Remedial Action Contract 2
For Remedial Response, Enforcement Oversight, and Non-Time-Critical Removal Activities at Sites of Release or Threatened Release of Hazardous Substances in EPA Region VIII

U.S. EPA Contract No. EP-W-05-049

Field Oversight Report
For Wheeler Bay Repair
October 2011

Work Assignment No.:	**343-VOBB-10BC**
	Terminal 4
EPA RPM:	**Sean Sheldrake**
CDM Project Manager:	**Lance Peterson**

December 16, 2011

Prepared for:
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Contents

Acronyms and Abbreviations

AED	automated external defibrillator
CDM	CDM Federal Programs Corporation
CIH	Certified Industrial Hygienist
CSP	Certified Safety Professional
EPA	U.S. Environmental Protection Agency
HASP	health and safety plan
IDW	investigation-derived waste
NGVD	National Geodetic Vertical Datum
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PPE	personal protective equipment
RM	river mile
RPM	EPA Remedial Project Manager
Site	Port of Portland Terminal 4 site
T4	Terminal 4
VOC	volatile organic compound

Section 1
Introduction

Under Work Assignment 343-VOBB-10BC from U.S. Environmental Protection Agency (EPA), under EPA Region 8, Response Action Contract No. EP-W-05-049, CDM Federal Programs Corporation (CDM) was assigned to conduct oversight of repair work completed for Wheeler Bay shoreline stabilization improvements damaged by high water erosion at the Port of Portland's Terminal 4 site (Site) in Portland, Oregon.

CDM provided technical field oversight of repair activities described in the *Wheeler Bay 2011 Repair* memorandum (Anchor QEA 2011a). The repair work was conducted by Northwest Earthmovers, Inc. under the direction and supervision of Anchor QEA. The field activities were undertaken on behalf of the Port of Portland to repair shoreline damage at Wheeler Bay that resulted from above-average river levels that occurred in late May and June 2011 when the Willamette River reached elevation 18.7 feet National Geodetic Vertical Datum (NGVD), which exceeds the flood stage of 18 feet NGVD established for the Lower Willamette River. Activities consisted of:

- Installing an erosion control silt fence between the repair area and the water's edge
- Constructing an access road utilizing the existing gate above the work area
- Placing rock armor materials over one erosion area
- Covering two additional, smaller erosion areas with surplus habitat cover material
- Restoring disturbed areas

The repair work was conducted from October 6, 2011 through October 13, 2011, within the 2011 fish work window that ended October 31, 2011.

During implementation of the repair of the Wheeler Bay shoreline, CDM conducted oversight to monitor health and safety compliance, green remediation plan compliance, and provide an independent verification of the repair work completed by Northwest Earthmovers, Inc. This report summarizes the field oversight activities, photo documentation, and a discussion of deviations from the planned repair activities delineated in the *Wheeler Bay 2011 Repair* memorandum (Anchor QEA 2011a).

1.1 Project Background

The Port of Portland's Terminal 4 (T4) site is located at 11040 North Lombard Street, Portland, Multnomah County, Oregon. The Site is located on the east bank of the Lower Willamette River between River Miles (RMs) 4.1 and 4.5. The Site is a multi-purpose, 261-acre active port facility featuring seven ship berths capable of handling a variety of cargos including autos, forest products, steel, and dry and liquid bulk goods.

The Site is located within Portland Harbor, which was designated a federal Superfund site by EPA in 2000 based on sediment contamination within the river. Contaminants of concern identified at the Site include pesticides, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and metals. The Site is a Non-Time Critical Removal Action Site and is the subject of an early action sediment cleanup.

The Port of Portland completed a Phase I Removal Action project at the Site in October 2008 that included dredging and capping activities within portions of Slip 3 and shoreline stabilization in Wheeler Bay. **Figure 1** in **Appendix A** obtained from Anchor QEA's *Final Removal Action Completion Report* (Anchor QEA 2009) has been provided to show the Site layout, including the location of Wheeler Bay.

