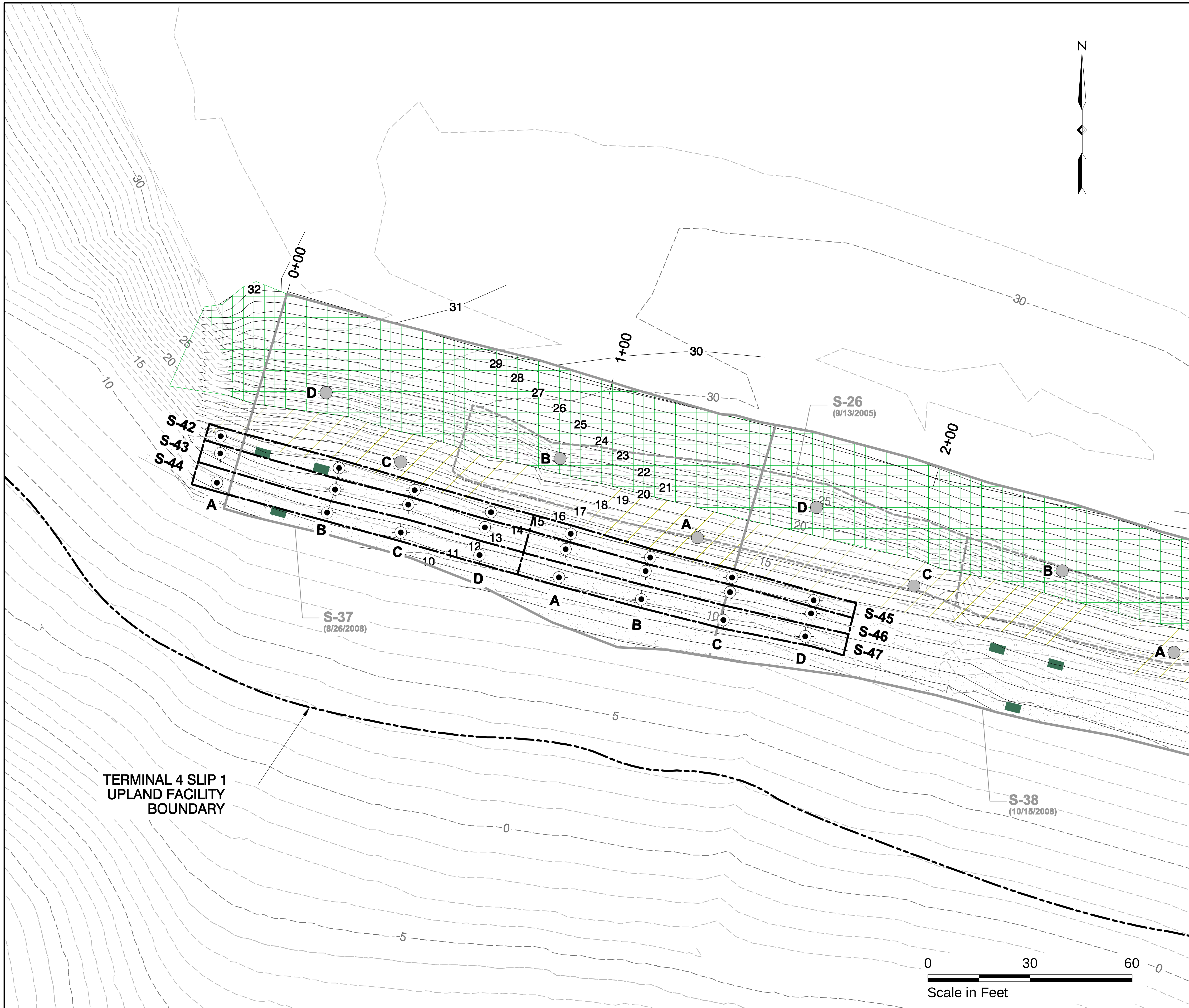


Facility Vicinity Plan

Surface Soil Sampling - Wheeler Bay Erosion
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1066-07	Figure
September 2010		2



LEGEND:

- S-37 (8/26/2008) — COMPOSITE SAMPLING BOUNDARY, IDENTIFICATION, AND (DATE SAMPLED)
- A — COMPOSITE SUB-SAMPLE LOCATION (2008)
- S-26 (9/13/2005) — RI RIVERBANK COMPOSITE SAMPLING BOUNDARY
- HYDROSEED AND JUTE MAT
- COIR FABRIC AND PLANTINGS WITH MULCH
- HABITAT ROCK AND LARGE WOODY DEBRIS
- ARMOR ROCK
- ECOLOGY BLOCK HABITAT LOG ANCHORS (BURIED MINIMUM 4 FEET BELOW FINISH GRADE)
- -25 — PRE-CONSTRUCTION CONTOURS
- 29 — AS-BUILT CONTOURS
- S-42 — COMPOSITE SAMPLING BOUNDARY AND IDENTIFICATION
- A — SUB-SAMPLE LOCATION

NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
   VERTICAL DATUM: NGVD 29-47
   CONTOUR INTERVAL = 1 FT
2. PRE-CONSTRUCTION BATHYMETRIC SURVEY BY PORT OF PORTLAND DATED NOVEMBER, 2007
3. PRE-CONSTRUCTION UPLAND SURVEY PROVIDED BY PORT OF PORTLAND DATED JANUARY 2008.
4. AS-BUILT UPLAND SURVEY BY MINISTER-GLASER DATED OCTOBER 13, 2008.

Sampling Plan

Surface Soil Sampling - Wheeler Bay Erosion
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1066-07	Figure
September 2010		3

Attachment A

Photograph Log

ATTACHMENT A
PHOTOGRAPH LOG

Project Name: Wheeler Bay Erosion
Project Number: 1066-07

Client: Port of Portland
Location: Portland, Oregon

Photo No: 1	
Photo Date: August 17, 2010	
Orientation: Looking Northeast	
Description: Erosion of topsoil exposing demarcation layer. Approximately station 0+(-05).	
Photo No: 2	
Photo Date: August 17, 2010	
Orientation: Looking North	
Description: Erosion of topsoil exposing demarcation layer. Eroded topsoil layer visible in center of photograph. Approximately station 0+30.	

ATTACHMENT A
PHOTOGRAPH LOG

Project Name: Wheeler Bay Erosion
Project Number: 1066-07

Client: Port of Portland
Location: Portland, Oregon

Photo No: 3	
Photo Date: August 17, 2010	
Orientation: Looking Northwest	
Description: Erosion of topsoil. Demarcation layer not visible. Approximately station 1+20.	
Photo No: 4	
Photo Date: August 17, 2010	
Orientation: Looking North	
Description: Erosion of topsoil. Demarcation layer not visible. Approximately station 1+50.	

ATTACHMENT A
PHOTOGRAPH LOG

Project Name: Wheeler Bay Erosion
Project Number: 1066-07

Client: Port of Portland
Location: Portland, Oregon

Photo No: 5	
Photo Date: August 17, 2010	
Orientation: Looking North	
Description: Erosion of topsoil. Demarcation layer not visible. Approximately station 2+00.	

Attachment B

Wheeler Bay Bank Historical Sample Results

Table 4 - Subgrade Soil Samples: PAHs
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Sample Location:	Preliminary Screening Levels		T4S1S-26	T4S1S-26A	T4S1S-26B	T4S1S-26C	T4S1S-26D	T4S1S-27	T4S1S-27A
Sample ID:	PRG	SLV	T4S1S-26	T4S1S-26A	T4S1S-26B	T4S1S-26C	T4S1S-26D	T4S1S-27	T4S1S-27A
Sample Interval:			0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Sampled:			9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005
PAHs (µg/kg)									
Naphthalene	190,000	10,000	30.3 J, D	13.6 U	5.55 J, D	13.9 U	83.2	69.2	269
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	35.7 J, D	13.6 U	48.8 D	13.9 U	108	18.7 J	114
Acenaphthene	29,000,000	20,000	70.1 U	13.6 U	27.1 D	13.9 U	77.3 U	97.4	375
Fluorene	26,000,000	30,000	70.1 U	13.6 U	28.7 D	13.9 U	77.3 U	48.0 J	207
Dibenzofuran	3,100,000	2	--	--	--	--	--	--	--
Phenanthrene	--	--	234 D	23.2 D	361 D	25.4 D	443	376	1,680
Anthracene	100,000,000	--	57.0 J, D	3.40 J, D	206 D	3.63 J, D	99.6	93.5	471
Fluoranthene	22,000,000	--	962 D	87.5 D	7,990 D	95.4 D	1,640	986	4,650
Pyrene	29,000,000	--	883 D	83.6 D	7,220 D	86.7 D	1,750	722	3,440
Benzo(b)fluoranthene	2,100	--	874 D	89.4 D	2,270 D	94.0 D	1,500	916	3,690
Benzo(k)fluoranthene	21,000	--	597 D	84.8 D	2,070 D	90.2 D	1,300	583	3,240
Benzo(a)anthracene	2,100	--	581 D	62.5 D	2,380 D	68.0 D	1,110	597	2,700
Chrysene	210,000	--	898 D	79.2 D	4,170 D	87.3 D	1,590	705	3,590
Benzo(a)pyrene	210	125,000	776 D	92.4 D	1,460 D	97.4 D	1,830	786	3,560
Indeno(1,2,3-cd)pyrene	2,100	--	514 D	55.4 D	433 D	54.8 D	790	581	2,280
Dibenz(a,h)anthracene	210	--	151 D	17.9 D	160 D	17.7 D	183	194	795
Benzo(g,h,i)perylene	--	--	611 D	61.4 D	358 D	60.1 D	926	655	2,560

Notes:
1. Only detected compounds are reported in the table. The complete analyte list is presented in the Sampling and Analysis Plan (Appendix A) of the RI Work Plan (Hart Cr
2. PAHs = Polynuclear Aromatic Hydrocarbons by EPA Method 8270C (SIM).
3. µg/kg = Micrograms per kilogram.
4. PRG = EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soil (October 2004).
5. -- = No screening level available or not analyzed.
6. J = The result is an estimated concentration that is less than the method reporting limit (MRL) but greater than or equal to the method detection limit (MI
7. U = The compound was analyzed for but was not detected at or above the MRL/MDL.
8. Shaded values indicate that the detected concentration exceeds the PRG.
9. Sample ID nomenclature is per the following: type of sample-sample number-depth in feet-designation. For example, T4S1SB-46-1-1 = soil boring (SB) number 46, collected 1 foot below the ground surface, primary sample (1). T4S1S-6 = surface soil sample num
10. SLV = Oregon Department of Environmental Quality Level II Screening Level Values (SLVs) for Terrestrial Receptors (lowest available value
11. Boxed values indicate that the detected concentration exceeds the SLV (only samples from 0 to 3 feet were screened against the SLV).

Table 4 - Subgrade Soil Samples: PAHs
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Sample Location:	Preliminary Screening Levels		T4S1S-27B	T4S1S-27C	T4S1S-27D	T4S1S-28	T4S1S-28A	T4S1S-28B	T4S1S-28C	T4S1S-28D	T4S1S-29	T4S1S-30	T4S1S-30A	T4S1S-30C	T4S1S-30D
Sample ID:			T4S1S-27B	T4S1S-27C	T4S1S-27D	T4S1S-28	T4S1S-28A	T4S1S-28B	T4S1S-28C	T4S1S-28D	T4S1S-29	T4S1S-30	T4S1S-30A	T4S1S-30C	T4S1S-30D
Sample Interval:	PRG	SLV	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Sampled:			9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005
PAHs (µg/kg)															
Naphthalene	190,000	10,000	13.6 U	54.7 U	54.5 U	28.3 J	107 D	55.2 U	13.8 U	68.4 U	388	39.5 J	344 U	33.2 J	6,480
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	13.6 U	54.7 U	54.5 U	67.6 U	18.2 J	55.2 U	13.8 U	68.4 U	176	69.2 U	344 U	55.2 U	347 U
Acenaphthene	29,000,000	20,000	9.59 J	54.7 U	54.5 U	151	843	55.2 U	13.8 U	68.4 U	164 J	183	295 J	171	1,180
Fluorene	26,000,000	30,000	7.51 J	54.7 U	54.5 U	114	825	55.2 U	13.8 U	68.4 U	116 J	72.5	105 J	70.3	1,240
Dibenzofuran	3,100,000	2	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	141	28.5 J	35.0 J	1,040	6,300	29.8 J	22.4	137	1,710	972	1,630	873	1,830
Anthracene	100,000,000	--	19.7	54.7 U	54.5 U	166	717	55.2 U	13.8 U	24.8 J	314	173	251 J	162	520 U
Fluoranthene	22,000,000	--	511	88.1	113	2,390	11,300	93.5	80.1	400	5,780	2,650	4,340	2,110	139 J
Pyrene	29,000,000	--	402	94.2	105	1,640	8,280	85.7	63.1	379	5,490	1,870	3,610	1,770	147
Benzo(b)fluoranthene	2,100	--	485	91.0	107	2,020	8,010	87.7	85.4	378	4,440	2,300	3,560	1,690	7.49 J
Benzo(k)fluoranthene	21,000	--	409	88.6	101	1,230	7,260	80.7	64.0	331	3,660	1,270	3,240	1,620	5.34 J
Benzo(a)anthracene	2,100	--	320	62.9	74.4	1,390	6,580	61.6	48.4	263	3,610	1,590	2,810	1,500	16.4
Chrysene	210,000	--	393	83.2	98.7	1,650	8,190	83.4	64.0	357	4,510	1,850	3,600	1,720	24.3
Benzo(a)pyrene	210	125,000	445	104	110	1,660	7,790	85.1	74.5	376	4,920	1,880	3,610	1,840	8.08 J
Indeno(1,2,3-cd)pyrene	2,100	--	181	60.6	61.4	1,130	4,460	49.1 J	30.5	247	3,500	1,220	1,950	950	13.9 U
Dibenz(a,h)anthracene	210	--	64.2	18.2 J	20.4 J	394	1,530	16.7 J	10.9 J	73.3	1,060	427	662	322	13.9 U
Benzo(g,h,i)perylene	--	--	181	74.4	68.3	1,240	4,770	56.3	30.5	290	4,160	1,280	2,160	997	13.9 U

Sample Location:	Preliminary Screening Levels		S-37	S-38	S-39	S-40	S-41
Sample ID:			T4S1S-26	T4S1S-26A	T4S1S-26B	T4S1S-26C	T4S1S-26D
Sample Interval:	PRG	SLV	Note 12	Note 12	Note 12	Note 12	Note 12
Date Sampled:			8/26/2008	10/4/2008	9/12/2008	9/12/2008	9/4/2008
PAHs (µg/kg)							
Naphthalene	190,000	10,000	163 U	30.6 U	171 U	144 U	149
2-Methylnaphthalene	--	--	--	--	--	--	--
Acenaphthylene	--	--	163 U	30.6 U	171 U	144 U	149 U
Acenaphthene	29,000,000	20,000	163 U	30.6 U	171 U	866	761
Fluorene	26,000,000	30,000	163 U	30.6 U	171 U	973	662
Dibenzofuran	3,100,000	2	--	--	--	--	--
Phenanthrene	--	--	181	146	225	4,360	4,470
Anthracene	100,000,000	--	163 U	30.6 U	171 U	479	556
Fluoranthene	22,000,000	--	486	212	542	4,330	7,380
Pyrene	29,000,000	--	558	201	514	3,560	5,540
Benzo(b)fluoranthene	2,100	--	359	169	477	2,560	5,110
Benzo(k)fluoranthene	21,000	--	273	128	398	2,190	4,150
Benzo(a)anthracene	2,100	--	293	120	391	2,560	4,610
Chrysene	210,000	--	357	164	498	2,850	5,440
Benzo(a)pyrene	210	125,000	342	158	453	2,520	4,620
Indeno(1,2,3-cd)pyrene	2,100	--	231	114	318	1,710	2,770
Dibenz(a,h)anthracene	210	--	163 U	34.5	171 U	633	987
Benzo(g,h,i)perylene	--	--	278	141	372	1,780	2,860

Notes:

1. Only detected compounds are reported in the table. The complete analyte list is presented in the Sampling and Analysis Plan (Appendix A) of the RI Work Plan (Hart Crowser, 2004a).
2. PAHs = Polynuclear Aromatic Hydrocarbons by EPA Method 8270C (SIM).
3. µg/kg = Micrograms per kilogram.
4. PRG = EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soil (October 2004).
5. -- = No screening level available or not analyzed.
6. J = The result is an estimated concentration that is less than the method reporting limit (MRL) but greater than or equal to the method detection limit (MDL).
7. U = The compound was analyzed for but was not detected at or above the MRL/MDL.
8. Shaded values indicate that the detected concentration exceeds the PRG.
9. Sample ID nomenclature is per the following: type of sample-sample number-depth in feet-designation. For example, T4S1SB-46-1-1 = soil boring (SB) number 46, collected 1 foot below the ground surface, primary sample (1). T4S1S-6 = surface soil sample number 6.
10. SLV = Oregon Department of Environmental Quality Level II Screening Level Values (SLVs) for Terrestrial Receptors (lowest available value).
11. Boxed values indicate that the detected concentration exceeds the SLV (only samples from 0 to 3 feet were screened against the SLV).
12. Sample is a 4-point composite collected at a depth of 0-1 foot below finish subgrade of the Wheeler Bay Stabilization project.

In general, the depth from finish grade to subgrade is 1 foot for two of the four composite subsamples and 2 feet for the other two composite subsamples.
The surface of the subgrade is delineated by a demarcation layer consisting of orange plastic mesh.

Table 5 - Subgrade Soil Samples: Pesticides
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Sample Location:	Preliminary Screening Levels		T4S1S-26	T4S1S-26A	T4S1S-26B	T4S1S-26C	T4S1S-26D	T4S1S-27	T4S1S-27A	T4S1S-27B	T4S1S-27C	T4S1S-27D
Sample ID:			T4S1S-26	T4S1S-26A	T4S1S-26B	T4S1S-26C	T4S1S-26D	T4S1S-27	T4S1S-27A	T4S1S-27B	T4S1S-27C	T4S1S-27D
Sample Interval:	PRG	SLV	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Sampled:			9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005
Pesticides (µg/kg)												
delta-BHC	--	--	1.04 U	1.37 U	6.87 U	1.39 U	7.70 U	1.02 U	6.78 U	1.35 U	1.37 U	1.37 U
Heptachlor	380	15,000	1.04 U	1.37 U	6.87 U	1.39 U	7.70 U	1.02 U	6.78 U	1.35 U	1.37 U	1.37 U
Heptachlor Epoxide	190	--	1.04 U	1.37 U	6.87 U	1.39 U	7.70 U	1.02 U	6.78 U	1.35 U	1.37 U	1.37 U
Aldrin	100	25,000	1.04 U	1.37 U	6.87 U	1.39 U	7.70 U	1.02 U	6.78 U	1.35 U	1.37 U	1.37 U
gamma-Chlordane	6,500	9,000	1.04 U	1.37 U	6.87 U	1.39 U	7.70 U	1.02 U	6.78 U	1.35 U	1.37 U	1.37 U
Endosulfan I	3,700,000	20,000	1.04 U	1.37 U	6.87 U	1.39 U	7.70 U	1.02 U	6.78 U	1.35 U	1.37 U	1.37 U
alpha-Chlordane	6,500	9,000	1.04 U	1.37 U	6.87 U	1.39 U	77.0 U	1.02 U	67.8 U	1.35 U	1.37 U	1.37 U
Dieldrin	110	300	0.761 J	1.37 U	68.7 U	1.39 U	77.0 U	2.04 U	67.8 U	1.35 U	1.37 U	1.37 U
4,4'-DDE	7,000	10	5.22	1.37 U	68.7 U	1.39 U	77.0 U	1.83 U	6.78 U	1.35 U	1.37 U	1.37 U
Endrin	180,000	40	2.09 U	1.37 U	6.87 U	1.39 U	7.70 U	2.04 U	67.8 U	1.35 U	1.37 U	1.37 U
4,4'-DDD	10,000	10	2.37	1.37 U	6.87 U	1.39 U	7.70 U	2.04 U	6.78 U	1.35 U	0.873 J	1.37 U
Endrin Aldehyde	--	--	2.09 U	1.37 U	6.87 U	1.39 U	77.0 U	2.04 U	67.8 U	1.35 U	1.37 U	1.37 U
4,4'-DDT	7,000	10	17.20	1.37 U	6.87 U	1.11 J	96.8	3.66	67.8 U	1.35 U	1.37 U	1.37 U
Endrin Ketone	--	--	2.09 U	1.37 U	6.87 U	1.39 U	77.0 U	2.04 U	67.8 U	1.35 U	1.37 U	1.37 U
Methoxychlor	3,100,000	500,000	2.09 U	1.37 U	68.7 U	1.39 U	77.0 U	2.04 U	67.8 U	1.35 U	1.37 U	1.37 U

Sample Location:	Preliminary Screening Levels		T4S1S-28	T4S1S-28A	T4S1S-28B	T4S1S-28C	T4S1S-28D	T4S1S-29	T4S1S-30	T4S1S-30A	T4S1S-30C	T4S1S-30D
Sample ID:			T4S1S-28	T4S1S-28A	T4S1S-28B	T4S1S-28C	T4S1S-28D	T4S1S-29	T4S1S-30	T4S1S-30A	T4S1S-30C	T4S1S-30D
Sample Interval:	PRG	SLV	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
Date Sampled:			9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005	9/13/2005
Pesticides (µg/kg)												
delta-BHC	--	--	1.01 U	1.03 U	1.02 U	1.02 U	1.01 U	1.03 U, D	1.03 U	1.03 U	1.01 U	1.04 U
Heptachlor	380	15,000	1.01 U	1.03 U	1.02 U	1.02 U	1.01 U	1.03 U, D	1.03 U	1.03 U	1.01 U	1.04 U
Heptachlor Epoxide	190	--	1.01 U	1.03 U	1.02 U	1.02 U	1.01 U	1.03 U, D	0.190 J	1.03 U	1.01 U	1.04 U
Aldrin	100	25,000	1.01 U	1.03 U	1.02 U	1.02 U	1.01 U	1.03 U, D	1.03 U	1.03 U	1.01 U	1.04 U
gamma-Chlordane	6,500	9,000	1.01 U	1.03 U	1.02 U	1.02 U	1.01 U	1.03 U, D	1.03 U	1.03 U	1.01 U	1.04 U
Endosulfan I	3,700,000	20,000	1.01 U	1.03 U	1.02 U	1.02 U	1.01 U	1.03 U, D	1.03 U	1.03 U	1.01 U	1.04 U
alpha-Chlordane	6,500	9,000	1.01 U	1.03 U	1.02 U	1.02 U	1.01 U	1.03 U, D	1.03 U	1.03 U	1.01 U	1.04 U
Dieldrin	110	300	2.03 U	2.06 U	0.274 J	2.05 U	0.808 J	2.06 U, D	0.397 J	0.896 J	2.02 U	0.381 J
4,4'-DDE	7,000	10	1.72 J	2.06 U	2.04 U	2.05 U	1.61 J	7.84 D	2.05 U	2.06 U	2.02 U	2.07 U
Endrin	180,000	40	2.03 U	2.06 U	2.04 U	2.05 U	2.01 U	2.06 U, D	2.05 U	2.06 U	2.02 U	2.07 U
4,4'-DDD	10,000	10	2.03 U	2.06 U	2.04 U	2.05 U	0.654 J	2.79 D	2.05 U	2.06 U	2.02 U	2.07 U
Endrin Aldehyde	--	--	2.03 U	2.06 U	2.04 U	2.05 U	2.01 U	2.06 U, D	2.05 U	2.06 U	2.02 U	2.07 U
4,4'-DDT	7,000	10	3.43	3.72	0.648 J	0.925 J	4.66	15.9 D	1.66 J	2.50	1.54 J	1.35 J
Endrin Ketone	--	--	2.03 U	2.06 U	2.04 U	2.05 U	2.01 U	2.06 U, D	2.05 U	2.06 U	2.02 U	2.07 U
Methoxychlor	3,100,000	500,000	2.03 U	2.06 U	2.04 U	2.05 U	2.01 U	2.06 U, D	2.05 U	2.06 U	2.02 U	2.07 U

Sample Location:	Preliminary Screening Levels		S-37	S-38	S-39	S-40	S-41
Lab ID:			K2406699-003	K2406699-003	K2406699-003	K2406699-003	K2406699-003
Sample Interval:			Note 12	Note 12	Note 12	Note 12	Note 12
Date Sampled:			8/26/2008	10/4/2008	9/12/2008	9/12/2008	9/4/2008
Pesticides (µg/kg)							
delta-BHC	--	--	--	--	--	--	--
Heptachlor	380	15,000	--	--	--	--	--
Heptachlor Epoxide	190	--	--	--	--	--	--
Aldrin	100	25,000	--	--	--	--	--
gamma-Chlordane	6,500	9,000	--	--	--	--	--
Endosulfan I	3,700,000	20,000	--	--	--	--	--
alpha-Chlordane	6,500	9,000	--	--	--	--	--
Dieldrin	110	300	--	--	--	--	--
4,4'-DDE	7,000	10	--	--	--	--	--
Endrin	180,000	40	--	--	--	--	--
4,4'-DDD	10,000	10	--	--	--	--	--
Endrin Aldehyde	--	--	--	--	--	--	--
4,4'-DDT	7,000	10	101	7.61 U	8.65 U	12.3	20.4
Endrin Ketone	--	--	--	--	--	--	--

Notes:

1. Only detected compounds are reported in the table. The complete analyte list is presented in the Sampling and Analysis Plan (Appendix A) of the RI Work Plan (Hart Crowser, 2004a).
2. Organochlorine Pesticides by EPA Method 8081A. Organophosphorus Pesticides by EPA Method 8141A.
3. µg/kg = Micrograms per kilogram.
4. PRG = EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soil (October 2004).
5. -- = No screening level available or not analyzed.
6. J = The result is an estimated concentration that is less than the method reporting limit (MRL) but greater than or equal to the method detection limit (MDL).
7. U = The compound was analyzed for but was not detected at or above the MRL/MDL.
8. P = The GC or HPLC confirmation criterion was exceeded. The relative percent difference is greater than 40 percent between the two analytical results.
9. Sample ID nomenclature is per the following: type of sample-sample number-depth in feet-designation.
   For example T4S1SB-46-1-1 = soil boring (SB) number 46, collected 1 foot below the ground surface, primary sample (1). T4S1S-6 = surface soil sample number 6.
10. SLV = Oregon Department of Environmental Quality Level II Screening Level Values (SLVs) for Terrestrial Receptors (lowest available value).
11. Boxed values indicate that the detected concentration exceeds the SLV (only samples from 0 to 3 feet were screened against the SLV).
12. Sample is a 4-point composite collected at a depth of 0-1 foot below finish subgrade of the Wheeler Bay Stabilization project.
    In general, the depth from finish grade to subgrade is 1 foot for two of the four composite subsamples and 2 feet for the other two composite subsamples.
    The surface of the subgrade is delineated by a demarcation layer consisting of orange plastic mesh.

Table 6 - Subgrade Soil Samples: Metals
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Sample Location:	Preliminary Screening Levels			T4S1S-26		T4S1S-26A		T4S1S-26B		T4S1S-26C		T4S1S-26D	
Sample ID:				T4S1S-26		T4S1S-26A		T4S1S-26B		T4S1S-26C		T4S1S-26D	
Sample Interval:	Background	PRG	SLV	0 - 1		0 - 1		0 - 1		0 - 1		0 - 1	
Date Sampled:				9/13/2005		9/13/2005		9/13/2005		9/13/2005		9/13/2005	
Metals (mg/kg)													
Antimony	5	410	5	0.0728	J	1.53	U	1.53	U	1.54	U	1.74	U
Arsenic	5.8	1.6	10	10.9		2.49		2.23		2.97		15.7	
Beryllium	2.1	1,900	10	0.260	J	0.209	J	0.285	J	0.277	J	0.186	J
Cadmium	0.9	450	4	7.02		0.220	J	0.270	J	0.646		25.3	
Chromium	26	450	0.4	16.4		12.3		14.5		15.2		23.6	
Copper	34	41,000	50	78.1		12.0		14.0		16.9		219	
Lead	17	800	16	479	D	7.78		12.6		43.6		868	
Mercury	0.04	310	0.1	0.0947	J	0.126	U, D	0.131	U	0.130	U	0.325	
Nickel	21	20,000	30	18.4		16.2		16.6		17.5		19.3	
Selenium	0.8	5,100	1	0.286	J	0.184	J	0.163	J	0.159	J	0.407	J
Silver	0.6	5,100	2	1.16		0.511	U	0.509	U	0.123	J	2.10	
Thallium	<5	67	1	0.0624	J	0.511	U	0.509	U	0.513	U	0.122	J
Zinc	95	100,000	50	949	D	55.7		64.0		127		3,320	

Sample Location:	Preliminary Screening Levels			T4S1S-27		T4S1S-28		T4S1S-29D		T4S1S-30	
Sample ID:				T4S1S-27		T4S1S-28		T4S1S-29		T4S1S-30	
Sample Interval:	Background	PRG	SLV	0 - 1		0 - 1		0 - 1		0 - 1	
Date Sampled:				9/13/2005		9/13/2005		9/13/2005		9/13/2005	
Metals (mg/kg)											
Antimony	5	410	5	1.53	U	1.53	U	1.51	U	1.53	U
Arsenic	5.8	1.6	10	2.59		3.72		14.5		2.47	
Beryllium	2.1	1,900	10	0.295	J	0.316	J	0.292	J	0.352	J
Cadmium	0.9	450	4	0.402	J	0.815		2.12		0.352	J
Chromium	26	450	0.4	16.0		16.6		23.8		16.8	
Copper	34	41,000	50	16.7		19.5		38.5		17.0	
Lead	17	800	16	30.4		88.8		276		41.8	
Mercury	0.04	310	0.1	0.102	U	0.0261	J, D	0.0799	J	0.0340	J
Nickel	21	20,000	30	19.5		19.0		17.7		20.5	
Selenium	0.8	5,100	1	0.229	J	0.295	J	0.347	J	0.250	J
Silver	0.6	5,100	2	0.509	U	0.0967	J	0.660		0.510	U
Thallium	<5	67	1	0.509	U	0.509	U	0.504	U	0.510	U
Zinc	95	100,000	50	112		181		328		91.4	

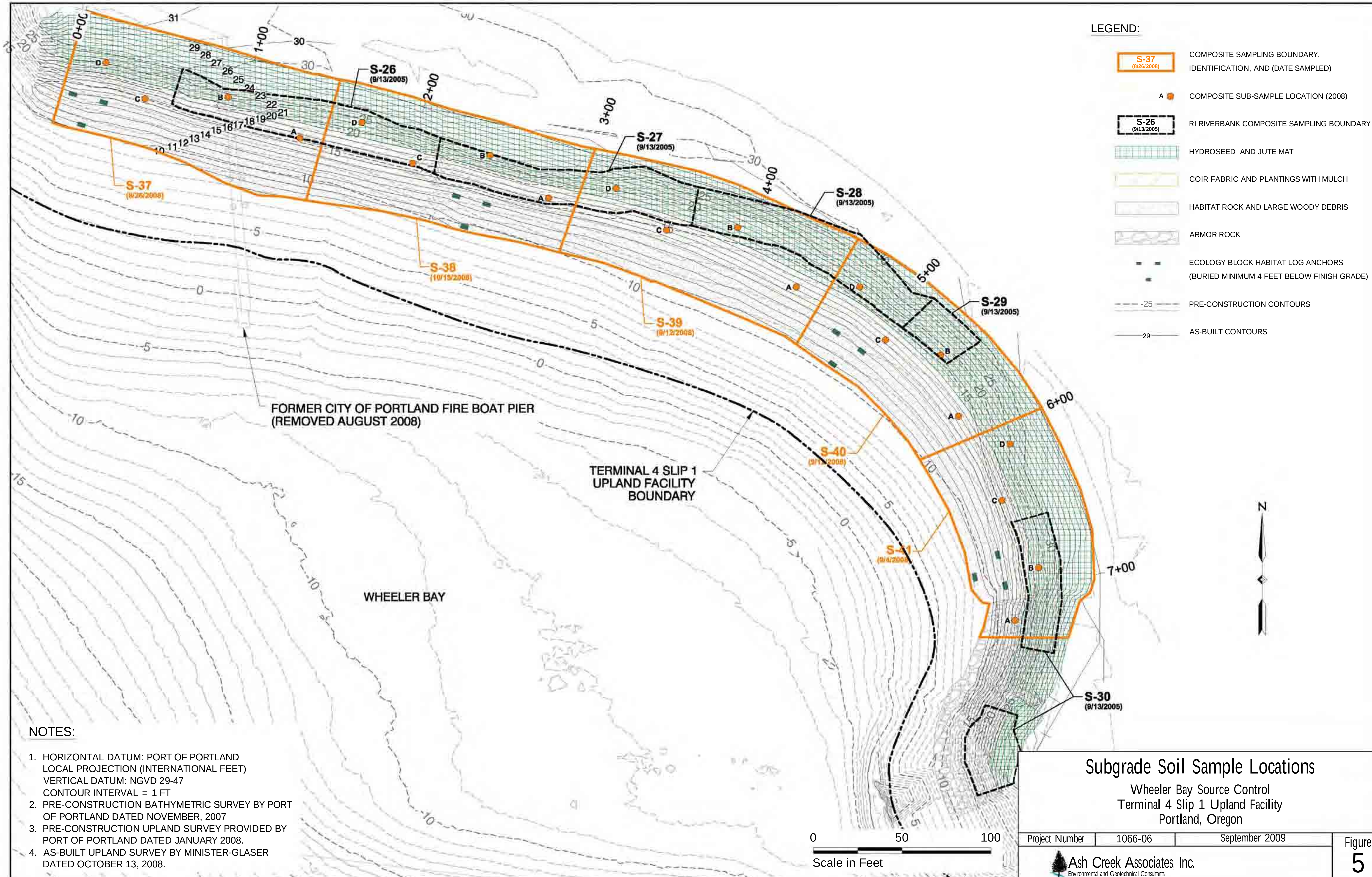
See Notes on Last Page of Table

Table 6 - Subgrade Soil Samples: Metals
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Sample Location:	Preliminary Screening Levels			S-37	S-38	S-39	S-40	S-41
Sample Interval:		PRG	SLV	Note 13	Note 13	Note 13	Note 13	Note 13
Date Sampled:				8/26/2008	10/4/2008	9/12/2008	9/12/2008	9/4/2008
Metals (mg/kg)								
Antimony	5	410	5	--	--	--	--	--
Arsenic	5.8	1.6	10	8.83	4.44	3.95	5.02	4.78
Beryllium	2.1	1,900	10	--	--	--	--	--
Cadmium	0.9	450	4	1.86	0.545 U	0.637 U	0.742	0.998
Chromium	26	450	0.4	--	--	--	--	--
Copper	34	41,000	50	34.4	17.3	15.5	17.7	24.9
Lead	17	800	16	427	32.8	54.7	118	117
Mercury	0.04	310	0.1	--	--	--	--	--
Nickel	21	20,000	30	--	--	--	--	--
Selenium	0.8	5,100	1	--	--	--	--	--
Silver	0.6	5,100	2	--	--	--	--	--
Thallium	<5	67	1	--	--	--	--	--
Zinc	95	100,000	50	323	93.7	90.8	163	190

Notes:

1. All analytes are reported in the table.
2. Metals using EPA 6000-7000 Series Methods.
3. mg/kg = Milligrams per kilogram.
4. PRG = EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soil (October 2004).
5. -- = No screening level available or not analyzed.
6. U = The compound was analyzed for but was not detected at or above the MRL/MDL.
7. B = The result is an estimated concentration that is less than the MRL but greater than or equal to the method detection limit (MDL).
8. N = The matrix spike sample recovery is not within control limits. The case narrative suggests that soil samples digested with EPA Method 3050 for Antimony should only be used as indicators to estimate concentrations.
9. * = The laboratory duplicate analysis was not within control limits. The laboratory attributed the variability to the heterogeneous character of the sample.
10. Shaded values indicate that the detected concentration exceeds the background and PRG.
11. Background Levels are from the Washington Department of Ecology's publication Natural Background Soil Metals Concentrations in Washington State, dated October 1994. Values are the 90th percentile values for Clark County, except for antimony, selenium, silver and thallium where state-wide data were used due to a limited number of detections.
12. Boxed values indicate that the detected concentration exceeds background and the SLV (only samples from 0 to 3 feet were screened against the SLV).
13. Sample is a 4-point composite collected at a depth of 0-1 foot below finish subgrade of the Wheeler Bay Stabilization project. In general, the depth from finish grade to subgrade is 1 foot for two of the four composite subsamples and 2 feet for the other two composite subsamples. The surface of the subgrade is delineated by a demarcation layer consisting of orange plastic mesh.



NOTES:

1. HORIZONTAL DATUM: PORT OF PORTLAND LOCAL PROJECTION (INTERNATIONAL FEET)
   VERTICAL DATUM: NGVD 29-47
   CONTOUR INTERVAL = 1 FT
2. PRE-CONSTRUCTION BATHYMETRIC SURVEY BY PORT OF PORTLAND DATED NOVEMBER, 2007
3. PRE-CONSTRUCTION UPLAND SURVEY PROVIDED BY PORT OF PORTLAND DATED JANUARY 2008.
4. AS-BUILT UPLAND SURVEY BY MINISTER-GLASER DATED OCTOBER 13, 2008.

Subgrade Soil Sample Locations

Wheeler Bay Source Control
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

Project Number	1066-06	September 2009	Figure 5

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Attachment C

Standard Operating Procedure 2.2

1. PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) describes the methods used for obtaining surface soil samples for physical and/or chemical analysis. For purposes of this SOP, surface soil (including shallow subsurface soil) is loosely defined as soil that is present within 3 feet of the ground surface at the time of sampling. Various types of sampling equipment are used to collect surface soil samples including spoons, scoops, trowels, shovels, and hand augers.

2. EQUIPMENT AND MATERIALS

The following materials are necessary for this procedure:

- Spoons, scoops, trowels, shovels, and/or hand augers. Stainless steel is preferred.
- Stainless steel bowls
- Laboratory-supplied sample containers
- Field documentation materials
- Decontamination materials
- Personal protective equipment (as required by Health and Safety Plan)

3. METHODOLOGY

Project-specific requirements will generally dictate the preferred type of sampling equipment used at a particular site. The following parameters should be considered: sampling depth, soil density, soil moisture, use of analyses (e.g., chemical versus physical testing), type of analyses (e.g., volatile versus non-volatile). Analytical testing requirements will indicate sample volume requirements that also will influence the selection of the appropriate type of sampling tool. The project sampling plan should define the specific requirements for collection of surface soil samples at a particular site.

<u>Collection of Samples</u>

- Volatile Analyses. Surface soil sampling for volatile organics analysis (VOA) is different than other routine physical or chemical testing because of the potential loss of volatiles during sampling. To limit volatile loss, the soil sample must be obtained as quickly and as directly as possible. If a VOA sample is to collected as part of a multiple analyte sample, the VOA sample portion will be obtained first. The VOA sample should be obtained from a discrete portion of the entire collected sample and should not be composited or homogenized. Sample bottles should be filled to capacity, with no headspace. Specific procedures for collecting VOA samples using the EPA Method 5035 are discussed in SOP 2-7.

- Other Analyses. Once the targeted sample interval has been collected, the soil sample will be thoroughly homogenized in a stainless steel bowl prior to bottling. Sample homogenizing is accomplished by manually mixing the entire soil sample in the stainless steel bowl with the sampling tool or with a clean teaspoon or spatula until a uniform mixture is achieved. If packing of the samples into the bottles is necessary, a clean stainless steel teaspoon or spatula may be used.

<u>General Sampling Procedure:</u>

- Decontaminate sampling equipment in accordance with the Sampling and Analysis Plan (SAP) before and after each individual soil sample.
- Remove surface debris that blocks access to the actual soil surface or loosen dense surface soils, such as those encountered in heavy traffic areas. If sampling equipment is used to remove surface debris,

the equipment should be decontaminated prior to sampling to reduce the potential for sample interferences.

- When using a hand auger, push and rotate downward until the auger becomes filled with soil. Usually a 6- to 12-inch long core of soil is obtained each time the auger is inserted. Once filled, remove the auger from the ground and empty into a stainless steel bowl. If a VOA sample is required, the sample should be taken directly from the auger using a teaspoon or spatula and/or directly filling the sample container from the auger. Repeat the augering process until the desired sample interval has been augered and placed into the stainless steel bowl.

<u>Backfilling Sample Locations:</u>

Backfill in accordance with federal and state regulations including OAR 690-240 (e.g., bentonite requirements). The soils from the excavation will be used as backfill unless project-specific or state requirements include the use of clean backfill material.

Attachment D

Analytical Laboratory Report

Specialty Analytical

11711 SE Capps Road
Clackamas, OR 97015
(503) 607-1331
Fax (503) 607-1336

Report Prepared for:

Herb Clough
Ash Creek Associates
3015 SW First Avenue
Portland, OR 97201

Report of Laboratory Analysis
Level III Data Package

Report Prepared Date:
September 13, 2010

Report Information:
Specialty Analytical WO #: 1008181
Sample Receipt Date: 8/30/2010
Client Project #: T4S1 Wheeler Bay/1066-07

This report has been reviewed and prepared by:

Dean Strom, Project Manager
dean@specialtyanalytical.com

Report of Laboratory Analysis

Specialty Analytical
11711 SE Capps Rd Ste. B Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

TABLE OF CONTENTS

Specialty Analytical Phone: 503-607-1331
11711 SE Capps Rd Ste. B Clackamas, OR 97015 Fax: 503-607-1336

Analytical Case Narrative

Client: Ash Creek Associates Date: 9/13/2010
Project: T4S1 Wheeler Bay/1066-07
Specialty Analytical Work Order Number: 1008181

Thirty (30) samples for the above referenced Specialty Analytical work order were received on August 30, 2010. Specialty Analytical sample numbers 100181-01, -02, -03 and –06 (Client ID's S-42, S-42A, S-42B and S-45 respectively) were analyzed for Lead by EPA 6010C. Samples were passed though a #10 sieve prior to digestion and analysis.

The chain of custody as well as sample receipt documentation is included in the data package. Samples were received from the client delivered by Specialty Analytical and received in good condition in a cooler with ice. Sample temperature was recorded upon receipt as 5.6^{o}C, within the EPA recommended storage temperature of 4^{o}C +/-2^{o}C.

Sample results are qualified on the Analytical Report if any data quality anomalies were encountered during analysis. Data qualifications are summarized below. Anomalies that do not affect data quality may not be included in the summary.

Total Metals by EPA 6010C
No anomalies.