The 2008 Wheeler Bay shoreline stabilization activity consisted of placing select fill (4-inch minus sandy gravel) between elevations 10 and 15 feet NGVD, covered by armor material (riprap), and topped with a surface "habitat layer" (2-inch minus sand and round rock). Large woody debris (natural conifer logs) and driftwood were installed within this same elevation (i.e., between elevations 10 and 15 feet NGVD). Topsoil was placed over higher elevations from 15 to 20 feet NGVD. This topsoil was covered by coir fabric (woven coconut fiber erosion control matting), and then fir and/or hemlock mulch. This zone was planted primarily with native willow species for additional stability and erosion control.

Erosion within the Wheeler Bay shoreline stabilization area was first identified in the spring of 2010. Areas of erosion were found extending above elevation 15 feet NGVD and into the willow planting area from the mouth of Wheeler Bay during site monitoring conducted in June 2010. It was presumed the erosion occurred during a high water event that happened during the first two weeks of June in which the water level reached elevation 15 feet NGVD. This erosion was repaired in October 2010. Larger riprap armor rock was placed up to elevation 16.5 feet NGVD from the mouth of Wheeler Bay to approximately 225 feet east (up river) along the shoreline. Large woody debris was anchored to the top of the armoring.

1.2 June/July 2011 Site Monitoring Activities

The Site was monitored at the end of June through early July 2011 following a high water event that occurred over a four week period from May to June 2011. The Willamette River reached a maximum elevation of approximately 18.7 feet NGVD over this time period. This elevation exceeded the flood stage of 18 feet NGVD established for the Lower Willamette River. Three separate erosion areas were identified during the monitoring event where the orange construction fabric used for demarcation of soil not to be disturbed was visible. These three areas were:

- At Station 0+08: This area contained a 1- to 2-foot erosion scarp in the willow planting zone; however, only a small 1-inch area of demarcation fabric was visible. This area was identified as Area 1.

- Between Stations 2+90 and 3+31: This was the primary erosion area. A 2-foot scarp was visible in the willow planting zone with the demarcation fabric clearly visible. This area was identified as Area 2.
- At Station 3+49: This area contained a 1-foot erosion scarp in the willow planting zone; however, only a small patch of demarcation fabric was visible. This area was identified as Area 3.

A site plan (**Figure C-1**: **Stabilization Repair Plan**) showing the Station locations and the three erosion areas from Anchor QEA's *Wheeler Bay 2011 Repair* memorandum (Anchor QEA 2011a) is provided in **Appendix A**.

1.3 Summary of Repair Work

The tasks for the Wheeler Bay stabilization area repair work included:

1. Installing an erosion control silt fence between the location where additional riprap was to be placed (Area 2) and the water's edge.
2. Constructing a temporary access road utilizing the existing gate above the work area.
3. Moving and storing the existing woody debris (i.e., logs) at the site for re-use.
4. Using a track hoe to prepare Area 2 to receive riprap. This included removing select fill from Area 2 and stockpiling it on the beach above the ordinary high water mark for re-use.
5. Using a front loader to place materials at the bottom of the slope for the track hoe to move and place into final positions in the three repair areas.
6. Using the track hoe to make spot repairs placing select fill over exposed demarcation fabric in Areas 1 and 3.
7. Installing riprap along approximately 50 linear feet of shoreline above the existing riprap in Area 2.
8. Re-installing the stabilization woody debris and anchoring it to the bank.
9. Placing topsoil in disturbed areas on the slope.
10. Revegetating disturbed areas by hydroseeding.

Section 2
Objectives and Scope of Field Oversight

2.1 Governing Documents

Activities at the Site were conducted by the potentially responsible party in accordance with the following documents prepared and submitted by Anchor QEA for the Port of Portland:

- *Wheeler Bay 2011 Repair*, Anchor QEA memorandum, September 9, 2011
- *Wheeler Bay 2011 Repair – Green Remediation Plan*, Anchor QEA memorandum, September 30, 2011
- *Final Removal Action Work Plan, Terminal 4 Phase I Removal Action, Wheeler Bay Shoreline Stabilization Slope Repair, Port of Portland, Portland, Oregon,* Prepared by Anchor QEA, LLC and Northwest Earthmovers, Inc., September 2010
- *Health and Safety Plan, Terminal 4 Phase I Removal Action Design Analysis Report,* Anchor QEA, June 30, 2008 as amended on October 2, 2011

2.2 Objectives of Field Oversight

The primary objective of the field oversight was to observe field activities for compliance with the governing documents listed in Section 2.1.