Dean Strom
Project Manager
Specialty Analytical

CHAIN OF CUSTODY RECORD

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Client Name: Ash Creek Associates
Address: 3015 SW First Ave
City/State/Zip: Portland, OR 97201
Telephone Number: 503.924.4704
Fax No.: 503.943.6357

Project Manager: Herb Clough
Analytical Lab: Specialty Analytical
Project Name: T4S1 Wheeler Bay
Report To: Herb Clough (hclough@ashcreekassociates.com)
Project Number: 1066-07
Page: 1 of 3
Sampler Name: Maguire/Clough

							Preservative								Matrix						Analyze For:						
Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Ice	HNO_3 (Red Label)	HCl (Blue Label)	NaOH (Orange Label)	H_2SO_4 Plastic (Yellow Label)	H_2SO_4 Glass(Yellow Label)	None (Black Label)	Other (Specify)	Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (specify):	Lead		Hold	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
S-42	8/27/10	1521	1		X														X		X			X			
S-42A	8/27/10	1455	1	X															X		X			X			
S-42B	8/27/10	1505	1	X															X		X			X			
S-42C	8/27/10	1512	1	X															X				X				
S-42D	8/27/10	1520	1	X															X				X				
S-43	8/27/10	1538	1		X														X				X				
S-43A	8/27/10	1535	1	X															X				X				
S-43B	8/27/10	1533	1	X															X				X				
S-43C	8/27/10	1530	1	X															X				X				
S-43D	8/27/10	1525	1	X															X				X				

Special Instructions: 1 mg/kg detection limit; pass through No. 10 sieve before analysis; 1-day turnaround
Tier 3 Data Package
Method of Shipment:

Laboratory Comments:
Temperature Upon Receipt:
VOCs Free of Headspace? Y N

Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time
	8/30/10	637	[illegible signature]	8/30/10	0637
Herb Clough, Ash Creek					

CHAIN OF CUSTODY RECORD

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Client Name: Ash Creek Associates
Address: 3015 SW First Ave
City/State/Zip: Portland, OR 97201

Telephone Number: 503.924.4704
Fax No.: 503.943.6357

Project Manager: Herb Clough
Analytical Lab: Specialty Analytical
Project Name: T4S1 Wheeler Bay
Report To: Herb Clough (hclough@ashcreekassociates.com)
Project Number: 1066-07
Page: 2 of 3
Sampler Name: Maguire/Clough

							Preservative								Matrix						Analyze For:						
Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Ice	HNO_3 (Red Label)	HCl (Blue Label)	NaOH (Orange Label)	H_2SO_4 Plastic (Yellow Label)	H_2SO_4 Glass(Yellow Label)	None (Black Label)	Other (Specify)	Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (specify):	Lead		Hold	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
S-44	8/27/10	1550	1		X														X				X				
S-44A	8/27/10	1542	1	X															X				X				
S-44B	8/27/10	1545	1	X															X				X				
S-44C	8/27/10	1547	1	X															X				X				
S-44D	8/27/10	1548	1	X															X				X				
S-45	8/27/10	1608	1		X														X		X			X			
S-45A	8/27/10	1555	1	X															X				X				
S-45B	8/27/10	1600	1	X															X				X				
S-45C	8/27/10	1605	1	X															X				X				
S-45D	8/27/10	1607	1	X															X				X				

Special Instructions: 1 mg/kg detection limit; pass through No. 10 sieve before analysis; 1-day turnaround
Tier 3 data Package

Method of Shipment:

Laboratory Comments:
Temperature Upon Receipt:
VOCs Free of Headspace? Y N

Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time
Ash	8/30/10	637	[signature] / SH	8/30/10	0637
Herb Clough Creek					

CHAIN OF CUSTODY RECORD

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Client Name:	Ash Creek Associates	Telephone Number:	503.924.4704
Address:	3015 SW First Ave	Fax No.:	503.943.6357
City/State/Zip:	Portland, OR 97201		

Project Manager: Herb Clough **Analytical Lab:** Specialty Analytical

Project Name: T4S1 Wheeler Bay **Report To:** Herb Clough (hclough@ashcreekassociates.com)

Project Number: 1066-07 **Page:** 3 **of** 3

Sampler Name: Maguire/Clough

Sample ID / Description Time	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	HNO_3 (Red Label)	HCl (Blue Label)	NaOH (Orange Label)	H_2SO_4 Plastic (Yellow Label)	H_2SO_4 Glass(Yellow Label)	None (Black Label)	Other (Specify)	Matrix: Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (specify):	Analyze For: Lead		Hold	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
S-46 1622	8/27/10	[illegible]	1		X														X				X				
S-46A 1610	8/27/10	[illegible]	1	X															X				X				
S-46B 1613	8/27/10	[illegible]	1	X															X				X				
S-46C 1615	8/27/10	[illegible]	1	X															X				X				
S-46D 1620	8/27/10	[illegible]	1	X															X				X				
S-47	8/27/10	1633	1		X														X				X				
S-47A	8/27/10	1625	1	X															X				X				
S-47B	8/27/10	1628	1	X															X				X				
S-47C	8/27/10	1630	1	X															X				X				
S-47D	8/27/10	1631	1	X															X				X				

Special Instructions: 1 mg/kg detection limit; pass through No. 10 sieve before analysis; 1-day turnaround

Tier 3 data package

Method of Shipment:

Laboratory Comments:
Temperature Upon Receipt:
VOCs Free of Headspace? Y N

Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time
[signature] Ash	8/30/10	637	[signature] / SA	8/30/10	0637
Herb Clough Ck.					

SPECIALTY ANALYTICAL **LOGIN CHECKLIST**

CLIENT: Ash Creek JOB No: 1008081

PROJECT NAME: T451 Wheeler Bay / 1066-07

DATE REC'D: 8/30/10 TIME REC'D: 0637 REC'D BY: [illegible]

SAMPLES REC'D BY: FedEx UPS Specialty Client Courier Greyhound Other________

AIR BILL NO: NA

1. Custody seals on cooler: N/A Absent Present Broken

2. Chain of Custody complete, Including location, date, time of collection, collectors name,

signature & analysis: Present Yes / No Complete Yes / No Correct Yes / No

3. Is project RUSH? Yes / No Was lab notified prior of arrival of samples? Yes / No

4. Type of Shipping Container and Packaging Material: Cooler

5. Temp: 5.6 Rec'd within 6hrs of sampling? Yes / No Refrigerant: ICE

6. Samples containers broken: Y/N If BROKEN which sample(s)________

7. Proper Sample Volume: Yes / No If NO, explain:________

8. Proper Preservative: Yes / No / NA If NO, explain:________

9. Head Space in VOA's: N/A None Present

10. Do Sample ID's & sample matrix agree with Chain of Custody? Yes / No If NO, please explain?

11. Total Number of Containers: WATER 30 SOIL_____ PRODUCT_____ AIR_____ OIL_____

CARBON_____ WIPE_____ SOLID_____ MISC LIQ_____ SLUDGE_____ OTHER_____

12. Type(s) of Container(s) 1-8oz soil per samp

13. Was pH verified and properly adjusted? Yes / No / N/A

14. Sample received in time for analysis to be completed within hold time? Yes No

15. Subcontracted: Yes / No What / Where:

16. Form Completed by: [signature] DATE 8/30/10

17. Samples Logged in by: [signature] DATE 8/30/10

18. Login reviewed by: [signature] DATE 8/30/10

19. Follow-ups Logged in by: DATE

20. Follow-ups Login reviewed by: DATE

IF THERE WERE PROBLEMS WAS THE CLIENT CONTACTED: Yes / No

CONTACTED BY: DATE:

Discussion

SIGNED: DATED

Specialty Analytical

11711 SE Capps Road
Clackamas, OR 97015
(503) 607-1331
Fax (503) 607-1336

September 02, 2010

Herb Clough
Ash Creek Associates
3015 SW First Avenue
Portland, OR 97201

TEL: (503) 924-4704
FAX: (503) 924-4707

RE: T4S1 Wheeler Bay/1066-07

Dear Herb Clough: Order No.: 1008181

Specialty Analytical received 30 samples on 8/30/2010 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Cindy Hillyard
Project Manager

Technical Review

Specialty Analytical

Date: *02-Sep-10*

CLIENT: Ash Creek Associates
Lab Order: 1008181
Project: T4S1 Wheeler Bay/1066-07

Lab ID: 1008181-01
Collection Date: 8/27/2010 3:21:00 PM
Client Sample ID: S-42
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP		**E6010**				Analyst: **cz**
Lead	17.1	1.25		mg/Kg	1	8/30/2010 1:15:54 PM
SIEVE ANALYSIS		**ASTM C136**				Analyst: **zau**
Passing 10 mesh	Complete			wt%	1	8/30/2010

Lab ID: 1008181-02
Collection Date: 8/27/2010 2:55:00 PM
Client Sample ID: S-42A
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP		**E6010**				Analyst: **cz**
Lead	37.8	1.35		mg/Kg	1	8/30/2010 1:20:53 PM
SIEVE ANALYSIS		**ASTM C136**				Analyst: **zau**
Passing 10 mesh	Complete			wt%	1	8/30/2010

Lab ID: 1008181-03
Collection Date: 8/27/2010 3:05:00 PM
Client Sample ID: S-42B
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP		**E6010**				Analyst: **cz**
Lead	8.50	1.43		mg/Kg	1	8/30/2010 12:46:11 PM
SIEVE ANALYSIS		**ASTM C136**				Analyst: **zau**
Passing 10 mesh	Complete			wt%	1	8/30/2010

Lab ID: 1008181-04
Collection Date: 8/27/2010 3:12:00 PM
Client Sample ID: S-42C
Matrix: SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

CLIENT:	Ash Creek Associates	**Lab Order:**	1008181
Project:	T4S1 Wheeler Bay/1066-07		

Lab ID: 1008181-05 **Collection Date:** 8/17/2010 3:20:00 PM
Client Sample ID: S-42D **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-06 **Collection Date:** 8/17/2010 3:38:00 PM
Client Sample ID: S-43 **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-07 **Collection Date:** 8/27/2010 3:35:00 PM
Client Sample ID: S-43A **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-08 **Collection Date:** 8/27/2010 3:33:00 PM
Client Sample ID: S-43B **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-09 **Collection Date:** 8/27/2010 3:30:00 PM
Client Sample ID: S-43C **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

CLIENT: Ash Creek Associates **Lab Order:** 1008181
Project: T4S1 Wheeler Bay/1066-07

Lab ID: 1008181-10 **Collection Date:** 8/27/2010 3:25:00 PM
Client Sample ID: S-43D **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-11 **Collection Date:** 8/27/2010 3:50:00 PM
Client Sample ID: S-44 **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-12 **Collection Date:** 8/27/2010 3:42:00 PM
Client Sample ID: S-44A **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-13 **Collection Date:** 8/27/2010 3:45:00 PM
Client Sample ID: S-44B **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-14 **Collection Date:** 8/27/2010 3:47:00 PM
Client Sample ID: S-44C **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

CLIENT: Ash Creek Associates **Lab Order:** 1008181
Project: T4S1 Wheeler Bay/1066-07

Lab ID: 1008181-15 **Collection Date:** 8/27/2010 3:48:00 PM
Client Sample ID: S-44D **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-16 **Collection Date:** 8/27/2010 4:08:00 PM
Client Sample ID: S-45 **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP		**E6010**				Analyst: **cz**
Lead	3.23	1.33		mg/Kg	1	8/30/2010 1:25:52 PM
SIEVE ANALYSIS		**ASTM C136**				Analyst: **zau**
Passing 10 mesh	Complete			wt%	1	8/30/2010

Lab ID: 1008181-17 **Collection Date:** 8/27/2010 3:55:00 PM
Client Sample ID: S-45A **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-18 **Collection Date:** 8/27/2010 4:00:00 PM
Client Sample ID: S-45B **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-19 **Collection Date:** 8/27/2010 4:05:00 PM
Client Sample ID: S-45C **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

CLIENT: Ash Creek Associates **Lab Order:** 1008181
Project: T4S1 Wheeler Bay/1066-07

Lab ID: 1008181-20 **Collection Date:** 8/27/2010 4:07:00 PM
Client Sample ID: S-45D **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-21 **Collection Date:** 8/27/2010 4:22:00 PM
Client Sample ID: S-46 **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-22 **Collection Date:** 8/27/2010 4:10:00 PM
Client Sample ID: S-46A **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-23 **Collection Date:** 8/27/2010 4:13:00 PM
Client Sample ID: S-46B **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-24 **Collection Date:** 8/27/2010 4:15:00 PM
Client Sample ID: S-46C **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Specialty Analytical

Date: *02-Sep-10*

CLIENT: Ash Creek Associates **Lab Order:** 1008181
Project: T4S1 Wheeler Bay/1066-07

Lab ID: 1008181-25 **Collection Date:** 8/27/2010 4:20:00 PM
Client Sample ID: S-46D **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-26 **Collection Date:** 8/27/2010 4:33:00 PM
Client Sample ID: S-47 **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-27 **Collection Date:** 8/27/2010 4:25:00 PM
Client Sample ID: S-47A **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-28 **Collection Date:** 8/27/2010 4:28:00 PM
Client Sample ID: S-47B **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Lab ID: 1008181-29 **Collection Date:** 8/27/2010 4:30:00 PM
Client Sample ID: S-47C **Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

CLIENT:	Ash Creek Associates	**Lab Order:**	1008181
Project:	T4S1 Wheeler Bay/1066-07		

Lab ID:	1008181-30	**Collection Date:**	8/27/2010 4:31:00 PM
Client Sample ID:	S-47D	**Matrix:**	SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **ADM**
Hold	Hold				1	9/2/2010

Specialty Analytical

Date: *02-Sep-10*

CLIENT: Ash Creek Associates
Work Order: 1008181
Project: T4S1 Wheeler Bay/1066-07

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MBLK-26398** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **8/30/2010** Run ID: **TJA IRIS_100830A**
Client ID: **ZZZZZ** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	2.00									

Sample ID: **LCS-26398** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **8/30/2010** Run ID: **TJA IRIS_100830A**
Client ID: **ZZZZZ** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	96.16	2.00	100	0	96.2	84.9	109	0	0		

Sample ID: **1008181-03AMS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **8/30/2010** Run ID: **TJA IRIS_100830A**
Client ID: **S-42B** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	77.64	1.43	71.43	8.5	96.8	84.9	109	0	0		

Sample ID: **1008181-03AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **8/30/2010** Run ID: **TJA IRIS_100830A**
Client ID: **S-42B** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694040**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	74.67	1.32	65.79	8.5	101	84.9	109	77.64	3.90	20	

Sample ID: **1008181-03ADUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **8/30/2010** Run ID: **TJA IRIS_100830A**
Client ID: **S-42B** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694038**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.303	1.41	0	0	0	0	0	8.5	9.02	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT:	Ash Creek Associates		
Work Order:	1008181		
Project:	T4S1 Wheeler Bay/1066-07		

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **CCV** SampType: **CCV** TestCode: **6010_S** Units: **mg/Kg** Prep Date: Run ID: **TJA IRIS_100830A**
Client ID: **ZZZZZ** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	100.3	2.00	100	0	100	90	110	0	0		

Sample ID: **CCV** SampType: **CCV** TestCode: **6010_S** Units: **mg/Kg** Prep Date: Run ID: **TJA IRIS_100830A**
Client ID: **ZZZZZ** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694046**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	100.9	2.00	100	0	101	90	110	0	0		

Sample ID: **ICV** SampType: **ICV** TestCode: **6010_S** Units: **mg/Kg** Prep Date: Run ID: **TJA IRIS_100830A**
Client ID: **ZZZZZ** Batch ID: **26398** TestNo: **E6010** Analysis Date: **8/30/2010** SeqNo: **694033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	101.8	2.00	100	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

KEY TO FLAGS

Rev. May 12, 2010

A This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards

A1 This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.

A2 This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.

A3 The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.

A4 The product appears to be aged or degraded diesel.

B The blank exhibited a positive result great than the reporting limit for this compound.

CN See Case Narrative.

D Result is based from a dilution.

E Result exceeds the calibration range for this compound. The result should be considered as estimate.

F The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.

G Result may be biased high due to biogenic interferences. Clean up is recommended.

H Sample was analyzed outside recommended holding time.

HT At clients request, samples was analyzed outside of recommended holding time.

J The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.

K Diesel result is biased high due to amount of Oil contained in the sample.

L Diesel result is biased high due to amount of Gasoline contained in the sample.

M Oil result is biased high due to amount of Diesel contained in the sample.

MC Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.

MI Result is outside control limits due to matrix interference.

MSA Value determined by Method of Standard Addition.

O Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.

Q Detection levels elevated due to sample matrix.

R RPD control limits were exceeded.

RF Duplicate failed due to result being at or near the method-reporting limit.

RP Matrix spike values exceed established QC limits; post digestion spike is in control.

S Recovery is outside control limits.

SC Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.

* The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

Sieve Analysis by ASTM C136 Documentation

RW: CCW 9/13/10 9-13-10

Specialty Analytical

ANALYTICAL RUN Summary

13-Sep-10

Run ID SUBWET_100830A

Seq No	Sample ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
693678	1008181-01A	SIEVE	SAMP		8/30/2010	1	R62547		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Acid Solubility	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 10 mesh	A	wt%		0	Complete	0	0	0	0	0	0	0%	0	0	0%	
Passing 100 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 20 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 40 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Sieve Analysis	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	

Seq No	Sample ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
693679	1008181-02A	SIEVE	SAMP		8/30/2010	1	R62547		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Acid Solubility	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 10 mesh	A	wt%		0	Complete	0	0	0	0	0	0	0%	0	0	0%	
Passing 100 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 20 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 40 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Sieve Analysis	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	

Seq No	Sample ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
693680	1008181-03A	SIEVE	SAMP		8/30/2010	1	R62547		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Acid Solubility	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 10 mesh	A	wt%		0	Complete	0	0	0	0	0	0	0%	0	0	0%	
Passing 100 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 20 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 40 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Sieve Analysis	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	

Seq No	Sample ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
693681	1008181-16A	SIEVE	SAMP		8/30/2010	1	R62547		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Acid Solubility	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 10 mesh	A	wt%		0	Complete	0	0	0	0	0	0	0%	0	0	0%	
Passing 100 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 20 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Passing 40 mesh	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	
Sieve Analysis	A	wt%		0		0	0	0	0	0	0	0%	0	0	0%	

8-30-10 ASTM C136 ZU

1008181-07A Passing through 10 mesh

-02A

-03A

-16A

000004

Total Metals by EPA 6010C Calibration, Quality Control and Raw Data

ICP / ICP-MS

Data Validation Check List

Analyst cz Reviewed By [illegible] 8/30/10

Date 8/30/10

Batch # 26398

LIMS Test Code 6010-S

ICV ✓

Mass Spec Tune in Control — (ICPMS Only)

Interference Check Std. In Control ✓

MBLK < RL ✓

LCS within Control Limits ✓ (See ICV for Dissolved metals)

DUP RPD < 20% ✓

MS/MSD in Control K→S, Mc

MS/MSD RPD < 20% ✓

Post Spike in Control — (If necessary)

Dilution Sample within 10% — (If necessary)

CCV +/- 10% ✓

Interference Check Standard in Control ✓ (ICP Only)

Comments Rush

Specialty Analytical

PREP BATCH REPORT

Prep Start Date: **8/30/2010 7:33:11 A**
Prep End Date: **8/30/2010 11:36:53**

Prep Factor Units: mL / g

Prep Batch **26398** Prep Code: **3050_I** Technician: **Zaiga Upite**

Sample ID	Matrix	pH	SampAmt	Sol Added	Sol Recov	Fin Vol	factor	PrepStart	PrepEnd
1008181-16A	Soil		0.75	0	0	50	66.667	8/30/2010	8/30/2010
1008181-03ADUP	Soil		0.71	0	0	50	70.423	8/30/2010	8/30/2010
1008181-03AMS	Soil		0.7	0	0	50	71.429	8/30/2010	8/30/2010
1008181-03AMSD	Soil		0.76	0	0	50	65.789	8/30/2010	8/30/2010
MB-26398			0.5	0	0	50	100.000	8/30/2010	8/30/2010
LCS-26398			0.5	0	0	50	100.000	8/30/2010	8/30/2010
1008171-01A	Soil		0.66	0	0	50	75.758	8/30/2010	8/30/2010
1008171-02A	Soil		0.64	0	0	50	78.125	8/30/2010	8/30/2010
1008171-03A	Soil		0.68	0	0	50	73.529	8/30/2010	8/30/2010
1008180-01A	Soil		0.54	0	0	50	92.593	8/30/2010	8/30/2010
1008181-01A	Soil		0.8	0	0	50	62.500	8/30/2010	8/30/2010
1008181-02A	Soil		0.74	0	0	50	67.568	8/30/2010	8/30/2010
1008181-03A	Soil		0.7	0	0	50	71.429	8/30/2010	8/30/2010

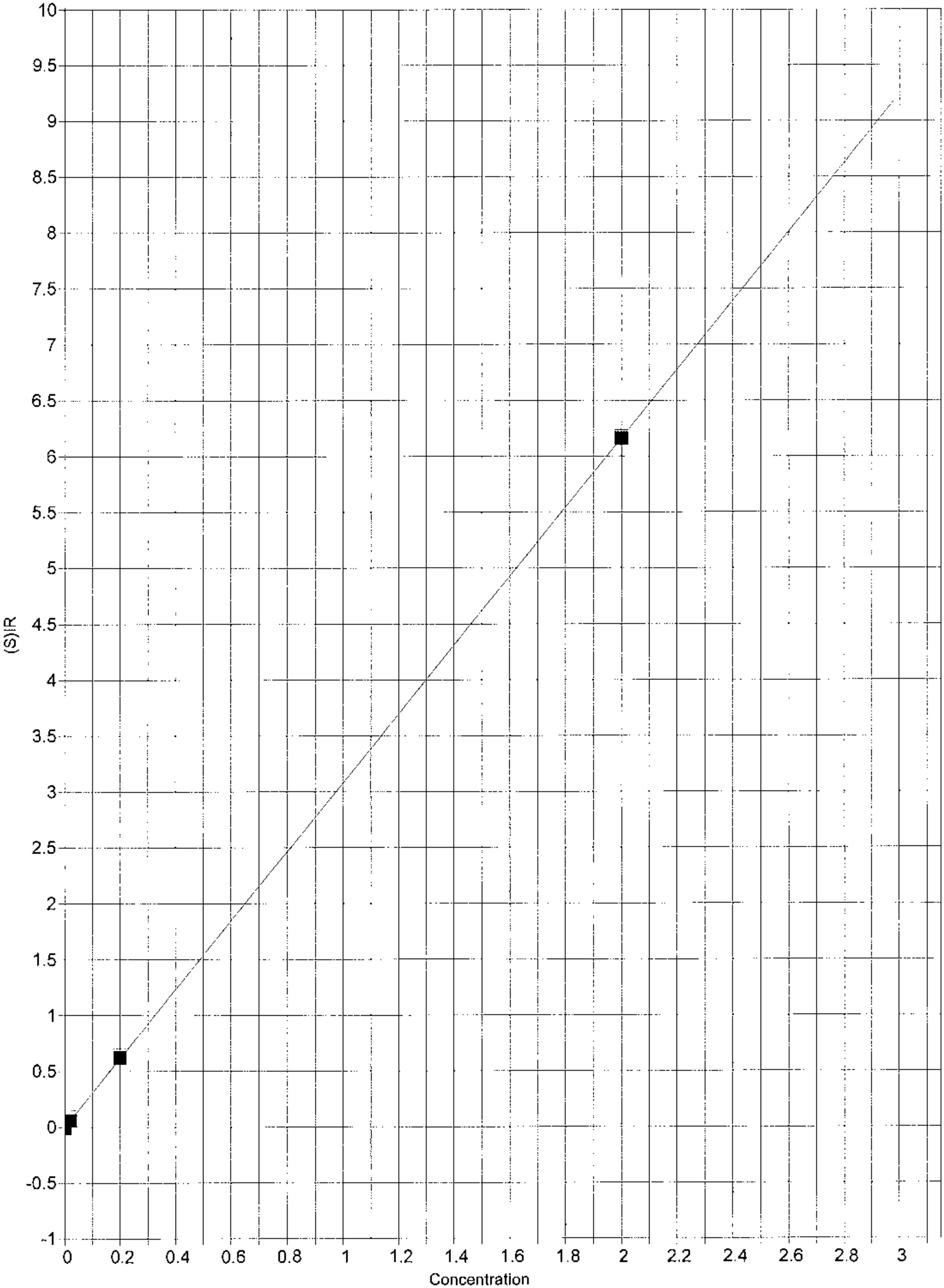
Spk ID	Spike Name	SampType	AmtAdd
MRS-545	SPECIALTY-QC-1		0.5
MRS-543	SPECIALTY-QC-3C		0.5
MRS-542	SPECIALTY-QC-2B		0.5

i'2 8/30/10

	Pos ID	Type	Samplename	Comment	Custom ID	Custom ID	Custom ID	CorrFact
1	1	Unk	1008157-02AMS	2X	MS	6010_S	2	1
2	2	Unk	1008157-02AMSD	2X	MSD	6010_S	2	1
3	3	Unk	A1008165-01A	5X	SAMP	6010_W	5	1
4	4	Unk	A1008165-01ADUP	5X	DUP	6010_W	5	1
5	5	Unk	A1008165-01AMS	5X	MS	6010_W	5	1
6	6	Unk	A1008165-01AMSD	5X	MSD	6010_W	5	1
7	7	Unk	A1008165-01APDS	5X	PDS	6010_W	5	1
8	8	Unk	RINSE		SAMP	6010_S	1	1
9	9	Unk	MBLK-26398		MBLK	6010_S	1	1
10	10	Unk	LCS-26398		LCS	6010_S	1	1
11	11	Unk	1008181-03A		SAMP	6010_S	1	1
12	12	Unk	1008181-03ADUP		DUP	6010_S	1	1
13	13	Unk	1008181-03AMS		MS	6010_S	1	1
14	14	Unk	1008181-03AMSD		MSD	6010_S	1	1
15	15	Unk	1008181-03APDS		PDS	6010_S	1	1
16	16	Unk	1008181-03ASD		SD	6010_S	5	1
17	17	Unk	1008181-01A		SAMP	6010_S	1	1
18	18	Unk	1008181-02A		SAMP	6010_S	1	1
19	19	Unk	1008181-16A		SAMP	6010_S	1	1
20	20	Unk	RINSE		SAMP	6010_S	1	1
21	21	Unk	1008171-01A		SAMP	6010_S	1	1
22	22	Unk	1008171-02A		SAMP	6010_S	1	1
23	23	Unk	1008171-03A		SAMP	6010_S	1	1
24	24	Unk	1008180-01A		SAMP	6010_S	1	1
25	25	Unk	1008152-02G	20X	SAMP	6010_WDI	20	1
26	26	Unk	RINSE		SAMP	6010_WDI	1	1
27	27	Unk	ICB-26402		ICB	6010_WDI	1	1
28	28	Unk	1008175-03G		SAMP	6010_WDI	1	1
29	29	Unk	1008175-03GDUP		DUP	6010_WDI	1	1
30	30	Unk	RINSE		SAMP	6010_WDI	1	1
31	31	Unk	1008175-03GMS		MS	6010_WDI	1	1
32	32	Unk	1008175-03GMSD		MSD	6010_WDI	1	1
33	33	Unk	1008175-01G		SAMP	6010_WDI	1	1
34	34	Unk	1008175-02G		SAMP	6010_WDI	1	1
35	35	Unk	1008175-04G		SAMP	6010_WDI	1	1
36	36	Unk	1008176-01C		SAMP	6010_WDI	1	1
37	37	Unk	1008176-02C		SAMP	6010_WDI	1	1
38	38	Unk	1008176-03C		SAMP	6010_WDI	1	1
39	39	Unk	1008176-04C		SAMP	6010_WDI	1	1

	Pos ID	Type	Samplename	Comment	Custom ID	Custom ID	Custom ID	CorrFact
40	40	Unk	RINSE		SAMP	6010_WDI	1	1
41	41	Unk	1008176-05C		SAMP	6010_WDI	1	1
42	42	Unk	1008176-06C		SAMP	6010_WDI	1	1
43	43	Unk	1008176-07C		SAMP	6010_WDI	1	1
44	44	Unk	1008176-08C		SAMP	6010_WDI	1	1
45	45	Unk	1008176-09C		SAMP	6010_WDI	1	1
46	46	Unk	RINSE		SAMP	6010_WDI	1	1

Pb cal. Curve ~~aw~~ 8/30/10



c.z 8/30/10

Element, Wavelength and Order	n (Exponent)	Correlation	Std Error of Est	MDL	MQL	Status	Res
							Slope
Ag 328.068 {102}	1.000000	0.999996	0.001726	0.005178	0.017260	OK.	1.000000
Al 237.312 {142}	1.000000	0.999988	0.014745	0.044234	0.147446	OK.	1.000000
Al 396.152 { 85}	1.000000	0.999996	0.008885	0.026654	0.088846	OK.	1.000000
As 189.042 {177}	1.000000	0.999943	0.012689	0.038067	0.126889	OK.	1.000000
Au 208.209 {161}	1.000000	1.000000	0.002605	0.007814	0.026046	OK.	1.000000
B 249.678 {134}	1.000000	0.999998	0.001159	0.003478	0.011593	OK.	1.000000
Ba 233.527 {144}	1.000000	0.999998	0.001177	0.003532	0.011772	OK.	1.000000
Be 234.861 {143}	1.000000	0.999999	0.000082	0.000246	0.000819	OK.	1.000000
Ca 184.006 {182}	1.000000	0.999999	0.036420	0.109260	0.364200	OK.	1.000000
Ca 430.253 { 78}	1.000000	0.999992	0.229596	0.688787	2.295958	OK.	1.000000
Cd 214.438 {156}	1.000000	0.999994	0.000201	0.000604	0.002012	OK.	1.000000
Cd 228.802 {147}	1.000000	0.999998	0.000132	0.000395	0.001318	OK.	1.000000
Co 228.616 {147}	1.000000	0.999999	0.000474	0.001421	0.004737	OK.	1.000000
Cr 267.716 {126}	1.000000	0.999993	0.001087	0.003262	0.010873	OK.	1.000000
Cu 324.754 {103}	1.000000	0.999994	0.002112	0.006336	0.021121	OK.	1.000000
Fe 259.837 {129}	1.000000	1.000000	0.011512	0.034536	0.115121	OK.	1.000000
Fe 259.940 {129}	1.000000	0.999999	0.000831	0.002492	0.008307	OK.	1.000000
K 766.490 { 44}	1.000000	0.999993	0.045777	0.137332	0.457775	OK.	1.000000
Mg 285.213 {117}	1.000000	0.999958	0.054374	0.163121	0.543737	OK.	1.000000
Mg 293.654 {114}	1.000000	0.999987	0.306961	0.920882	3.069606	OK.	1.000000
Mn 257.610 {131}	1.000000	0.999998	0.000118	0.000353	0.001178	OK.	1.000000
Mo 202.030 {166}	1.000000	0.999992	0.002405	0.007215	0.024051	OK.	1.000000
Na 589.592 { 57}	1.000000	1.000000	0.003351	0.010041	0.033471	OK.	1.000000
Ni 231.604 {145}	1.000000	0.999999	0.000305	0.000915	0.003051	OK.	1.000000
P 213.618 {157}	1.000000	0.999998	0.055023	0.165069	0.550230	OK.	1.000000
Pb 220.353 {152}	1.000000	0.999999	0.001806	0.005417	0.018055	OK.	1.000000
Pd 360.955 { 93}	1.000000	0.999989	0.014178	0.042535	0.141784	OK.	1.000000
Sb 206.833 {162}	1.000000	0.999991	0.002529	0.007587	0.025290	OK.	1.000000
Se 196.090 {171}	1.000000	0.999992	0.004820	0.014460	0.048199	OK.	1.000000
Si 251.612 {133}	1.000000	0.999888	0.044281	0.132843	0.442811	OK.	1.000000
Sn 189.989 {176}	1.000000	0.999951	0.005842	0.017527	0.058422	OK.	1.000000
Sr 346.446 { 97}	1.000000	0.999998	0.003158	0.009474	0.031581	OK.	1.000000
Ti 334.941 {100}	1.000000	1.000000	0.000101	0.000304	0.001015	OK.	1.000000
Tl 190.864 {176}	1.000000	0.999957	0.013752	0.041257	0.137524	OK.	1.000000
V 310.230 {108}	1.000000	0.999993	0.002147	0.006440	0.021466	OK.	1.000000
Zn 213.856 {157}	1.000000	0.999999	0.000924	0.002771	0.009235	OK.	1.000000

Sample Report

Report Author Zaiga Upite

Printed: 8/30/2010 2:59 pm

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Acquire Date: 30-Aug-2010 10:50 am Sample Type: Calib. Std.

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.1555	Cts/S	0.0420	26.9844
Al2373	.9088	Cts/S	0.0124	1.3661
Al3961	-.0241	Cts/S	0.0585	243.2690
As1890	.0302	Cts/S	0.0070	23.1782
Au2082	.0414	Cts/S	0.0113	27.3560
B_2496	.0846	Cts/S	0.0134	15.8501
Ba2335	-.1829	Cts/S	0.0492	26.9240
Be2348	.07221	Cts/S	0.0291	40.2989
Ca1840!	1.447	Cts/S	0.0874	6.0413
Ca4302l	-.2120	Cts/S	0.1523	71.8637
Cd2144	.0515	Cts/S	0.0062	11.9685
Cd2288	.2981	Cts/S	0.0262	8.7989
Co2286	.0234	Cts/S	0.0397	169.7654
Cr2677	-.1706	Cts/S	0.0364	21.3300
Cu3247	-.0158	Cts/S	0.0736	466.0498
Fe2598I	.2194	Cts/S	0.0561	25.5862
Fe2599l	.3635	Cts/S	0.1621	44.5817
K_7664	1.540	Cts/S	0.1419	9.2101
Mg2852	.0315	Cts/S	0.0201	63.8275
Mg2936	-.1729	Cts/S	0.0063	3.6267
Mn2576	.1225	Cts/S	0.0239	19.5385
Mo2020	.0346	Cts/S	0.0117	33.9096
Na5895	-.2742	Cts/S	0.0648	23.6353
Ni2316	.1204	Cts/S	0.0091	7.5836
P_2136	.1049	Cts/S	0.0426	40.5927
Pb2203	-.0063	Cts/S	0.0171	268.9983
Pd3609	-.1731	Cts/S	0.0395	22.8411
Sb2068	.0131	Cts/S	0.0147	111.7417
Se1960	.0019	Cts/S	0.0149	804.8439
Si2516	.3987	Cts/S	0.0605	15.1851
Sn1899	.0299	Cts/S	0.0078	26.2190
Sr3464	.0111	Cts/S	0.0222	199.9471
Ti3349	.0667	Cts/S	0.0441	66.1534
Tl1908	.0100	Cts/S	0.0050	50.2266
V_3102	1.050	Cts/S	0.0095	0.9057
Zn2138	.2700	Cts/S	0.0044	1.6216

MRS-380,381,382 low

Acquire Date: 30-Aug-2010 10:55 am Sample Type: Calib. Std.

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0056	Cts/S	0.0509	916.4293
Al2373	1.009	Cts/S	0.0083	0.8245
Al3961	.3025	Cts/S	0.0265	8.7636
As1890	.0821	Cts/S	0.0270	32.8690
Au2082	.1759	Cts/S	0.0273	15.5357
B_2496	.2089	Cts/S	0.0268	12.8420
Ba2335	.6259	Cts/S	0.0546	8.7276
Be2348	.94353	Cts/S	0.0506	5.3616
Ca1840I	2.320	Cts/S	0.0856	3.6896
Cd2144	.0963	Cts/S	0.0206	21.4131
Cd2288	.3610	Cts/S	0.0111	3.0724
Co2286	.2502	Cts/S	0.0436	17.4235
Cr2677	-.0623	Cts/S	0.0140	22.4856
Cu3247	.2225	Cts/S	0.0227	10.1951
Fe2599I	.7201	Cts/S	0.0573	7.9577
K_7664	3.073	Cts/S	0.1935	6.2951
Mg2852	.3516	Cts/S	0.0071	2.0233
Mn2576	.3301	Cts/S	0.0181	5.4804
Mo2020	.1284	Cts/S	0.0099	7.7063
Na5895	17.39	Cts/S	0.3417	1.9647
Ni2316	.2468	Cts/S	0.0365	14.7802
P_2136	1.634	Cts/S	0.0324	1.9848
Pb2203	.0582	Cts/S	0.0300	51.6287
Pd3609	.0444	Cts/S	0.0475	106.8293
Sb2068	.0308	Cts/S	0.0155	50.1780
Se1960	.0469	Cts/S	0.0072	15.3342
Si2516	.5992	Cts/S	0.0972	16.2254
Sn1899	.0558	Cts/S	0.0122	21.8383
Sr3464	.1665	Cts/S	0.0074	4.4547
Ti3349	.4015	Cts/S	0.0731	18.2136
Tl1908	.0080	Cts/S	0.0222	278.7805
V_3102	1.213	Cts/S	0.0110	0.9033
Zn2138	1.088	Cts/S	0.0204	1.8775

MRS-380,381,382 mid

Acquire Date: 30-Aug-2010 11:00 am Sample Type: Calib. Std.

Elem	Avg	Units	Stddev	%RSD
Ag3280	1.493	Cts/S	0.0097	0.6468
Al2373	1.978	Cts/S	0.0084	0.4246
Al3961	3.639	Cts/S	0.0464	1.2745
As1890	.3980	Cts/S	0.0258	6.4717
Au2082	1.457	Cts/S	0.0369	2.5317
B_2496	1.633	Cts/S	0.0362	2.2178
Ba2335	7.435	Cts/S	0.0491	0.6607
Be2348	8.9357	Cts/S	0.0237	0.2654
Ca1840I	10.44	Cts/S	0.1897	1.8168
Ca4302I	7.618	Cts/S	0.0081	0.1067
Cd2144	.5659	Cts/S	0.0228	4.0325
Cd2288	1.137	Cts/S	0.0063	0.5533
Co2286	2.236	Cts/S	0.0307	1.3741
Cr2677	.8052	Cts/S	0.0196	2.4294
Cu3247	1.873	Cts/S	0.0357	1.9050
Fe2598I	1.504	Cts/S	0.0274	1.8195
Fe2599I	4.417	Cts/S	0.0918	2.0774
K_7664	18.92	Cts/S	0.0928	0.4907
Mg2852	7.304	Cts/S	0.0315	0.4310
Mg2936	.2258	Cts/S	0.0235	10.4239
Mn2576	1.838	Cts/S	0.0296	1.6088
Mo2020	1.072	Cts/S	0.0641	5.9769
Na5895	176.4	Cts/S	0.6733	0.3817
Ni2316	1.492	Cts/S	0.0321	2.1489
P_2136	15.53	Cts/S	0.1149	0.7400
Pb2203	.6207	Cts/S	0.0223	3.5924
Pd3609	1.538	Cts/S	0.0586	3.8095
Sb2068	.3243	Cts/S	0.0261	8.0609
Se1960	.3456	Cts/S	0.0267	7.7360
Si2516	2.581	Cts/S	0.0398	1.5404
Sn1899	.3432	Cts/S	0.0251	7.3189
Sr3464	1.875	Cts/S	0.1002	5.3455
Ti3349	3.514	Cts/S	0.0691	1.9674
Tl1908	.2786	Cts/S	0.0082	2.9510
V_3102	3.066	Cts/S	0.0291	0.9492
Zn2138	8.750	Cts/S	0.0564	0.6443

MRS-380,381,382 high

Acquire Date: 30-Aug-2010 11:05 am Sample Type: Calib. Std.

Elem	Avg	Units	Stddev	%RSD
Ag3280	15.92	Cts/S	0.1202	0.7551
Al2373	11.10	Cts/S	0.0664	0.5982
Al3961	35.71	Cts/S	0.0853	0.2389
As1890	4.080	Cts/S	0.0084	0.2051
Au2082	14.34	Cts/S	0.0739	0.5156
B_2496	15.84	Cts/S	0.0397	0.2509
Ba2335	74.34	Cts/S	0.3699	0.4976
Be2348	87.515	Cts/S	0.2169	0.2478
Ca1840l	90.35	Cts/S	0.5080	0.5622
Ca4302l	77.00	Cts/S	0.2103	0.2731
Cd2144	5.055	Cts/S	0.0095	0.1873
Cd2288	8.735	Cts/S	0.0600	0.6872
Co2286	21.77	Cts/S	0.0960	0.4410
Cr2677	9.918	Cts/S	0.0288	0.2904
Cu3247	19.23	Cts/S	0.1280	0.6659
Fe2598l	13.40	Cts/S	0.0188	0.1403
Fe2599l	40.69	Cts/S	0.0996	0.2447
K_7664	169.7	Cts/S	0.4608	0.2716
Mg2852	81.22	Cts/S	0.1341	0.1651
Mg2936	4.351	Cts/S	0.0286	0.6570
Mn2576	17.03	Cts/S	0.1021	0.5996
Mo2020	10.90	Cts/S	0.0931	0.8543
Na5895	1606.	Cts/S	6.1944	0.3856
Ni2316	13.77	Cts/S	0.0521	0.3781
P_2136	151.5	Cts/S	0.6395	0.4220
Pb2203	6.161	Cts/S	0.0193	0.3138
Pd3609	16.07	Cts/S	0.0489	0.3041
Sb2068	3.116	Cts/S	0.0094	0.3017
Se1960	3.509	Cts/S	0.0438	1.2473
Si2516	26.34	Cts/S	0.4880	1.8527
Sn1899	3.542	Cts/S	0.0080	0.2250
Sr3464	19.08	Cts/S	0.0363	0.1900
Ti3349	34.50	Cts/S	0.1382	0.4005
Tl1908	2.899	Cts/S	0.0148	0.5095
V_3102	22.07	Cts/S	0.0122	0.0552
Zn2138	83.87	Cts/S	0.2374	0.2831

MRS-385 Fe high

Acquire Date: 30-Aug-2010 11:10 am Sample Type: Calib. Std.

Elem	Avg	Units	Stddev	%RSD
Ca4302l	154.9	Cts/S	0.3341	0.2157
Fe2598l	1348.	Cts/S	6.9221	0.5136
Mg2936	48.01	Cts/S	0.1155	0.2406

ICB

Acquire Date: 30-Aug-2010 11:15 am Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0005	ppm	0.0016	337.8506
Al2373	.0116	ppm	0.0021	18.5159
Al3961	.0049	ppm	0.0098	199.2954
As1890	.0087	ppm	0.0151	172.3326
Au2082	.0011	ppm	0.0080	717.5638
B_2496	-.0011	ppm	0.0006	54.5796
Ba2335	-.0005	ppm	0.0002	44.1334
Be2348	-.00003	ppm	0.0001	262.9557
Ca1840l	-.0113	ppm	0.0429	379.4589
Ca4302l	.0188	ppm	0.0787	419.4129
Cd2144	.0002	ppm	0.0005	242.1114
Cd2288	.0002	ppm	0.0004	240.7653
Co2286	-.0008	ppm	0.0004	53.3690
Cr2677	.0000	ppm	0.0007	1,407.9086
Cu3247	.0021	ppm	0.0018	86.0390
Fe2598l	.0227	ppm	0.0124	54.6105
Fe2599l	.0160	ppm	0.0111	69.3489
K_7664	-.0019	ppm	0.0249	1,321.6461
Mg2852	.0593	ppm	0.0022	3.7947
Mg2936	.3894	ppm	0.0323	8.3043
Mn2576	.0000	ppm	0.0001	127.9039
Mo2020	.0018	ppm	0.0013	74.2149
Na5895	.0185	ppm	0.0028	15.0752
Ni2316	-.0003	ppm	0.0013	529.7254
P_2136	-.0289	ppm	0.0148	51.3975
Pb2203	.0104	ppm	0.0014	13.7335
Pd3609	-.0094	ppm	0.0052	54.9773
Sb2068	.0020	ppm	0.0098	494.4480
Se1960	.0052	ppm	0.0172	329.4698
Si2516	.0220	ppm	0.0018	8.1177
Sn1899	.0053	ppm	0.0027	51.2373
Sr3464	-.0045	ppm	0.0035	77.3548
Ti3349	.0000	ppm	0.0006	47,841.3480
Tl1908	.0127	ppm	0.0184	144.5730
V_3102	-.0001	ppm	0.0007	722.5004
Zn2138	-.0002	ppm	0.0003	158.2749

ICV MRS-329,339,340

Acquire Date: 30-Aug-2010 11:20 am Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4883	ppm	0.0014	0.2927
Al2373	2.565	ppm	0.0098	0.3810
Al3961	2.566	ppm	0.0115	0.4476
As1890	.9906	ppm	0.0080	0.8049
Au2082	2.537	ppm	0.0053	0.2082
B_2496	.4977	ppm	0.0015	0.3044
Ba2335	.5133	ppm	0.0022	0.4279
Be2348	.05086	ppm	0.0002	0.2955
Ca1840l	25.86	ppm	0.0607	0.2348
Ca4302l	25.59	ppm	0.0519	0.2028
Cd2144	.0507	ppm	0.0000	0.0542
Cd2288	.0506	ppm	0.0004	0.8477
Co2286	.2536	ppm	0.0018	0.7000
Cr2677	.2544	ppm	0.0026	1.0377
Cu3247	.4987	ppm	0.0025	0.5061
Fe2598l	.5226	ppm	0.0063	1.2008
Fe2599l	.5150	ppm	0.0039	0.7489
K_7664	10.03	ppm	0.0468	0.4663
Mg2852	5.013	ppm	0.0251	0.5008
Mg2936	4.862	ppm	0.0831	1.7084
Mn2576	.0503	ppm	0.0002	0.4134
Mo2020	.5003	ppm	0.0133	2.6525
Na5895	23.54	ppm	0.0807	0.3428
Ni2316	.2556	ppm	0.0010	0.3784
P_2136	20.42	ppm	0.0706	0.3460
Pb2203	1.018	ppm	0.0017	0.1698
Pd3609	2.518	ppm	0.0051	0.2018
Sb2068	.4385	ppm	0.0868	19.7914
Se1960	.9877	ppm	0.0067	0.6807
Si2516	2.308	ppm	0.0226	0.9807
Sn1899	.5040	ppm	0.0020	0.4030
Sr3464	1.278	ppm	0.0069	0.5383
Ti3349	.2540	ppm	0.0008	0.3218
Tl1908	1.235	ppm	0.0289	2.3425
V_3102	.4946	ppm	0.0029	0.5872
Zn2138	.5062	ppm	0.0019	0.3774