Through daily reporting of field observations made by CDM, the EPA Remedial Project Manager (RPM) was informed of the detailed status of the shoreline repair work. Furthermore, oversight personnel provided the RPM with timely notification of issues that developed during the course of the investigation work, including possible deviations from the governing documents. This information was important because it assisted the RPM in making decisions regarding any necessary changes in how the repair work was being conducted.

2.3 Field Investigation Schedule

The repair work was conducted by Northwest Earthmovers, Inc. under the direction and supervision of Anchor QEA. Repair work commenced on October 6, 2011, with a site safety kickoff meeting. Installation of the silt fence between the repair area and the water, and construction of the access path, began the same day. Repairs of Areas 1, 2, and 3 began on Friday, October 7, 2011 and were completed on Monday, October 10, 2011. Small conifer trees that had been salvaged during construction of the temporary access path were re-planted on October 10th. However, final site restoration activities were delayed pending the arrival of the hydroseed plant mix. The hydroseed arrived onsite on October 13, 2011, and the final repair work was completed by hydroseeding disturbed areas including the temporary access path and top of bank on that day.

2.4 Oversight Personnel

Oversight was conducted by the following CDM personnel:

- Lance Peterson, Project Manager
- Jennifer Jones, Field Team Lead
- Shawn Oliveira, Health and Safety Lead

2.5 Field Documentation

Information and notations were recorded as required in a field logbook in accordance with CDM Standard Operating Procedure 4-1; revision 6 Field Logbook Content and Control. Field documentation consisted of an accounting of activities at the Site, noting problems or deviations from governing documents described in Section 2.1.

The field team lead maintained the field logbooks and submitted copies of the logbook on a regular basis to the CDM project manager for review, for use in preparing field reports, and for filing in the project files. Field notes are provided in **Appendix B**.

2.6 Photographic Documentation

Photographs were taken during field oversight in accordance with CDM Standard Operating Procedure 4-2; revision 7 Photographic Documentation of Field Activities. Photo-documentation by the CDM field oversight team included taking photos of conditions prior to initiation of work, repair activities, health and safety compliance procedures, and any other instance determined necessary. Photographs taken during field oversight are provided in **Appendix C**.

Section 3
Observations

3.1 Summary of Repair Work

The daily descriptions provided below present a general overview of activities performed during the shoreline stabilization repair work with a focus on health and safety compliance, and compliance with the work plan detailed in the *Wheeler Bay 2011 Repair* memorandum (Anchor QEA 2011). Health and safety aspects of the project are discussed in Section 3.2. Compliance with the Green Remediation Plan is discussed in Section 3.3.

October 6, 2011

The repair work was initiated on October 6, 2011. CDM was onsite from 08:00 hours to 11:30 hours for oversight. A health and safety kickoff meeting was conducted by Northwest Earthmovers, Inc. at the T4 Administrative Building prior to entering the work area. John Durst, Roger Anderson, and Bill McCormack from the Port of Portland also attended the meeting. After the meeting, Northwest Earthmovers, Anchor QEA, and CDM personnel proceeded to the work area to observe conditions prior to the initiation of repair work. It was determined that more riprap would be needed to repair Area 2 than was originally estimated (approximately 100 tons versus the 50 tons estimated). The temporary access path was delineated with consideration of the small trees growing on the bank that were planted following the 2010 repair work.

Northwest Earthmovers initiated repair activities by first installing the erosion control silt fence between the work area and the water's edge.

While CDM was not present, the temporary access path was constructed. The path was angled to avoid disturbance of most of the vegetation on the slope. Small willow and poplar trees were cut to near ground surface with the expectation that they would re-grow. Small conifer trees were removed and salvaged for re-planting during site restoration activities.

October 7, 2011

CDM was onsite from 08:15 hours to 10:40 hours for oversight. Northwest Earthmovers used a track hoe to move the large woody debris (natural conifer logs with root wads) anchored around the repair areas and store it for later re-use. A front loader was used to transfer select fill (i.e., surplus habitat cover) from an existing stockpile at the top of the bank down the access path to the bottom of the slope. The track hoe was then used to scoop up the select fill and place it in the repair areas. Northwest Earthmovers repaired Area 1 first by placing 24 inches of select fill over the exposed demarcation fabric.