Fe High MRS-388

Acquire Date: 30-Aug-2010 11:25 am Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0020	ppm	0.0016	81.1656
Al2373	-.0727	ppm	0.0076	10.4458
Al3961	.0188	ppm	0.0088	46.8816
As1890	.0036	ppm	0.0090	252.1123
Au2082	-.0139	ppm	0.0021	14.9895
B_2496	-.0310	ppm	0.0017	5.4191
Ba2335	.0001	ppm	0.0002	298.8518
Be2348	.00127	ppm	0.0000	1.6911
Ca1840l	.1276	ppm	0.0610	47.7736
Ca4302l	.2263	ppm	0.0391	17.2784
Cd2144	.0017	ppm	0.0002	10.5718
Cd2288	-.0005	ppm	0.0003	69.8745
Co2286	.0000	ppm	0.0004	959.5850
Cr2677	.0053	ppm	0.0007	13.9869
Cu3247	-.0045	ppm	0.0004	9.6917
Fe2598l	51.15	ppm	0.1615	0.3157
Fe2599l	48.70	ppm	0.2682	0.5508
K_7664	-.1623	ppm	0.0241	14.8633
Mg2852	.0464	ppm	0.0015	3.3309
Mg2936	-2.311	ppm	0.0529	2.2901
Mn2576	.0004	ppm	0.0002	45.8372
Mo2020	.0027	ppm	0.0006	20.9469
Na5895	.0516	ppm	0.0090	17.3605
Ni2316	-.0121	ppm	0.0016	13.3918
P_2136	.0131	ppm	0.0051	38.8007
Pb2203	-.0096	ppm	0.0113	117.4907
Pd3609	-.0723	ppm	0.0133	18.3548
Sb2068	.0117	ppm	0.0059	50.2721
Se1960	.0008	ppm	0.0028	337.4039
Si2516	.0255	ppm	0.0063	24.7443
Sn1899	-.0207	ppm	0.0040	19.3977
Sr3464	.0036	ppm	0.0044	123.8999
Ti3349	-.0005	ppm	0.0002	42.0405
Tl1908	.0104	ppm	0.0265	254.5283
V_3102	.0020	ppm	0.0021	103.1711
Zn2138	.0027	ppm	0.0002	8.0423

ICSA MRS-372

Acquire Date: 30-Aug-2010 11:30 am Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4502	ppm	0.0037	0.8242
Al2373	448.2	ppm	2.4474	0.5460
Al3961	430.8	ppm	1.3761	0.3195
As1890	.8787	ppm	0.0020	0.2326
Au2082	2.178	ppm	0.0224	1.0299
B_2496	.3425	ppm	0.0025	0.7183
Ba2335	.4419	ppm	0.0033	0.7375
Be2348	.05077	ppm	0.0001	0.2826
Ca1840l	444.0	ppm	2.4451	0.5507
Ca4302l	496.2	ppm	1.3758	0.2772
Cd2144	.0441	ppm	0.0001	0.3262
Cd2288	.0475	ppm	0.0004	0.7697
Co2286	.2145	ppm	0.0015	0.7128
Cr2677	.2107	ppm	0.0031	1.4525
Cu3247	.4382	ppm	0.0057	1.2984
Fe2598l	173.3	ppm	1.0162	0.5864
Fe2599l	164.3	ppm	1.3481	0.8203
K_7664	9.049	ppm	0.0407	0.4493
Mg2852	388.6	ppm	0.5425	0.1396
Mg2936	489.6	ppm	1.8667	0.3812
Mn2576	.0417	ppm	0.0003	0.6072
Mo2020	.4149	ppm	0.0120	2.8989
Na5895	24.05	ppm	0.0924	0.3843
Ni2316	.1817	ppm	0.0022	1.2195
P_2136	18.41	ppm	0.1309	0.7108
Pb2203	.8083	ppm	0.0113	1.3976
Pd3609	2.122	ppm	0.0051	0.2411
Sb2068	.3844	ppm	0.0888	23.0984
Se1960	.8432	ppm	0.0167	1.9816
Si2516	2.041	ppm	0.0143	0.6992
Sn1899	.4608	ppm	0.0042	0.9054
Sr3464	1.110	ppm	0.0072	0.6503
Ti3349	.2254	ppm	0.0013	0.5727
Tl1908	1.049	ppm	0.0309	2.9495
V_3102	.4422	ppm	0.0036	0.8149
Zn2138	.4706	ppm	0.0028	0.5943

ICB

Acquire Date: 30-Aug-2010 11:35 am Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0019	ppm	0.0016	80.8335
Al2373	.1138	ppm	0.0427	37.4888
Al3961	.1043	ppm	0.0271	26.0013
As1890	.0130	ppm	0.0047	36.0156
Au2082	.0062	ppm	0.0064	102.8358
B_2496	-.0006	ppm	0.0005	86.1142
Ba2335	-.0004	ppm	0.0002	51.6659
Be2348	-.00002	ppm	0.0000	146.5744
Ca1840l	.1147	ppm	0.0486	42.3504
Ca4302l	.1284	ppm	0.0464	36.1815
Cd2144	-.0001	ppm	0.0004	363.9440
Cd2288	.0004	ppm	0.0004	95.2892
Co2286	-.0005	ppm	0.0007	148.0826
Cr2677	.0010	ppm	0.0004	42.7670
Cu3247	.0004	ppm	0.0010	284.8259
Fe2598l	.0633	ppm	0.0162	25.6548
Fe2599l	.0532	ppm	0.0129	24.1745
K_7664	.0049	ppm	0.0280	576.2514
Mg2852	.0988	ppm	0.0120	12.1421
Mg2936	.4032	ppm	0.0587	14.5501
Mn2576	.0000	ppm	0.0001	1,555.6466
Mo2020	.0070	ppm	0.0019	26.6440
Na5895	.0258	ppm	0.0026	9.9963
Ni2316	.0001	ppm	0.0009	1,202.7471
P_2136	-.0227	ppm	0.0141	62.0338
Pb2203	.0068	ppm	0.0040	59.1981
Pd3609	-.0100	ppm	0.0126	126.4698
Sb2068	.0108	ppm	0.0050	46.3343
Se1960	.0082	ppm	0.0139	168.8297
Si2516	.0181	ppm	0.0070	38.8145
Sn1899	-.0006	ppm	0.0039	709.7211
Sr3464	.0009	ppm	0.0063	685.7053
Ti3349	-.0003	ppm	0.0006	174.0870
Tl1908	.0181	ppm	0.0123	68.0263
V_3102	.0014	ppm	0.0008	60.2445
Zn2138	.0003	ppm	0.0003	91.1201

1008157-02AMS

Acquire Date: 30-Aug-2010 11:40 am Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0422	ppm	0.0036	8.4979
Al2373	12.19	ppm	0.0545	0.4472
Al3961	11.89	ppm	0.0254	0.2133
As1890	.4717	ppm	0.0041	0.8719
Au2082	.1924	ppm	0.0081	4.2183
B_2496	.9654	ppm	0.0009	0.0900
Ba2335	.3579	ppm	0.0013	0.3596
Be2348	.02653	ppm	0.0001	0.2237
Ca1840l	132.7	ppm	0.4213	0.3175
Ca4302l	138.8	ppm	0.1261	0.0909
Cd2144	.0249	ppm	0.0003	1.3193
Cd2288	.0258	ppm	0.0003	1.0160
Co2286	.1270	ppm	0.0006	0.4564
Cr2677	.1221	ppm	0.0025	2.0138
Cu3247	.2717	ppm	0.0042	1.5575
Fe2598l	2.107	ppm	0.0007	0.0315
Fe2599l	2.015	ppm	0.0057	0.2838
K_7664	5.959	ppm	0.0143	0.2395
Mg2852	9.280	ppm	0.0134	0.1443
Mg2936	8.912	ppm	0.1880	2.1096
Mn2576	.2258	ppm	0.0007	0.3253
Mo2020	.0363	ppm	0.0014	3.7766
Na5895	20.82	ppm	0.0737	0.3538
Ni2316	.1346	ppm	0.0009	0.6327
P_2136	10.64	ppm	0.0478	0.4491
Pb2203	.3643	ppm	0.0057	1.5740
Pd3609	.0051	ppm	0.0099	192.6997
Sb2068	.1708	ppm	0.0078	4.5625
Se1960	.4220	ppm	0.0212	5.0155
Si2516	20.36	ppm	0.0537	0.2640
Sn1899	.0280	ppm	0.0028	9.9767
Sr3464	.7887	ppm	0.0056	0.7085
Ti3349	.0816	ppm	0.0013	1.5819
Tl1908	.5823	ppm	0.0174	2.9883
V_3102	.2410	ppm	0.0015	0.6414
Zn2138	.4740	ppm	0.0014	0.2962

1008157-02AMSD

Acquire Date: 30-Aug-2010 11:45 am Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0819	ppm	0.0022	2.6326
Al2373	10.92	ppm	0.0837	0.7671
Al3961	10.70	ppm	0.1244	1.1629
As1890	.4486	ppm	0.0029	0.6533
Au2082	.3334	ppm	0.0062	1.8597
B_2496	.8136	ppm	0.0114	1.4065
Ba2335	.3497	ppm	0.0026	0.7571
Be2348	.02573	ppm	0.0002	0.6500
Ca1840I	118.0	ppm	1.1084	0.9391
Ca4302I	124.3	ppm	1.4079	1.1326
Cd2144	.0244	ppm	0.0002	0.7438
Cd2288	.0256	ppm	0.0005	1.7940
Co2286	.1227	ppm	0.0009	0.7328
Cr2677	.1182	ppm	0.0011	0.9338
Cu3247	.2711	ppm	0.0035	1.2812
Fe2598I	2.046	ppm	0.0144	0.7060
Fe2599I	1.944	ppm	0.0104	0.5363
K_7664	5.707	ppm	0.0663	1.1620
Mg2852	8.537	ppm	0.0907	1.0630
Mg2936	8.156	ppm	0.1460	1.7896
Mn2576	.2187	ppm	0.0018	0.8092
Mo2020	.0399	ppm	0.0016	4.1153
Na5895	18.98	ppm	0.2644	1.3933
Ni2316	.1292	ppm	0.0004	0.2761
P_2136	10.28	ppm	0.0930	0.9055
Pb2203	.3731	ppm	0.0076	2.0495
Pd3609	.0277	ppm	0.0096	34.8378
Sb2068	.1606	ppm	0.0099	6.1349
Se1960	.4364	ppm	0.0180	4.1194
Si2516	19.51	ppm	0.1394	0.7149
Sn1899	.0329	ppm	0.0013	4.0696
Sr3464	.7369	ppm	0.0027	0.3731
Ti3349	.0945	ppm	0.0009	0.9045
Tl1908	.5683	ppm	0.0063	1.1002
V_3102	.2395	ppm	0.0044	1.8451
Zn2138	.4680	ppm	0.0039	0.8245

A1008165-01A

Acquire Date: 30-Aug-2010 11:50 am   Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0005	ppm	0.0006	129.8520
Al2373	.0084	ppm	0.0051	60.7834
Al3961	.0623	ppm	0.0074	11.8156
As1890	.0136	ppm	0.0051	37.3464
Au2082	-.0009	ppm	0.0050	538.0962
B_2496	.0145	ppm	0.0002	1.6187
Ba2335	.0809	ppm	0.0014	1.7683
Be2348	-.00007	ppm	0.0000	25.5069
Ca1840I	5.691	ppm	0.0732	1.2868
Ca4302I	5.526	ppm	0.1054	1.9078
Cd2144	.0052	ppm	0.0002	4.2184
Cd2288	.0048	ppm	0.0002	3.6025
Co2286	.0025	ppm	0.0005	21.2425
Cr2677	.0089	ppm	0.0012	13.3559
Cu3247	.0998	ppm	0.0024	2.3967
Fe2598I	.0698	ppm	0.0032	4.6535
Fe2599I	.0592	ppm	0.0013	2.2656
K_7664	.1851	ppm	0.0157	8.5074
Mg2852	.3997	ppm	0.0057	1.4326
Mg2936	.6805	ppm	0.0712	10.4648
Mn2576	.1159	ppm	0.0027	2.3106
Mo2020	.0036	ppm	0.0012	32.8425
Na5895	60.66	ppm	1.2003	1.9787
Ni2316	.0171	ppm	0.0008	4.5562
P_2136	-.0174	ppm	0.0067	38.5900
Pb2203	.1402	ppm	0.0084	6.0223
Pd3609	-.0743	ppm	0.0104	14.0219
Sb2068	.0126	ppm	0.0098	78.0033
Se1960	.0017	ppm	0.0027	158.5914
Si2516	.5955	ppm	0.0219	3.6692
Sn1899	.0027	ppm	0.0070	258.7893
Sr3464	.0191	ppm	0.0029	15.1172
Ti3349	.0006	ppm	0.0007	117.7380
Tl1908	.0167	ppm	0.0071	42.8028
V_3102	.0039	ppm	0.0011	28.1148
Zn2138	1.268	ppm	0.0282	2.2259

A1008165-01ADUP

Acquire Date: 30-Aug-2010 11:55 am Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0040	ppm	0.0036	90.4129
Al2373	.0121	ppm	0.0016	13.6478
Al3961	.0401	ppm	0.0084	20.9173
As1890	-.0025	ppm	0.0037	146.6432
Au2082	-.0003	ppm	0.0019	664.6019
B_2496	.0105	ppm	0.0004	3.6011
Ba2335	.0627	ppm	0.0014	2.2868
Be2348	-.00002	ppm	0.0000	198.9831
Ca1840l	4.419	ppm	0.0931	2.1061
Ca4302l	4.387	ppm	0.0702	1.6002
Cd2144	.0041	ppm	0.0006	15.0063
Cd2288	.0036	ppm	0.0003	7.3906
Co2286	.0028	ppm	0.0003	12.0904
Cr2677	.0096	ppm	0.0020	20.7131
Cu3247	.0790	ppm	0.0038	4.8048
Fe2598l	.0528	ppm	0.0013	2.4051
Fe2599l	.0446	ppm	0.0010	2.2043
K_7664	.1317	ppm	0.0058	4.3719
Mg2852	.3092	ppm	0.0057	1.8395
Mg2936	.6398	ppm	0.0400	6.2518
Mn2576	.0906	ppm	0.0023	2.5727
Mo2020	.0027	ppm	0.0010	38.0203
Na5895	47.11	ppm	1.4245	3.0238
Ni2316	.0136	ppm	0.0008	6.0887
P_2136	-.0215	ppm	0.0037	17.0922
Pb2203	.1088	ppm	0.0047	4.3223
Pd3609	-.0568	ppm	0.0176	30.9041
Sb2068	.0122	ppm	0.0078	63.8279
Se1960	-.0004	ppm	0.0022	544.3012
Si2516	.4609	ppm	0.0065	1.4118
Sn1899	.0026	ppm	0.0030	116.6985
Sr3464	.0142	ppm	0.0056	39.5625
Ti3349	.0008	ppm	0.0005	67.9193
Tl1908	.0087	ppm	0.0112	129.0434
V_3102	.0027	ppm	0.0026	93.2275
Zn2138	.9923	ppm	0.0242	2.4411

A1008165-01AMS

Acquire Date: 30-Aug-2010 12:00 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0902	ppm	0.0016	1.8109
Al2373	.5442	ppm	0.0104	1.9168
Al3961	.5747	ppm	0.0221	3.8409
As1890	.2008	ppm	0.0055	2.7332
Au2082	.4770	ppm	0.0139	2.9243
B_2496	.1086	ppm	0.0045	4.1681
Ba2335	.1738	ppm	0.0022	1.2934
Be2348	.01016	ppm	0.0002	1.5110
Ca1840l	9.968	ppm	0.0818	0.8210
Ca4302l	10.08	ppm	0.1400	1.3884
Cd2144	.0143	ppm	0.0005	3.1911
Cd2288	.0140	ppm	0.0004	3.1842
Co2286	.0525	ppm	0.0014	2.7490
Cr2677	.0558	ppm	0.0010	1.8135
Cu3247	.1864	ppm	0.0032	1.7009
Fe2598l	.1636	ppm	0.0043	2.6225
Fe2599l	.1541	ppm	0.0018	1.1355
K_7664	2.160	ppm	0.0492	2.2768
Mg2852	1.333	ppm	0.0263	1.9703
Mg2936	1.427	ppm	0.1954	13.6937
Mn2576	.1104	ppm	0.0015	1.3826
Mo2020	.1021	ppm	0.0019	1.8741
Na5895	57.54	ppm	1.2130	2.1082
Ni2316	.0665	ppm	0.0015	2.2561
P_2136	4.102	ppm	0.0271	0.6613
Pb2203	.3285	ppm	0.0067	2.0477
Pd3609	.4672	ppm	0.0215	4.6015
Sb2068	.1141	ppm	0.0021	1.8075
Se1960	.1855	ppm	0.0128	6.8778
Si2516	.9470	ppm	0.0153	1.6136
Sn1899	.1053	ppm	0.0028	2.6774
Sr3464	.2732	ppm	0.0015	0.5602
Ti3349	.0515	ppm	0.0023	4.5291
Tl1908	.2550	ppm	0.0095	3.7380
V_3102	.0987	ppm	0.0009	0.9010
Zn2138	1.200	ppm	0.0193	1.6057

A1008165-01AMSD

Acquire Date: 30-Aug-2010 12:05 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0865	ppm	0.0057	6.5989
Al2373	.5404	ppm	0.0123	2.2813
Al3961	.5978	ppm	0.0078	1.3078
As1890	.2003	ppm	0.0078	3.8871
Au2082	.4942	ppm	0.0025	0.5099
B_2496	.1121	ppm	0.0010	0.8768
Ba2335	.1796	ppm	0.0012	0.6889
Be2348	.01033	ppm	0.0002	1.4618
Ca1840l	10.49	ppm	0.0772	0.7365
Ca4302l	10.41	ppm	0.0636	0.6112
Cd2144	.0148	ppm	0.0003	2.2279
Cd2288	.0149	ppm	0.0002	1.4311
Co2286	.0547	ppm	0.0014	2.6031
Cr2677	.0587	ppm	0.0020	3.3686
Cu3247	.1923	ppm	0.0016	0.8133
Fe2598l	.1659	ppm	0.0047	2.8377
Fe2599l	.1593	ppm	0.0029	1.8407
K_7664	2.138	ppm	0.0192	0.8966
Mg2852	1.363	ppm	0.0097	0.7129
Mg2936	1.457	ppm	0.0191	1.3095
Mn2576	.1151	ppm	0.0010	0.8652
Mo2020	.1068	ppm	0.0020	1.8369
Na5895	60.08	ppm	0.5911	0.9838
Ni2316	.0674	ppm	0.0002	0.3208
P_2136	4.241	ppm	0.0580	1.3669
Pb2203	.3224	ppm	0.0081	2.5009
Pd3609	.4553	ppm	0.0097	2.1278
Sb2068	.1152	ppm	0.0059	5.1595
Se1960	.1940	ppm	0.0097	5.0038
Si2516	.9648	ppm	0.0041	0.4283
Sn1899	.1027	ppm	0.0055	5.3189
Sr3464	.2803	ppm	0.0043	1.5293
Ti3349	.0532	ppm	0.0016	2.9133
Tl1908	.2589	ppm	0.0108	4.1671
V_3102	.1009	ppm	0.0015	1.4560
Zn2138	1.246	ppm	0.0127	1.0185

A1008165-01APDS

Acquire Date: 30-Aug-2010 12:10 pm   Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4748	ppm	0.0141	2.9615
Al2373	2.648	ppm	0.0548	2.0685
Al3961	2.640	ppm	0.0510	1.9334
As1890	.9897	ppm	0.0246	2.4850
Au2082	2.559	ppm	0.0596	2.3300
B_2496	.5210	ppm	0.0124	2.3814
Ba2335	.6031	ppm	0.0162	2.6815
Be2348	.05092	ppm	0.0013	2.6269
Ca1840l	31.89	ppm	0.6987	2.1908
Ca4302l	31.54	ppm	0.6500	2.0611
Cd2144	.0557	ppm	0.0010	1.8627
Cd2288	.0560	ppm	0.0012	2.1054
Co2286	.2583	ppm	0.0064	2.4918
Cr2677	.2538	ppm	0.0062	2.4357
Cu3247	.6096	ppm	0.0089	1.4632
Fe2598l	.5828	ppm	0.0165	2.8335
Fe2599l	.5812	ppm	0.0179	3.0768
K_7664	10.01	ppm	0.2300	2.2970
Mg2852	5.464	ppm	0.1161	2.1256
Mg2936	5.292	ppm	0.0734	1.3875
Mn2576	.1646	ppm	0.0047	2.8382
Mo2020	.5246	ppm	0.0085	1.6151
Na5895	90.63	ppm	2.7120	2.9925
Ni2316	.2734	ppm	0.0069	2.5395
P_2136	20.99	ppm	0.5294	2.5227
Pb2203	1.158	ppm	0.0221	1.9109
Pd3609	2.457	ppm	0.0708	2.8841
Sb2068	.5076	ppm	0.0233	4.5868
Se1960	.9975	ppm	0.0239	2.3924
Si2516	2.971	ppm	0.0399	1.3429
Sn1899	.5074	ppm	0.0120	2.3686
Sr3464	1.314	ppm	0.0294	2.2358
Ti3349	.2603	ppm	0.0048	1.8625
Tl1908	1.278	ppm	0.0337	2.6327
V_3102	.4995	ppm	0.0044	0.8754
Zn2138	1.752	ppm	0.0455	2.5988

RINSE

Acquire Date: 30-Aug-2010 12:15 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0013	ppm	0.0021	164.4534
Al2373	.0181	ppm	0.0082	45.2528
Al3961	-.0153	ppm	0.0052	33.9518
As1890	.0136	ppm	0.0069	50.6456
Au2082	-.0004	ppm	0.0070	1,774.0268
B_2496	-.0017	ppm	0.0012	69.6284
Ba2335	.0000	ppm	0.0003	2,085.8321
Be2348	-.00003	ppm	0.0000	20.7962
Ca1840l	-.0159	ppm	0.0542	340.9325
Ca4302l	.0051	ppm	0.0491	969.9475
Cd2144	.0001	ppm	0.0002	232.7417
Cd2288	.0004	ppm	0.0003	74.6225
Co2286	-.0007	ppm	0.0005	72.7223
Cr2677	-.0001	ppm	0.0023	4,095.4850
Cu3247	.0009	ppm	0.0022	237.3476
Fe2598l	.0039	ppm	0.0017	44.7831
Fe2599l	-.0010	ppm	0.0006	59.5729
K_7664	.0212	ppm	0.0071	33.5324
Mg2852	.0586	ppm	0.0026	4.5027
Mg2936	.2750	ppm	0.1090	39.6404
Mn2576	.0006	ppm	0.0001	11.2107
Mo2020	.0031	ppm	0.0006	20.6691
Na5895	.0205	ppm	0.0109	53.1944
Ni2316	-.0003	ppm	0.0006	238.4095
P_2136	-.0166	ppm	0.0109	65.3831
Pb2203	.0043	ppm	0.0123	282.2377
Pd3609	-.0286	ppm	0.0096	33.4506
Sb2068	.0037	ppm	0.0048	129.9389
Se1960	.0102	ppm	0.0003	2.9985
Si2516	.0174	ppm	0.0046	26.6199
Sn1899	.0019	ppm	0.0015	77.4933
Sr3464	.0046	ppm	0.0024	52.3401
Ti3349	-.0004	ppm	0.0007	168.2234
Tl1908	.0054	ppm	0.0042	77.5496
V_3102	.0016	ppm	0.0011	67.3405
Zn2138	.0000	ppm	0.0003	674.5473

MBLK-26398

Acquire Date: 30-Aug-2010 12:20 pm   Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0030	ppm	0.0016	52.9099
Al2373	.1243	ppm	0.0063	5.0593
Al3961	.1157	ppm	0.0030	2.5542
As1890	.0094	ppm	0.0065	69.2843
Au2082	.0963	ppm	0.0849	88.2243
B_2496	.0260	ppm	0.0007	2.6767
Ba2335	-.0001	ppm	0.0006	794.4606
Be2348	-.00002	ppm	0.0000	228.4523
Ca1840I	.3332	ppm	0.0678	20.3303
Ca4302I	.4211	ppm	0.0451	10.7016
Cd2144	.0001	ppm	0.0003	225.2655
Cd2288	.0001	ppm	0.0005	422.6668
Co2286	-.0010	ppm	0.0004	34.1625
Cr2677	.0001	ppm	0.0020	2,556.3436
Cu3247	-.0005	ppm	0.0000	8.0538
Fe2598I	.0098	ppm	0.0039	39.2621
Fe2599I	.0066	ppm	0.0007	10.3166
K_7664	.0320	ppm	0.0245	76.5795
Mg2852	.0563	ppm	0.0031	5.4615
Mg2936	.2700	ppm	0.0328	12.1434
Mn2576	.0010	ppm	0.0001	12.0704
Mo2020	.0024	ppm	0.0006	25.7290
Na5895	.0282	ppm	0.0047	16.6495
Ni2316	-.0001	ppm	0.0011	1,284.1211
P_2136	-.0073	ppm	0.0135	186.4216
Pb2203	.0053	ppm	0.0130	244.8872
Pd3609	.0314	ppm	0.0151	48.0720
Sb2068	.0019	ppm	0.0042	219.5880
Se1960	.0135	ppm	0.0073	54.3372
Si2516	.0781	ppm	0.0082	10.5062
Sn1899	.0309	ppm	0.0062	19.9577
Sr3464	.0014	ppm	0.0023	164.5488
Ti3349	.0006	ppm	0.0004	62.3256
Tl1908	.0076	ppm	0.0047	61.8417
V_3102	-.0006	ppm	0.0013	209.9068
Zn2138	.0003	ppm	0.0004	128.7434

LCS-26398

Acquire Date: 30-Aug-2010 12:25 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4374	ppm	0.0017	0.3958
Al2373	2.510	ppm	0.0132	0.5261
Al3961	2.558	ppm	0.0188	0.7344
As1890	.9211	ppm	0.0069	0.7499
Au2082	2.388	ppm	0.0070	0.2914
B_2496	.4418	ppm	0.0029	0.6547
Ba2335	.5003	ppm	0.0001	0.0230
Be2348	.04776	ppm	0.0001	0.1343
Ca1840l	25.26	ppm	0.0858	0.3397
Ca4302l	25.30	ppm	0.1072	0.4238
Cd2144	.0472	ppm	0.0002	0.5097
Cd2288	.0490	ppm	0.0005	0.9465
Co2286	.2425	ppm	0.0003	0.1316
Cr2677	.2350	ppm	0.0005	0.1948
Cu3247	.4845	ppm	0.0008	0.1679
Fe2598l	.4955	ppm	0.0026	0.5236
Fe2599l	.4969	ppm	0.0027	0.5401
K_7664	9.427	ppm	0.0474	0.5032
Mg2852	4.791	ppm	0.0244	0.5085
Mg2936	4.519	ppm	0.0311	0.6882
Mn2576	.0491	ppm	0.0001	0.2035
Mo2020	.5002	ppm	0.0050	0.9996
Na5895	23.01	ppm	0.1517	0.6593
Ni2316	.2418	ppm	0.0011	0.4639
P_2136	19.91	ppm	0.0597	0.3001
Pb2203	.9616	ppm	0.0130	1.3468
Pd3609	2.359	ppm	0.0168	0.7115
Sb2068	.4741	ppm	0.0045	0.9561
Se1960	.9343	ppm	0.0017	0.1862
Si2516	.0558	ppm	0.0019	3.3224
Sn1899	.4907	ppm	0.0046	0.9274
Sr3464	1.233	ppm	0.0049	0.3970
Ti3349	.2506	ppm	0.0014	0.5667
Tl1908	1.210	ppm	0.0248	2.0493
V_3102	.4720	ppm	0.0024	0.5103
Zn2138	.4786	ppm	0.0002	0.0507

ICV MRS-329,339,340

Acquire Date: 30-Aug-2010 12:30 pm   Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4696	ppm	0.0059	1.2652
Al2373	2.517	ppm	0.0022	0.0880
Al3961	2.591	ppm	0.0090	0.3458
As1890	.9659	ppm	0.0117	1.2079
Au2082	2.564	ppm	0.0134	0.5245
B_2496	.4962	ppm	0.0015	0.2958
Ba2335	.5166	ppm	0.0011	0.2165
Be2348	.04993	ppm	0.0001	0.1698
Ca1840I	26.26	ppm	0.0899	0.3423
Ca4302I	25.81	ppm	0.0702	0.2721
Cd2144	.0500	ppm	0.0007	1.4611
Cd2288	.0511	ppm	0.0001	0.1954
Co2286	.2525	ppm	0.0013	0.4982
Cr2677	.2453	ppm	0.0014	0.5738
Cu3247	.5052	ppm	0.0035	0.6992
Fe2598I	.5053	ppm	0.0021	0.4222
Fe2599I	.5102	ppm	0.0024	0.4674
K_7664	9.625	ppm	0.0143	0.1484
Mg2852	4.930	ppm	0.0066	0.1340
Mg2936	4.665	ppm	0.0927	1.9879
Mn2576	.0496	ppm	0.0002	0.3784
Mo2020	.5066	ppm	0.0084	1.6496
Na5895	23.74	ppm	0.0539	0.2272
Ni2316	.2541	ppm	0.0013	0.5036
P_2136	20.80	ppm	0.0940	0.4520
Pb2203	1.003	ppm	0.0018	0.1800
Pd3609	2.483	ppm	0.0167	0.6736
Sb2068	.4054	ppm	0.0703	17.3505
Se1960	.9550	ppm	0.0189	1.9767
Si2516	2.267	ppm	0.0175	0.7731
Sn1899	.4971	ppm	0.0041	0.8297
Sr3464	1.294	ppm	0.0090	0.6953
Ti3349	.2582	ppm	0.0005	0.1901
Tl1908	1.262	ppm	0.0022	0.1770
V_3102	.4840	ppm	0.0048	0.9900
Zn2138	.5012	ppm	0.0005	0.1016

Fe High MRS-388

Acquire Date: 30-Aug-2010 12:35 pm Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0006	ppm	0.0016	277.2840
Al2373	-.0723	ppm	0.0146	20.2384
Al3961	.0211	ppm	0.0095	44.9579
As1890	.0042	ppm	0.0032	76.7662
Au2082	-.0169	ppm	0.0027	16.0607
B_2496	-.0330	ppm	0.0021	6.4124
Ba2335	.0002	ppm	0.0002	89.7536
Be2348	.00127	ppm	0.0000	2.5080
Ca1840l	.1474	ppm	0.0653	44.2549
Ca4302l	.2383	ppm	0.0253	10.6270
Cd2144	.0014	ppm	0.0003	22.2841
Cd2288	-.0010	ppm	0.0003	27.4842
Co2286	-.0003	ppm	0.0006	199.6285
Cr2677	.0054	ppm	0.0013	24.2227
Cu3247	-.0038	ppm	0.0020	53.7787
Fe2598l	51.79	ppm	0.1406	0.2715
Fe2599l	50.33	ppm	0.3009	0.5979
K_7664	-.1453	ppm	0.0209	14.4019
Mg2852	.0451	ppm	0.0005	1.1422
Mg2936	-2.622	ppm	0.0481	1.8343
Mn2576	.0001	ppm	0.0001	60.4250
Mo2020	.0035	ppm	0.0015	43.7832
Na5895	.0589	ppm	0.0073	12.4119
Ni2316	-.0117	ppm	0.0009	7.4809
P_2136	.0160	ppm	0.0123	76.7199
Pb2203	-.0030	ppm	0.0105	346.8670
Pd3609	-.0857	ppm	0.0069	8.0371
Sb2068	.0118	ppm	0.0081	68.2412
Se1960	-.0052	ppm	0.0067	130.0715
Si2516	.0285	ppm	0.0115	40.5004
Sn1899	-.0176	ppm	0.0016	8.9572
Sr3464	-.0002	ppm	0.0038	2,220.8371
Ti3349	.0001	ppm	0.0011	844.3409
Tl1908	.0094	ppm	0.0096	102.2674
V_3102	.0003	ppm	0.0020	606.2507
Zn2138	.0027	ppm	0.0001	5.0457

ICB

Acquire Date: 30-Aug-2010 12:41 pm   Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0026	ppm	0.0026	98.5619
Al2373	.0869	ppm	0.0379	43.5515
Al3961	.0588	ppm	0.0143	24.2865
As1890	.0124	ppm	0.0097	78.0648
Au2082	-.0001	ppm	0.0007	1,056.4448
B_2496	-.0007	ppm	0.0004	54.3717
Ba2335	-.0003	ppm	0.0004	145.3394
Be2348	.00000	ppm	0.0000	4,907.5987
Ca1840l	.0893	ppm	0.0288	32.2698
Ca4302l	.1189	ppm	0.0424	35.6510
Cd2144	.0000	ppm	0.0003	11,804.1141
Cd2288	.0003	ppm	0.0005	174.5582
Co2286	-.0002	ppm	0.0006	272.0650
Cr2677	.0004	ppm	0.0023	543.3970
Cu3247	.0002	ppm	0.0013	596.9403
Fe2598l	.0703	ppm	0.0092	13.0580
Fe2599l	.0647	ppm	0.0069	10.6749
K_7664	.0130	ppm	0.0084	64.4949
Mg2852	.0872	ppm	0.0057	6.4862
Mg2936	.3311	ppm	0.1061	32.0478
Mn2576	-.0001	ppm	0.0001	120.4186
Mo2020	.0033	ppm	0.0013	39.7747
Na5895	.0376	ppm	0.0048	12.8664
Ni2316	-.0001	ppm	0.0010	1,377.0538
P_2136	-.0162	ppm	0.0099	60.9704
Pb2203	-.0011	ppm	0.0041	385.7460
Pd3609	-.0100	ppm	0.0119	118.9017
Sb2068	.0061	ppm	0.0022	35.7638
Se1960	.0089	ppm	0.0016	18.0769
Si2516	.0157	ppm	0.0011	6.7815
Sn1899	.0074	ppm	0.0026	34.7135
Sr3464	-.0078	ppm	0.0050	64.6795
Ti3349	-.0006	ppm	0.0008	137.4707
Tl1908	.0065	ppm	0.0052	80.3370
V_3102	.0022	ppm	0.0011	51.5905
Zn2138	.0003	ppm	0.0003	84.6831

1008181-03A

Acquire Date: 30-Aug-2010 12:46 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0195	ppm	0.0027	14.0888
Al2373	65.69	ppm	0.2207	0.3360
Al3961	65.08	ppm	0.3456	0.5311
As1890	.0325	ppm	0.0055	16.9412
Au2082	-.0215	ppm	0.0029	13.3550
B_2496	-.0994	ppm	0.0006	0.6483
Ba2335	.9614	ppm	0.0039	0.4063
Be2348	.00682	ppm	0.0000	0.3300
Ca1840l	36.65	ppm	0.0688	0.1878
Ca4302l	32.59	ppm	0.1764	0.5414
Cd2144	.0079	ppm	0.0003	3.4727
Cd2288	.0014	ppm	0.0002	15.0825
Co2286	.1333	ppm	0.0004	0.3278
Cr2677	.1124	ppm	0.0016	1.4415
Cu3247	.1015	ppm	0.0005	0.4600
Fe2598l	167.9	ppm	0.8528	0.5081
Fe2599l	160.6	ppm	1.1492	0.7158
K_7664	6.468	ppm	0.0160	0.2470
Mg2852	26.96	ppm	0.0948	0.3517
Mg2936	16.66	ppm	0.2218	1.3314
Mn2576	7.134	ppm	0.0238	0.3343
Mo2020	-.0023	ppm	0.0009	38.8613
Na5895	2.732	ppm	0.0083	0.3043
Ni2316	.1105	ppm	0.0012	1.0642
P_2136	9.242	ppm	0.0706	0.7634
Pb2203	.1190	ppm	0.0083	6.9794
Pd3609	-.1687	ppm	0.0078	4.6211
Sb2068	.0103	ppm	0.0021	20.0546
Se1960	-.0233	ppm	0.0094	40.3294
Si2516	4.971	ppm	0.0078	0.1563
Sn1899	-.0015	ppm	0.0046	298.9390
Sr3464	.2807	ppm	0.0038	1.3420
Ti3349	9.385	ppm	0.0427	0.4549
Tl1908	-.0415	ppm	0.0141	33.9945
V_3102	.4320	ppm	0.0041	0.9550
Zn2138	.9298	ppm	0.0024	0.2570

1008181-03ADUP

Acquire Date: 30-Aug-2010 12:51 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0198	ppm	0.0069	34.8200
Al2373	72.76	ppm	0.6309	0.8671
Al3961	72.44	ppm	0.3279	0.4526
As1890	.0182	ppm	0.0072	39.8723
Au2082	-.0169	ppm	0.0047	27.7066
B_2496	-.1102	ppm	0.0016	1.4566
Ba2335	.8810	ppm	0.0089	1.0096
Be2348	.00786	ppm	0.0001	1.4383
Ca1840I	36.64	ppm	0.5094	1.3903
Ca4302I	33.14	ppm	0.3065	0.9250
Cd2144	.0093	ppm	0.0003	3.3825
Cd2288	.0020	ppm	0.0003	16.3392
Co2286	.1191	ppm	0.0011	0.8952
Cr2677	.0929	ppm	0.0013	1.3790
Cu3247	.0932	ppm	0.0021	2.2476
Fe2598I	189.2	ppm	1.5683	0.8290
Fe2599I	179.5	ppm	2.1794	1.2143
K_7664	7.428	ppm	0.0358	0.4814
Mg2852	27.21	ppm	0.1238	0.4550
Mg2936	15.95	ppm	0.1451	0.9097
Mn2576	4.448	ppm	0.0327	0.7356
Mo2020	-.0027	ppm	0.0011	42.8164
Na5895	2.585	ppm	0.0246	0.9522
Ni2316	.0841	ppm	0.0014	1.6422
P_2136	9.855	ppm	0.1381	1.4013
Pb2203	.1321	ppm	0.0005	0.4106
Pd3609	-.2043	ppm	0.0264	12.9010
Sb2068	.0129	ppm	0.0011	8.9037
Se1960	-.0302	ppm	0.0039	12.9018
Si2516	5.583	ppm	0.0712	1.2753
Sn1899	-.0085	ppm	0.0019	21.8863
Sr3464	.2721	ppm	0.0061	2.2297
Ti3349	9.466	ppm	0.0725	0.7656
Tl1908	-.0454	ppm	0.0133	29.2828
V_3102	.4673	ppm	0.0016	0.3433
Zn2138	1.057	ppm	0.0093	0.8784

1008181-03AMS

Acquire Date: 30-Aug-2010 12:56 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4713	ppm	0.0006	0.1283
Al2373	103.4	ppm	0.3574	0.3455
Al3961	102.4	ppm	0.2108	0.2059
As1890	.9931	ppm	0.0133	1.3410
Au2082	.6924	ppm	0.0055	0.7941
B_2496	.3362	ppm	0.0011	0.3374
Ba2335	1.365	ppm	0.0065	0.4784
Be2348	.05572	ppm	0.0001	0.2516
Ca1840l	68.62	ppm	0.1619	0.2359
Ca4302l	64.65	ppm	0.0815	0.1261
Cd2144	.0563	ppm	0.0002	0.4358
Cd2288	.0512	ppm	0.0002	0.4509
Co2286	.3847	ppm	0.0008	0.2086
Cr2677	.3508	ppm	0.0020	0.5582
Cu3247	.6131	ppm	0.0040	0.6546
Fe2598l	185.1	ppm	1.0788	0.5827
Fe2599l	177.5	ppm	0.8749	0.4930
K_7664	18.04	ppm	0.0433	0.2400
Mg2852	37.18	ppm	0.0765	0.2057
Mg2936	25.78	ppm	0.1299	0.5039
Mn2576	4.969	ppm	0.0232	0.4676
Mo2020	.4918	ppm	0.0050	1.0064
Na5895	28.64	ppm	0.0460	0.1605
Ni2316	.3425	ppm	0.0014	0.3968
P_2136	28.59	ppm	0.0632	0.2212
Pb2203	1.087	ppm	0.0065	0.6019
Pd3609	1.989	ppm	0.0274	1.3752
Sb2068	.2631	ppm	0.0086	3.2771
Se1960	.9542	ppm	0.0045	0.4727
Si2516	6.673	ppm	0.0133	0.1992
Sn1899	.4904	ppm	0.0061	1.2438
Sr3464	1.627	ppm	0.0092	0.5661
Ti3349	10.36	ppm	0.0106	0.1027
Tl1908	.7291	ppm	0.0081	1.1094
V_3102	.9708	ppm	0.0037	0.3832
Zn2138	1.494	ppm	0.0047	0.3122

1008181-03AMSD

Acquire Date: 30-Aug-2010 1:01 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4979	ppm	0.0021	0.4140
Al2373	117.3	ppm	0.2612	0.2227
Al3961	115.4	ppm	0.1778	0.1541
As1890	1.024	ppm	0.0140	1.3725
Au2082	.7536	ppm	0.0018	0.2360
B_2496	.3312	ppm	0.0016	0.4783
Ba2335	1.957	ppm	0.0035	0.1769
Be2348	.05774	ppm	0.0001	0.2205
Ca1840l	72.33	ppm	0.1164	0.1609
Ca4302l	68.55	ppm	0.2246	0.3277
Cd2144	.0582	ppm	0.0001	0.1333
Cd2288	.0515	ppm	0.0002	0.2941
Co2286	.4194	ppm	0.0009	0.2080
Cr2677	.3615	ppm	0.0016	0.4490
Cu3247	.6348	ppm	0.0061	0.9613
Fe2598l	208.4	ppm	0.5766	0.2767
Fe2599l	198.6	ppm	0.3000	0.1510
K_7664	19.89	ppm	0.0557	0.2800
Mg2852	40.08	ppm	0.0294	0.0733
Mg2936	27.63	ppm	0.2900	1.0495
Mn2576	6.425	ppm	0.0061	0.0954
Mo2020	.5042	ppm	0.0043	0.8513
Na5895	29.95	ppm	0.0671	0.2242
Ni2316	.3558	ppm	0.0010	0.2756
P_2136	32.52	ppm	0.1131	0.3477
Pb2203	1.135	ppm	0.0245	2.1597
Pd3609	2.019	ppm	0.0206	1.0187
Sb2068	.2632	ppm	0.0018	0.6934
Se1960	.9610	ppm	0.0093	0.9656
Si2516	7.153	ppm	0.0132	0.1847
Sn1899	.4978	ppm	0.0035	0.7085
Sr3464	1.750	ppm	0.0064	0.3684
Ti3349	11.34	ppm	0.0468	0.4129
Tl1908	.7555	ppm	0.0009	0.1232
V_3102	1.020	ppm	0.0017	0.1688
Zn2138	1.314	ppm	0.0025	0.1876

1008181-03APDS

Acquire Date: 30-Aug-2010 1:05 pm   Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4889	ppm	0.0024	0.4889
Al2373	67.13	ppm	0.5418	0.8071
Al3961	66.27	ppm	0.1573	0.2374
As1890	1.010	ppm	0.0152	1.5048
Au2082	2.366	ppm	0.0261	1.1025
B_2496	.3891	ppm	0.0030	0.7627
Ba2335	1.434	ppm	0.0101	0.7015
Be2348	.05408	ppm	0.0002	0.4177
Ca1840l	61.27	ppm	0.5614	0.9163
Ca4302l	57.28	ppm	0.2061	0.3598
Cd2144	.0556	ppm	0.0005	0.9135
Cd2288	.0506	ppm	0.0006	1.1986
Co2286	.3765	ppm	0.0028	0.7385
Cr2677	.3491	ppm	0.0041	1.1654
Cu3247	.6014	ppm	0.0019	0.3193
Fe2598l	165.1	ppm	1.2978	0.7863
Fe2599l	158.7	ppm	1.6601	1.0461
K_7664	16.11	ppm	0.0307	0.1905
Mg2852	31.25	ppm	0.0361	0.1155
Mg2936	21.26	ppm	0.0337	0.1584
Mn2576	7.058	ppm	0.0567	0.8030
Mo2020	.5053	ppm	0.0093	1.8327
Na5895	26.80	ppm	0.3370	1.2573
Ni2316	.3547	ppm	0.0019	0.5451
P_2136	29.37	ppm	0.3196	1.0883
Pb2203	1.078	ppm	0.0193	1.7919
Pd3609	2.218	ppm	0.0230	1.0368
Sb2068	.5009	ppm	0.0226	4.5020
Se1960	.9758	ppm	0.0143	1.4609
Si2516	7.365	ppm	0.0644	0.8744
Sn1899	.4868	ppm	0.0105	2.1600
Sr3464	1.545	ppm	0.0074	0.4818
Ti3349	9.478	ppm	0.0312	0.3296
Tl1908	1.208	ppm	0.0224	1.8515
V_3102	.9102	ppm	0.0009	0.1033
Zn2138	1.184	ppm	0.0091	0.7675

1008181-03ASD

Acquire Date: 30-Aug-2010 1:10 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0032	ppm	0.0016	49.0402
Al2373	13.32	ppm	0.0047	0.0352
Al3961	13.12	ppm	0.0300	0.2283
As1890	.0100	ppm	0.0090	90.3001
Au2082	-.0110	ppm	0.0068	62.3382
B_2496	-.0193	ppm	0.0008	4.1298
Ba2335	.1991	ppm	0.0008	0.3983
Be2348	.00139	ppm	0.0000	1.2256
Ca1840l	7.488	ppm	0.0535	0.7145
Ca4302l	6.575	ppm	0.0543	0.8253
Cd2144	.0013	ppm	0.0004	31.4035
Cd2288	-.0001	ppm	0.0002	342.7444
Co2286	.0272	ppm	0.0007	2.5153
Cr2677	.0304	ppm	0.0006	1.8587
Cu3247	.0203	ppm	0.0018	8.7854
Fe2598l	34.59	ppm	0.0379	0.1097
Fe2599l	33.61	ppm	0.1129	0.3360
K_7664	1.259	ppm	0.0196	1.5601
Mg2852	5.372	ppm	0.0030	0.0554
Mg2936	3.405	ppm	0.1441	4.2301
Mn2576	1.459	ppm	0.0043	0.2920
Mo2020	.0022	ppm	0.0010	47.0522
Na5895	.5413	ppm	0.0030	0.5618
Ni2316	.0188	ppm	0.0014	7.6349
P_2136	1.850	ppm	0.0131	0.7063
Pb2203	.0151	ppm	0.0084	55.5274
Pd3609	-.0477	ppm	0.0076	16.0070
Sb2068	.0112	ppm	0.0039	34.8501
Se1960	-.0055	ppm	0.0048	87.8586
Si2516	1.040	ppm	0.0059	0.5682
Sn1899	-.0178	ppm	0.0010	5.6815
Sr3464	.0585	ppm	0.0037	6.2512
Ti3349	1.908	ppm	0.0044	0.2319
Tl1908	-.0001	ppm	0.0010	753.7718
V_3102	.0876	ppm	0.0018	2.0836
Zn2138	.1892	ppm	0.0002	0.0817

1008181-01A

Acquire Date: 30-Aug-2010 1:15 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0398	ppm	0.0032	7.9453
Al2373	75.37	ppm	0.1095	0.1453
Al3961	74.96	ppm	0.0796	0.1062
As1890	.0179	ppm	0.0037	20.6486
Au2082	-.0295	ppm	0.0079	26.7239
B_2496	-.1318	ppm	0.0005	0.4127
Ba2335	.9195	ppm	0.0004	0.0388
Be2348	.00860	ppm	0.0000	0.0864
Ca1840I	46.01	ppm	0.2151	0.4675
Ca4302I	38.55	ppm	0.0791	0.2051
Cd2144	.0104	ppm	0.0003	2.7182
Cd2288	.0012	ppm	0.0002	20.0377
Co2286	.1493	ppm	0.0003	0.1677
Cr2677	.1015	ppm	0.0030	2.9162
Cu3247	.1193	ppm	0.0043	3.5941
Fe2598I	223.8	ppm	0.4211	0.1881
Fe2599I	212.2	ppm	0.0731	0.0344
K_7664	8.472	ppm	0.0340	0.4013
Mg2852	30.21	ppm	0.0399	0.1321
Mg2936	16.05	ppm	0.2196	1.3688
Mn2576	4.637	ppm	0.0055	0.1185
Mo2020	-.0034	ppm	0.0024	69.8581
Na5895	3.428	ppm	0.0036	0.1051
Ni2316	.0918	ppm	0.0008	0.8330
P_2136	11.65	ppm	0.0338	0.2905
Pb2203	.2734	ppm	0.0048	1.7431
Pd3609	-.2477	ppm	0.0232	9.3690
Sb2068	.0089	ppm	0.0032	36.4530
Se1960	-.0310	ppm	0.0050	16.0851
Si2516	5.696	ppm	0.0225	0.3942
Sn1899	-.0035	ppm	0.0037	105.2225
Sr3464	.3592	ppm	0.0060	1.6815
Ti3349	17.67	ppm	0.0226	0.1279
Tl1908	-.0546	ppm	0.0160	29.3351
V_3102	.6824	ppm	0.0052	0.7589
Zn2138	.9449	ppm	0.0022	0.2365

1008181-02A

Acquire Date: 30-Aug-2010 1:20 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0495	ppm	0.0000	0.0036
Al2373	69.92	ppm	0.2979	0.4261
Al3961	69.69	ppm	0.3746	0.5375
As1890	.0212	ppm	0.0139	65.3054
Au2082	-.0184	ppm	0.0038	20.3729
B_2496	-.1466	ppm	0.0013	0.8547
Ba2335	.8689	ppm	0.0016	0.1838
Be2348	.00836	ppm	0.0000	0.5081
Ca1840l	47.16	ppm	0.1624	0.3444
Ca4302l	36.61	ppm	0.1369	0.3739
Cd2144	.0127	ppm	0.0002	1.4937
Cd2288	.0023	ppm	0.0002	8.9006
Co2286	.1982	ppm	0.0013	0.6696
Cr2677	.1000	ppm	0.0032	3.2189
Cu3247	.1328	ppm	0.0030	2.2825
Fe2598l	246.2	ppm	0.5292	0.2150
Fe2599l	232.9	ppm	0.2432	0.1044
K_7664	5.765	ppm	0.0733	1.2706
Mg2852	28.24	ppm	0.1203	0.4258
Mg2936	12.18	ppm	0.1529	1.2556
Mn2576	4.400	ppm	0.0076	0.1724
Mo2020	-.0022	ppm	0.0010	44.4526
Na5895	3.398	ppm	0.0202	0.5950
Ni2316	.0972	ppm	0.0011	1.1330
P_2136	10.85	ppm	0.0311	0.2863
Pb2203	.5596	ppm	0.0105	1.8681
Pd3609	-.2842	ppm	0.0149	5.2411
Sb2068	.0080	ppm	0.0064	79.8014
Se1960	-.0377	ppm	0.0046	12.2046
Si2516	5.875	ppm	0.0290	0.4928
Sn1899	-.0048	ppm	0.0042	86.8930
Sr3464	.2971	ppm	0.0048	1.6317
Ti3349	23.95	ppm	0.0667	0.2786
Tl1908	-.0819	ppm	0.0202	24.6584
V_3102	.8300	ppm	0.0055	0.6641
Zn2138	1.464	ppm	0.0043	0.2963

1008181-16A

Acquire Date: 30-Aug-2010 1:25 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0188	ppm	0.0026	13.8851
Al2373	76.35	ppm	0.2230	0.2921
Al3961	75.64	ppm	0.2738	0.3620
As1890	.0154	ppm	0.0124	80.0158
Au2082	-.0256	ppm	0.0066	25.5692
B_2496	-.1093	ppm	0.0007	0.6801
Ba2335	1.259	ppm	0.0036	0.2849
Be2348	.00768	ppm	0.0000	0.3881
Ca1840I	44.17	ppm	0.2981	0.6749
Ca4302I	40.02	ppm	0.1646	0.4112
Cd2144	.0077	ppm	0.0005	6.1589
Cd2288	-.0001	ppm	0.0003	299.9915
Co2286	.1182	ppm	0.0009	0.7875
Cr2677	.0989	ppm	0.0027	2.7017
Cu3247	.1601	ppm	0.0023	1.4240
Fe2598I	187.4	ppm	0.6310	0.3366
Fe2599I	178.3	ppm	0.4322	0.2424
K_7664	7.612	ppm	0.0282	0.3706
Mg2852	31.20	ppm	0.1167	0.3741
Mg2936	19.95	ppm	0.0529	0.2649
Mn2576	4.219	ppm	0.0162	0.3849
Mo2020	-.0035	ppm	0.0006	17.4890
Na5895	3.503	ppm	0.0086	0.2448
Ni2316	.0979	ppm	0.0011	1.1220
P_2136	9.230	ppm	0.0649	0.7035
Pb2203	.0485	ppm	0.0105	21.5506
Pd3609	-.1935	ppm	0.0151	7.7961
Sb2068	.0105	ppm	0.0077	72.6559
Se1960	-.0323	ppm	0.0064	19.7312
Si2516	5.529	ppm	0.0319	0.5763
Sn1899	.0030	ppm	0.0037	124.8892
Sr3464	.4145	ppm	0.0044	1.0591
Ti3349	10.47	ppm	0.0245	0.2340
Tl1908	-.0523	ppm	0.0118	22.5121
V_3102	.4671	ppm	0.0024	0.5139
Zn2138	.7270	ppm	0.0040	0.5467

RINSE

Acquire Date: 30-Aug-2010 1:30 pm   Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0005	ppm	0.0016	336.4956
Al2373	.0324	ppm	0.0041	12.6404
Al3961	.0211	ppm	0.0064	30.4651
As1890	.0115	ppm	0.0052	45.2169
Au2082	.0013	ppm	0.0029	220.1723
B_2496	-.0017	ppm	0.0017	97.7211
Ba2335	.0001	ppm	0.0007	1,190.8061
Be2348	-.00003	ppm	0.0000	37.3843
Ca1840l	-.0101	ppm	0.0443	436.3226
Ca4302l	.0149	ppm	0.0797	536.0153
Cd2144	-.0002	ppm	0.0003	185.9904
Cd2288	.0001	ppm	0.0003	217.2068
Co2286	-.0008	ppm	0.0004	47.8884
Cr2677	.0019	ppm	0.0019	98.0658
Cu3247	.0018	ppm	0.0025	138.0559
Fe2598l	.0854	ppm	0.0112	13.0642
Fe2599l	.0747	ppm	0.0134	17.8763
K_7664	.0168	ppm	0.0361	215.1500
Mg2852	.0568	ppm	0.0022	3.7921
Mg2936	.2769	ppm	0.0718	25.9148
Mn2576	.0016	ppm	0.0003	15.5556
Mo2020	.0014	ppm	0.0006	39.2177
Na5895	.0026	ppm	0.0020	77.9306
Ni2316	.0005	ppm	0.0004	71.2138
P_2136	-.0227	ppm	0.0037	16.1319
Pb2203	.0019	ppm	0.0045	229.8316
Pd3609	-.0094	ppm	0.0146	155.0696
Sb2068	-.0037	ppm	0.0045	122.5377
Se1960	.0038	ppm	0.0125	327.7391
Si2516	.0568	ppm	0.0034	5.9533
Sn1899	.0021	ppm	0.0034	162.7251
Sr3464	.0019	ppm	0.0060	318.9553
Ti3349	.0046	ppm	0.0008	16.6377
Tl1908	.0098	ppm	0.0192	195.5904
V_3102	.0019	ppm	0.0021	111.5370
Zn2138	-.0001	ppm	0.0003	236.8093

ICV MRS-329,339,340

Acquire Date: 30-Aug-2010 1:36 pm Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4615	ppm	0.0041	0.8916
Al2373	2.512	ppm	0.0133	0.5279
Al3961	2.522	ppm	0.0172	0.6811
As1890	.9659	ppm	0.0101	1.0450
Au2082	2.510	ppm	0.0279	1.1095
B_2496	.4881	ppm	0.0027	0.5485
Ba2335	.5109	ppm	0.0020	0.3862
Be2348	.04947	ppm	0.0003	0.6024
Ca1840l	25.63	ppm	0.2353	0.9180
Ca4302l	25.47	ppm	0.0666	0.2615
Cd2144	.0496	ppm	0.0009	1.8121
Cd2288	.0506	ppm	0.0005	0.9062
Co2286	.2501	ppm	0.0019	0.7752
Cr2677	.2462	ppm	0.0007	0.2912
Cu3247	.4985	ppm	0.0025	0.5051
Fe2598l	.5048	ppm	0.0008	0.1517
Fe2599l	.5068	ppm	0.0048	0.9427
K_7664	9.582	ppm	0.0140	0.1461
Mg2852	4.894	ppm	0.0033	0.0682
Mg2936	4.697	ppm	0.0873	1.8594
Mn2576	.0496	ppm	0.0006	1.2143
Mo2020	.4964	ppm	0.0146	2.9488
Na5895	23.03	ppm	0.0843	0.3659
Ni2316	.2508	ppm	0.0012	0.4744
P_2136	20.34	ppm	0.0896	0.4405
Pb2203	1.009	ppm	0.0094	0.9293
Pd3609	2.443	ppm	0.0228	0.9350
Sb2068	.4353	ppm	0.0799	18.3609
Se1960	.9474	ppm	0.0098	1.0392
Si2516	2.301	ppm	0.0300	1.3038
Sn1899	.4933	ppm	0.0125	2.5424
Sr3464	1.263	ppm	0.0058	0.4582
Ti3349	.2531	ppm	0.0009	0.3581
Tl1908	1.262	ppm	0.0346	2.7427
V_3102	.4865	ppm	0.0039	0.7941
Zn2138	.4973	ppm	0.0026	0.5247

Fe High MRS-388

Acquire Date: 30-Aug-2010 1:40 pm Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0001	ppm	0.0042	3,496.9202
Al2373	-.0614	ppm	0.0208	33.8087
Al3961	.0268	ppm	0.0100	37.1987
As1890	.0087	ppm	0.0074	85.0734
Au2082	-.0204	ppm	0.0021	10.2232
B_2496	-.0325	ppm	0.0020	6.1723
Ba2335	.0001	ppm	0.0006	1,192.5224
Be2348	.00129	ppm	0.0000	1.0694
Ca1840l	.1388	ppm	0.0630	45.3675
Ca4302l	.2654	ppm	0.0281	10.5907
Cd2144	.0015	ppm	0.0005	34.4307
Cd2288	-.0008	ppm	0.0000	4.6814
Co2286	.0002	ppm	0.0006	260.4453
Cr2677	.0064	ppm	0.0022	34.9199
Cu3247	-.0048	ppm	0.0018	36.9433
Fe2598l	51.53	ppm	0.1933	0.3751
Fe2599l	50.00	ppm	0.2068	0.4136
K_7664	-.1527	ppm	0.0416	27.2488
Mg2852	.0437	ppm	0.0005	1.2525
Mg2936	-2.526	ppm	0.0975	3.8608
Mn2576	.0006	ppm	0.0003	55.6870
Mo2020	.0025	ppm	0.0008	32.4226
Na5895	.0667	ppm	0.0077	11.5849
Ni2316	-.0119	ppm	0.0018	15.1734
P_2136	.0160	ppm	0.0107	66.8908
Pb2203	-.0135	ppm	0.0025	18.1862
Pd3609	-.0840	ppm	0.0185	21.9971
Sb2068	.0044	ppm	0.0033	74.2957
Se1960	-.0074	ppm	0.0070	94.4558
Si2516	.0403	ppm	0.0038	9.4198
Sn1899	-.0201	ppm	0.0031	15.5308
Sr3464	.0021	ppm	0.0047	222.7819
Ti3349	.0013	ppm	0.0013	99.2230
Tl1908	-.0033	ppm	0.0046	137.7621
V_3102	.0014	ppm	0.0008	53.6592
Zn2138	.0026	ppm	0.0003	11.4625

ICB

Acquire Date: 30-Aug-2010 1:46 pm Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0002	ppm	0.0027	1,206.3804
Al2373	.0697	ppm	0.0068	9.7588
Al3961	.0653	ppm	0.0047	7.2004
As1890	.0039	ppm	0.0021	54.4924
Au2082	.0031	ppm	0.0104	339.1631
B_2496	-.0008	ppm	0.0002	23.0494
Ba2335	-.0003	ppm	0.0005	175.1068
Be2348	-.00004	ppm	0.0000	93.0251
Ca1840l	.0611	ppm	0.0571	93.4338
Ca4302i	.1296	ppm	0.0386	29.7496
Cd2144	-.0002	ppm	0.0001	42.8780
Cd2288	.0004	ppm	0.0001	22.9442
Co2286	-.0005	ppm	0.0003	57.6116
Cr2677	.0001	ppm	0.0023	2,432.7633
Cu3247	.0023	ppm	0.0005	20.3343
Fe2598l	.0912	ppm	0.0294	32.2566
Fe2599l	.0811	ppm	0.0264	32.5868
K_7664	.0200	ppm	0.0122	61.1166
Mg2852	.0812	ppm	0.0077	9.4567
Mg2936	.4077	ppm	0.0525	12.8774
Mn2576	.0005	ppm	0.0004	73.6328
Mo2020	.0028	ppm	0.0008	28.2034
Na5895	.0306	ppm	0.0040	13.0854
Ni2316	.0003	ppm	0.0012	436.1135
P_2136	-.0179	ppm	0.0074	41.6969
Pb2203	.0034	ppm	0.0072	211.3666
Pd3609	-.0097	ppm	0.0221	227.2441
Sb2068	-.0010	ppm	0.0035	354.1028
Se1960	.0033	ppm	0.0066	200.5240
Si2516	.0291	ppm	0.0005	1.8394
Sn1899	.0036	ppm	0.0022	61.6351
Sr3464	.0035	ppm	0.0046	134.0026
Ti3349	.0009	ppm	0.0004	46.6137
Tl1908	.0023	ppm	0.0104	448.3082
V_3102	.0019	ppm	0.0017	94.0533
Zn2138	.0002	ppm	0.0004	198.0979

1008171-01A

Acquire Date: 30-Aug-2010 1:51 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0236	ppm	0.0055	23.2250
Al2373	202.3	ppm	0.7239	0.3579
Al3961	200.6	ppm	0.4597	0.2292
As1890	.0121	ppm	0.0105	86.8891
Au2082	-.0132	ppm	0.0023	17.3497
B_2496	-.1818	ppm	0.0009	0.5196
Ba2335	1.540	ppm	0.0039	0.2523
Be2348	.01422	ppm	0.0000	0.0404
Ca1840I	78.29	ppm	0.4192	0.5354
Ca4302I	74.11	ppm	0.2547	0.3437
Cd2144	.0140	ppm	0.0004	2.5790
Cd2288	.0018	ppm	0.0004	23.8149
Co2286	.1914	ppm	0.0012	0.6255
Cr2677	.2597	ppm	0.0016	0.6139
Cu3247	.2812	ppm	0.0049	1.7560
Fe2598I	312.6	ppm	1.2936	0.4138
Fe2599I	293.9	ppm	0.3856	0.1312
K_7664	14.34	ppm	0.0217	0.1514
Mg2852	63.17	ppm	0.2492	0.3944
Mg2936	45.70	ppm	0.3590	0.7856
Mn2576	6.973	ppm	0.0263	0.3777
Mo2020	-.0062	ppm	0.0001	2.3805
Na5895	4.481	ppm	0.0201	0.4483
Ni2316	.1938	ppm	0.0022	1.1262
P_2136	15.89	ppm	0.0898	0.5654
Pb2203	.0468	ppm	0.0067	14.3490
Pd3609	-.3642	ppm	0.0170	4.6764
Sb2068	.0164	ppm	0.0028	16.9122
Se1960	-.0654	ppm	0.0021	3.2677
Si2516	7.256	ppm	0.0539	0.7429
Sn1899	.0003	ppm	0.0068	2,038.7987
Sr3464	.6504	ppm	0.0045	0.6944
Ti3349	11.90	ppm	0.0543	0.4561
Tl1908	-.0467	ppm	0.0175	37.4646
V_3102	.8000	ppm	0.0017	0.2128
Zn2138	.8427	ppm	0.0044	0.5275

1008171-02A

Acquire Date: 30-Aug-2010 1:56 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0243	ppm	0.0022	8.8722
Al2373	187.9	ppm	0.6051	0.3220
Al3961	187.2	ppm	0.6800	0.3632
As1890	.0185	ppm	0.0137	74.2875
Au2082	-.0202	ppm	0.0036	17.8093
B_2496	-.1670	ppm	0.0009	0.5475
Ba2335	1.387	ppm	0.0026	0.1908
Be2348	.01330	ppm	0.0001	0.6966
Ca1840l	73.51	ppm	0.1629	0.2216
Ca4302l	69.06	ppm	0.4545	0.6582
Cd2144	.0126	ppm	0.0002	1.8987
Cd2288	.0014	ppm	0.0003	24.4896
Co2286	.1749	ppm	0.0004	0.2351
Cr2677	.2261	ppm	0.0025	1.1150
Cu3247	.2572	ppm	0.0039	1.5139
Fe2598l	294.6	ppm	0.2920	0.0991
Fe2599l	275.9	ppm	1.0174	0.3687
K_7664	11.95	ppm	0.0369	0.3089
Mg2852	59.62	ppm	0.1781	0.2987
Mg2936	43.58	ppm	0.1536	0.3524
Mn2576	6.035	ppm	0.0067	0.1112
Mo2020	-.0079	ppm	0.0004	5.5320
Na5895	3.764	ppm	0.0143	0.3804
Ni2316	.1885	ppm	0.0009	0.4951
P_2136	12.13	ppm	0.0152	0.1257
Pb2203	.0376	ppm	0.0082	21.8266
Pd3609	-.3448	ppm	0.0239	6.9240
Sb2068	.0136	ppm	0.0067	49.2798
Se1960	-.0555	ppm	0.0090	16.1806
Si2516	7.144	ppm	0.0129	0.1809
Sn1899	-.0054	ppm	0.0047	86.7917
Sr3464	.6250	ppm	0.0029	0.4600
Ti3349	12.06	ppm	0.0424	0.3517
Tl1908	-.0545	ppm	0.0035	6.4723
V_3102	.7621	ppm	0.0023	0.2972
Zn2138	.8924	ppm	0.0003	0.0317

1008171-03A

Acquire Date: 30-Aug-2010 2:01 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0274	ppm	0.0012	4.3655
Al2373	170.1	ppm	0.0709	0.0417
Al3961	167.4	ppm	0.3617	0.2161
As1890	.0203	ppm	0.0146	71.7094
Au2082	-.0220	ppm	0.0093	42.2387
B_2496	-.1712	ppm	0.0013	0.7835
Ba2335	1.484	ppm	0.0022	0.1502
Be2348	.01246	ppm	0.0000	0.3416
Ca1840l	72.46	ppm	0.1789	0.2469
Ca4302l	67.49	ppm	0.1433	0.2123
Cd2144	.0113	ppm	0.0004	3.8871
Cd2288	.0004	ppm	0.0002	55.5393
Co2286	.1640	ppm	0.0009	0.5413
Cr2677	.2126	ppm	0.0008	0.3564
Cu3247	.2439	ppm	0.0025	1.0425
Fe2598l	288.4	ppm	0.4133	0.1433
Fe2599l	270.5	ppm	0.3213	0.1188
K_7664	10.19	ppm	0.0716	0.7026
Mg2852	59.19	ppm	0.3286	0.5552
Mg2936	43.49	ppm	0.1395	0.3207
Mn2576	5.138	ppm	0.0108	0.2103
Mo2020	-.0060	ppm	0.0009	14.9214
Na5895	4.349	ppm	0.0190	0.4369
Ni2316	.1849	ppm	0.0014	0.7557
P_2136	9.882	ppm	0.0112	0.1130
Pb2203	.0327	ppm	0.0131	40.0347
Pd3609	-.3365	ppm	0.0167	4.9644
Sb2068	.0125	ppm	0.0032	25.3271
Se1960	-.0567	ppm	0.0076	13.4253
Si2516	6.686	ppm	0.0185	0.2768
Sn1899	-.0061	ppm	0.0093	152.4334
Sr3464	.7451	ppm	0.0024	0.3263
Ti3349	12.58	ppm	0.0295	0.2347
Tl1908	-.0590	ppm	0.0132	22.4150
V_3102	.7695	ppm	0.0016	0.2060
Zn2138	.6740	ppm	0.0011	0.1683

1008180-01A

Acquire Date: 30-Aug-2010 2:06 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0436	ppm	0.0032	7.2511
Al2373	182.5	ppm	0.6208	0.3402
Al3961	181.9	ppm	1.1195	0.6156
As1890	.0200	ppm	0.0078	38.9976
Au2082	-.0175	ppm	0.0092	52.2134
B_2496	-.1818	ppm	0.0010	0.5482
Ba2335	1.786	ppm	0.0064	0.3558
Be2348	.01296	ppm	0.0001	0.8098
Ca1840l	25.59	ppm	0.1597	0.6240
Ca4302l	17.18	ppm	0.1498	0.8719
Cd2144	.0118	ppm	0.0001	0.7075
Cd2288	.0007	ppm	0.0002	34.8040
Co2286	.1977	ppm	0.0011	0.5548
Cr2677	.1651	ppm	0.0012	0.7103
Cu3247	.1141	ppm	0.0021	1.8185
Fe2598l	303.0	ppm	1.3594	0.4486
Fe2599l	282.9	ppm	1.2311	0.4351
K_7664	12.27	ppm	0.0400	0.3256
Mg2852	32.92	ppm	0.1731	0.5259
Mg2936	13.72	ppm	0.2823	2.0579
Mn2576	7.892	ppm	0.0214	0.2708
Mo2020	-.0055	ppm	0.0020	35.5683
Na5895	.9522	ppm	0.0093	0.9722
Ni2316	.0980	ppm	0.0004	0.4149
P_2136	13.90	ppm	0.0711	0.5115
Pb2203	.0654	ppm	0.0153	23.4252
Pd3609	-.3710	ppm	0.0052	1.4101
Sb2068	.0136	ppm	0.0067	49.3804
Se1960	-.0504	ppm	0.0021	4.1724
Si2516	7.198	ppm	0.0351	0.4870
Sn1899	-.0136	ppm	0.0056	41.3239
Sr3464	.2122	ppm	0.0069	3.2387
Ti3349	18.34	ppm	0.1102	0.6010
Tl1908	-.0651	ppm	0.0089	13.7295
V_3102	.8606	ppm	0.0084	0.9713
Zn2138	.6978	ppm	0.0027	0.3883

1008152-02G

Acquire Date: 30-Aug-2010 2:11 pm   Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0018	ppm	0.0018	97.1532
Al2373	-.0798	ppm	0.0420	52.6163
Al3961	.1427	ppm	0.0110	7.6912
As1890	.0081	ppm	0.0033	40.4831
Au2082	-.0051	ppm	0.0058	113.5070
B_2496	-.0397	ppm	0.0013	3.2245
Ba2335	.0631	ppm	0.0003	0.5164
Be2348	.00133	ppm	0.0000	2.2046
Ca1840I	29.58	ppm	0.0495	0.1674
Ca4302I	30.00	ppm	0.1112	0.3705
Cd2144	.0018	ppm	0.0003	18.4324
Cd2288	-.0009	ppm	0.0000	4.0235
Co2286	-.0009	ppm	0.0003	37.1196
Cr2677	.0047	ppm	0.0015	30.8989
Cu3247	-.0035	ppm	0.0022	63.1118
Fe2598I	52.86	ppm	0.1684	0.3186
Fe2599I	51.38	ppm	0.1223	0.2380
K_7664	1.452	ppm	0.0405	2.7879
Mg2852	14.97	ppm	0.0669	0.4470
Mg2936	11.86	ppm	0.1078	0.9090
Mn2576	2.005	ppm	0.0024	0.1206
Mo2020	-.0024	ppm	0.0009	35.9141
Na5895	3.068	ppm	0.0262	0.8540
Ni2316	-.0124	ppm	0.0007	5.8604
P_2136	.0649	ppm	0.0035	5.4413
Pb2203	-.0140	ppm	0.0024	16.8307
Pd3609	-.0754	ppm	0.0146	19.3815
Sb2068	.0028	ppm	0.0080	280.7472
Se1960	-.0059	ppm	0.0044	75.0258
Si2516	2.756	ppm	0.0124	0.4506
Sn1899	-.0183	ppm	0.0068	37.0819
Sr3464	.1993	ppm	0.0039	1.9745
Ti3349	.0045	ppm	0.0018	39.1651
Tl1908	-.0075	ppm	0.0153	205.0339
V_3102	.0040	ppm	0.0004	10.4582
Zn2138	.0027	ppm	0.0002	7.9625

RINSE

Acquire Date: 30-Aug-2010 2:16 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0016	ppm	0.0012	74.1635
Al2373	.0173	ppm	0.0047	27.1638
Al3961	.0038	ppm	0.0062	165.1499
As1890	.0136	ppm	0.0069	50.6397
Au2082	-.0033	ppm	0.0053	161.4936
B_2496	-.0009	ppm	0.0009	96.5438
Ba2335	-.0004	ppm	0.0001	16.7877
Be2348	-.00008	ppm	0.0000	6.9535
Ca1840l	-.0131	ppm	0.0522	400.1828
Ca4302l	.0116	ppm	0.0118	101.6125
Cd2144	.0000	ppm	0.0003	8,770.7914
Cd2288	.0000	ppm	0.0001	230.5832
Co2286	-.0004	ppm	0.0007	178.2584
Cr2677	.0009	ppm	0.0020	235.7854
Cu3247	.0016	ppm	0.0031	195.5986
Fe2598l	.0431	ppm	0.0054	12.5696
Fe2599l	.0345	ppm	0.0045	12.9760
K_7664	.0220	ppm	0.0113	51.6039
Mg2852	.0571	ppm	0.0036	6.2345
Mg2936	.3220	ppm	0.0778	24.1575
Mn2576	.0011	ppm	0.0002	18.5879
Mo2020	.0018	ppm	0.0014	74.1281
Na5895	.0052	ppm	0.0064	124.1185
Ni2316	-.0009	ppm	0.0011	131.3821
P_2136	-.0211	ppm	0.0031	14.5722
Pb2203	.0016	ppm	0.0080	497.1212
Pd3609	-.0106	ppm	0.0087	81.9586
Sb2068	-.0077	ppm	0.0051	66.6873
Se1960	.0010	ppm	0.0098	976.1392
Si2516	.0410	ppm	0.0023	5.5035
Sn1899	.0028	ppm	0.0028	98.2878
Sr3464	-.0061	ppm	0.0064	104.8373
Ti3349	.0016	ppm	0.0006	35.3630
Tl1908	.0140	ppm	0.0008	6.0859
V_3102	.0014	ppm	0.0011	76.4022
Zn2138	-.0006	ppm	0.0001	19.7099

ICB-26402

Acquire Date: 30-Aug-2010 2:21 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0016	ppm	0.0032	196.5536
Al2373	.0266	ppm	0.0107	40.2611
Al3961	-.0043	ppm	0.0129	301.8475
As1890	.0161	ppm	0.0028	17.3679
Au2082	-.0030	ppm	0.0046	153.5783
B_2496	-.0023	ppm	0.0012	49.7503
Ba2335	-.0005	ppm	0.0002	38.0103
Be2348	.00000	ppm	0.0001	1,605.2530
Ca1840I	-.0327	ppm	0.0611	186.6106
Ca4302I	.0413	ppm	0.0398	96.4451
Cd2144	-.0001	ppm	0.0003	221.4358
Cd2288	.0002	ppm	0.0003	141.8073
Co2286	-.0003	ppm	0.0011	331.4807
Cr2677	.0002	ppm	0.0008	393.8643
Cu3247	-.0008	ppm	0.0009	113.8183
Fe2598I	.0080	ppm	0.0020	24.8945
Fe2599I	.0035	ppm	0.0020	55.6314
K_7664	-.0132	ppm	0.0114	86.5517
Mg2852	.0557	ppm	0.0025	4.4053
Mg2936	.2926	ppm	0.0285	9.7355
Mn2576	.0000	ppm	0.0002	1,931.5345
Mo2020	.0017	ppm	0.0009	51.4252
Na5895	-.0002	ppm	0.0053	3,209.4098
Ni2316	-.0004	ppm	0.0005	110.6442
P_2136	-.0289	ppm	0.0064	22.0081
Pb2203	.0023	ppm	0.0046	203.0617
Pd3609	-.0166	ppm	0.0156	93.8634
Sb2068	-.0023	ppm	0.0015	64.8458
Se1960	.0031	ppm	0.0038	122.5697
Si2516	.0301	ppm	0.0043	14.2003
Sn1899	.0050	ppm	0.0055	109.1628
Sr3464	-.0054	ppm	0.0087	162.1197
Ti3349	-.0001	ppm	0.0004	819.5079
Tl1908	.0119	ppm	0.0094	78.9250
V_3102	.0018	ppm	0.0008	42.8127
Zn2138	-.0008	ppm	0.0002	29.0472

1008175-03G

Acquire Date: 30-Aug-2010 2:26 pm   Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0015	ppm	0.0022	143.1704
Al2373	-.1537	ppm	0.0042	2.7580
Al3961	.1811	ppm	0.0112	6.1780
As1890	-.0083	ppm	0.0033	39.6496
Au2082	.2446	ppm	0.0029	1.1986
B_2496	-.0793	ppm	0.0021	2.6137
Ba2335	.0765	ppm	0.0003	0.4167
Be2348	.00113	ppm	0.0000	2.2986
Ca1840l	72.52	ppm	0.1631	0.2249
Ca4302l	72.54	ppm	0.1520	0.2096
Cd2144	.0022	ppm	0.0003	13.0742
Cd2288	-.0003	ppm	0.0003	105.4451
Co2286	-.0007	ppm	0.0004	57.8202
Cr2677	.0067	ppm	0.0010	14.6923
Cu3247	-.0054	ppm	0.0019	35.4770
Fe2598l	45.43	ppm	0.0743	0.1636
Fe2599l	44.08	ppm	0.1473	0.3341
K_7664	3.163	ppm	0.0106	0.3339
Mg2852	34.38	ppm	0.0250	0.0726
Mg2936	32.28	ppm	1.4876	4.6091
Mn2576	2.382	ppm	0.0045	0.1871
Mo2020	.0005	ppm	0.0009	194.5921
Na5895	19.75	ppm	0.1061	0.5375
Ni2316	-.0093	ppm	0.0017	18.5207
P_2136	1.501	ppm	0.0218	1.4504
Pb2203	-.0166	ppm	0.0074	44.4053
Pd3609	-.1010	ppm	0.0141	13.9376
Sb2068	.0014	ppm	0.0065	449.9923
Se1960	-.0080	ppm	0.0149	187.3657
Si2516	62.39	ppm	0.0973	0.1559
Sn1899	-.0098	ppm	0.0028	28.6903
Sr3464	.4731	ppm	0.0022	0.4622
Ti3349	-.0006	ppm	0.0008	143.3137
Tl1908	-.3840	ppm	0.0142	3.6910
V_3102	.0034	ppm	0.0009	26.7235
Zn2138	.0029	ppm	0.0002	5.2352

1008175-03GDUP

Acquire Date: 30-Aug-2010 2:31 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0015	ppm	0.0032	209.9945
Al2373	-.1598	ppm	0.0040	2.4996
Al3961	.1877	ppm	0.0080	4.2598
As1890	-.0132	ppm	0.0112	84.7042
Au2082	.2468	ppm	0.0046	1.8734
B_2496	-.0837	ppm	0.0009	1.0645
Ba2335	.0778	ppm	0.0003	0.3585
Be2348	.00112	ppm	0.0000	1.0742
Ca1840l	73.44	ppm	0.1303	0.1774
Ca4302l	73.22	ppm	0.1067	0.1458
Cd2144	.0021	ppm	0.0003	16.1047
Cd2288	-.0001	ppm	0.0001	154.7917
Co2286	-.0006	ppm	0.0006	99.7592
Cr2677	.0046	ppm	0.0016	35.3159
Cu3247	-.0027	ppm	0.0014	52.7932
Fe2598l	45.99	ppm	0.2115	0.4598
Fe2599l	44.87	ppm	0.1613	0.3594
K_7664	3.158	ppm	0.0080	0.2524
Mg2852	34.58	ppm	0.0586	0.1694
Mg2936	33.25	ppm	0.2056	0.6183
Mn2576	2.413	ppm	0.0070	0.2909
Mo2020	.0007	ppm	0.0018	268.0105
Na5895	20.07	ppm	0.1138	0.5669
Ni2316	-.0106	ppm	0.0007	6.9261
P_2136	1.526	ppm	0.0139	0.9112
Pb2203	-.0070	ppm	0.0056	80.1481
Pd3609	-.1099	ppm	0.0106	9.6225
Sb2068	.0027	ppm	0.0058	215.6090
Se1960	.0038	ppm	0.0050	130.6389
Si2516	63.07	ppm	0.2500	0.3964
Sn1899	-.0163	ppm	0.0039	24.0994
Sr3464	.4810	ppm	0.0072	1.4888
Ti3349	-.0007	ppm	0.0005	79.9877
Tl1908	-.4057	ppm	0.0245	6.0304
V_3102	.0012	ppm	0.0028	233.7167
Zn2138	.0029	ppm	0.0002	5.2356

RINSE

Acquire Date: 30-Aug-2010 2:36 pm Sample Type: Unknown

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0013	ppm	0.0027	216.8723
Al2373	.0114	ppm	0.0141	123.4291
Al3961	.0008	ppm	0.0132	1,640.6244
As1890	.0145	ppm	0.0042	28.7925
Au2082	-.0055	ppm	0.0034	62.7616
B_2496	-.0040	ppm	0.0016	41.2464
Ba2335	.0001	ppm	0.0002	150.6388
Be2348	-.00003	ppm	0.0000	122.7225
Ca1840I	.0168	ppm	0.0479	284.4939
Ca4302I	.0212	ppm	0.0840	396.9664
Cd2144	-.0001	ppm	0.0001	146.6214
Cd2288	.0000	ppm	0.0003	608.2415
Co2286	-.0014	ppm	0.0004	25.5104
Cr2677	.0007	ppm	0.0006	84.2362
Cu3247	.0021	ppm	0.0015	70.9401
Fe2598I	.0398	ppm	0.0026	6.6588
Fe2599I	.0344	ppm	0.0006	1.6332
K_7664	-.0037	ppm	0.0064	173.1425
Mg2852	.0610	ppm	0.0039	6.3906
Mg2936	.2531	ppm	0.0998	39.4321
Mn2576	.0009	ppm	0.0001	11.2949
Mo2020	.0019	ppm	0.0012	61.9421
Na5895	.0163	ppm	0.0026	15.9741
Ni2316	.0000	ppm	0.0006	1,151.8462
P_2136	-.0236	ppm	0.0086	36.4556
Pb2203	.0050	ppm	0.0153	303.9079
Pd3609	.0006	ppm	0.0176	3,176.8794
Sb2068	-.0018	ppm	0.0068	388.5145
Se1960	.0052	ppm	0.0128	244.5414
Si2516	.0428	ppm	0.0028	6.6353
Sn1899	.0020	ppm	0.0076	381.7698
Sr3464	.0013	ppm	0.0016	123.5948
Ti3349	.0004	ppm	0.0001	30.4243
Tl1908	.0061	ppm	0.0113	185.0801
V_3102	.0036	ppm	0.0018	50.7491
Zn2138	-.0003	ppm	0.0002	59.8117

ICV MRS-329,339,340

Acquire Date: 30-Aug-2010 2:41 pm Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.4602	ppm	0.0061	1.3343
Al2373	2.499	ppm	0.0165	0.6599
Al3961	2.538	ppm	0.0175	0.6885
As1890	.9548	ppm	0.0098	1.0245
Au2082	2.503	ppm	0.0125	0.5009
B_2496	.4866	ppm	0.0024	0.4974
Ba2335	.5108	ppm	0.0023	0.4511
Be2348	.04950	ppm	0.0003	0.5084
Ca1840l	25.89	ppm	0.1233	0.4763
Ca4302l	25.41	ppm	0.1304	0.5130
Cd2144	.0491	ppm	0.0002	0.4539
Cd2288	.0503	ppm	0.0005	1.0526
Co2286	.2496	ppm	0.0010	0.4200
Cr2677	.2431	ppm	0.0011	0.4641
Cu3247	.4966	ppm	0.0018	0.3573
Fe2598l	.5117	ppm	0.0046	0.8952
Fe2599l	.5159	ppm	0.0014	0.2761
K_7664	9.598	ppm	0.0216	0.2246
Mg2852	4.888	ppm	0.0198	0.4058
Mg2936	4.725	ppm	0.1133	2.3977
Mn2576	.0497	ppm	0.0001	0.2721
Mo2020	.4989	ppm	0.0087	1.7502
Na5895	23.09	ppm	0.0421	0.1825
Ni2316	.2523	ppm	0.0007	0.2919
P_2136	20.41	ppm	0.0955	0.4678
Pb2203	.9888	ppm	0.0053	0.5351
Pd3609	2.442	ppm	0.0146	0.5965
Sb2068	.4346	ppm	0.0712	16.3787
Se1960	.9524	ppm	0.0135	1.4155
Si2516	2.256	ppm	0.0162	0.7175
Sn1899	.4941	ppm	0.0072	1.4592
Sr3464	1.275	ppm	0.0013	0.1022
Ti3349	.2534	ppm	0.0010	0.3897
Tl1908	1.251	ppm	0.0196	1.5630
V_3102	.4837	ppm	0.0050	1.0290
Zn2138	.4977	ppm	0.0013	0.2626

Fe High MRS-388

Acquire Date: 30-Aug-2010 2:46 pm Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	-.0026	ppm	0.0012	45.0616
Al2373	-.0791	ppm	0.0165	20.8873
Al3961	.0214	ppm	0.0077	36.2602
As1890	.0060	ppm	0.0037	61.4851
Au2082	-.0161	ppm	0.0019	11.7448
B_2496	-.0346	ppm	0.0015	4.1961
Ba2335	-.0003	ppm	0.0008	245.7684
Be2348	.00128	ppm	0.0000	1.7578
Ca1840l	.1532	ppm	0.0599	39.1238
Ca4302l	.2032	ppm	0.0316	15.5315
Cd2144	.0019	ppm	0.0004	18.6471
Cd2288	-.0007	ppm	0.0004	62.3838
Co2286	-.0002	ppm	0.0003	133.0392
Cr2677	.0056	ppm	0.0015	27.5273
Cu3247	-.0039	ppm	0.0025	63.6203
Fe2598l	51.99	ppm	0.3762	0.7236
Fe2599(	50.88	ppm	0.5602	1.1011
K_7664	-.1516	ppm	0.0203	13.3874
Mg2852	.0419	ppm	0.0040	9.5110
Mg2936	-2.789	ppm	0.1898	6.8079
Mn2576	.0009	ppm	0.0001	12.3385
Mo2020	.0022	ppm	0.0011	48.7710
Na5895	.0536	ppm	0.0069	12.8404
Ni2316	-.0121	ppm	0.0009	7.2580
P_2136	.0139	ppm	0.0074	53.3749
Pb2203	-.0118	ppm	0.0045	38.4772
Pd3609	-.0754	ppm	0.0131	17.3203
Sb2068	.0134	ppm	0.0059	43.9373
Se1960	.0066	ppm	0.0067	101.5827
Si2516	.0316	ppm	0.0039	12.3948
Sn1899	-.0180	ppm	0.0026	14.5444
Sr3464	.0059	ppm	0.0044	74.4346
Ti3349	.0007	ppm	0.0003	41.4739
Tl1908	.0078	ppm	0.0132	168.1922
V_3102	-.0003	ppm	0.0006	226.9624
Zn2138	.0027	ppm	0.0005	17.7370

ICB

Acquire Date: 30-Aug-2010 2:51 pm Sample Type: QC

Elem	Avg	Units	Stddev	%RSD
Ag3280	.0012	ppm	0.0022	185.9878
Al2373	.0775	ppm	0.0094	12.1172
Al3961	.0612	ppm	0.0057	9.2842
As1890	.0051	ppm	0.0059	116.6514
Au2082	.0001	ppm	0.0055	3,741.2234
B_2496	-.0017	ppm	0.0011	61.8789
Ba2335	-.0002	ppm	0.0005	247.3124
Be2348	-.00002	ppm	0.0000	65.5550
Ca1840l	.0700	ppm	0.0542	77.3679
Ca4302l	.1552	ppm	0.0604	38.8949
Cd2144	.0001	ppm	0.0005	790.5038
Cd2288	-.0003	ppm	0.0003	116.3864
Co2286	-.0001	ppm	0.0004	491.7135
Cr2677	.0004	ppm	0.0016	439.7275
Cu3247	.0009	ppm	0.0014	159.4695
Fe2598l	.0847	ppm	0.0190	22.4738
Fe2599l	.0743	ppm	0.0154	20.7311
K_7664	.0020	ppm	0.0181	890.7273
Mg2852	.0836	ppm	0.0040	4.8334
Mg2936	.3663	ppm	0.1038	28.3372
Mn2576	.0003	ppm	0.0001	52.3007
Mo2020	.0028	ppm	0.0014	50.5630
Na5895	.0308	ppm	0.0048	15.4487
Ni2316	.0000	ppm	0.0008	1,713.0163
P_2136	-.0268	ppm	0.0049	18.4266
Pb2203	.0018	ppm	0.0054	302.5037
Pd3609	-.0163	ppm	0.0073	44.6425
Sb2068	.0043	ppm	0.0048	113.4981
Se1960	.0098	ppm	0.0021	21.5486
Si2516	.0197	ppm	0.0032	16.3468
Sn1899	.0032	ppm	0.0026	81.5792
Sr3464	.0002	ppm	0.0028	1,471.7208
Ti3349	.0004	ppm	0.0002	53.6666
Tl1908	.0113	ppm	0.0125	111.0927
V_3102	.0010	ppm	0.0028	268.1248
Zn2138	.0004	ppm	0.0003	79.6270