At 10:15 hours, Northwest Earthmovers personnel left the site in order to cut the chains that had been unfastened from the logs and cable anchors as they had not obtained a "hot permit" from the Port to cut the chains onsite.

CDM confirmed with site personnel that one load of riprap was delivered after CDM had left the site. This riprap was partially placed in Area 2 in the afternoon.

October 8-9, 2011

Weekend: no work activity conducted during this time period.

October 10, 2011

The CDM health and safety lead was onsite from 07:00 hours to 15:00 hours to conduct a health and safety inspection. The results of this inspection are discussed in Section 3.2. The CDM field team lead was onsite from 13:20 hours to 14:55 hours to observe repair activities. By the time the CDM field team lead arrived onsite, the repairs of Areas 2 and 3 had been completed. Northwest Earthmovers personnel were re-planting salvaged conifer trees within the temporary access path. The front loader was parked at the top of the bank and the track hoe had already been removed from the site. The remaining tasks to be completed included re-fastening the large woody debris (i.e., logs) to the anchors using chain and hydroseeding the temporary access path and other disturbed areas.

The CDM field team lead observed that the repair of Areas 1, 2, and 3 appeared to be complete and the extent of the new riprap in Area 2 was estimated to be 50 feet long by 20 feet wide (1,000 square feet). It was also noted that silt fences had been installed to control erosion along the temporary access road above Area 2.

Northwest Earthmovers personnel were in the process of cutting chain to attach the existing chain around the large woody debris (i.e., logs) to the anchors in the bank. A "hot permit" had been obtained from the Port in order to cut the chains onsite.

October 11-12, 2011

No activity occurred within the repair area. Activity was suspended pending arrival of the hydroseed mix needed to complete restoration work.

October 13, 2011

CDM was onsite from 09:00 hours to 10:30 hours for oversight. At 09:45 hours, a Northwest Earthmovers representative arrived onsite with personnel from Fox Erosion Control and Landscape, Inc., the hydroseeding subcontractor. The temporary access path and other disturbed areas were hydroseeded as the final restoration step per the work plan. A photograph of the packing slip provided with the hydroseed (October 13, 2011 Photo 001 in **Appendix C**) shows the composition of the seed mixture used at the Site.

3.2 Health and Safety Program

The CDM health and safety lead, who is a Certified Industrial Hygienist (CIH)/Certified Safety Professional (CSP), conducted a field health and safety inspection on October 10, 2011. Additional health and safety observations were made by the CDM field team lead conducting oversight during the repair work. This section provides a summary of health and safety observations.

Based on the CDM health and safety lead's comprehensive health and safety assessment conducted on October 10, 2011, the construction activities observed that day were determined to be in compliance with the requirements as defined in the Health and Safety Plan (HASP). The inspection report is provided in **Appendix D**.

3.2.1 Health and Safety Meetings

A health and safety kickoff meeting was held at the Site on October 6, 2011, before the start of repair work. Jeff Hargens from Northwest Earthmovers led the meeting. The meeting was attended by field staff from Northwest Earthmovers; CDM; Tim Stone from Anchor QEA; and John Durst, Roger Anderson, and Bill McCormack from the Port of Portland. During the meeting, the following items were discussed:

1. Site hazards included chemical hazards such as "pencil pitch"; grease, oils, and fuels; and PCBs and volatile organic compounds (VOCs). Since these contaminants are not anticipated to be present in the work zone (other than fuel and hydraulic oils for the construction equipment), only Level D personal protective equipment (PPE) is required. However, pencil pitch is present on the beach (below where the riprap will be placed), so any entry into that area will require modified Level D, which includes nitrile gloves and rubber boots or boot coverings. Installation of the silt fence will occur in this zone so modified Level D will be necessary for those workers installing the silt fence. Standard Level D PPE includes hard hat, safety vest, safety glasses, and steel-toed boots. In addition, the biological hazard associated with Willamette River water was discussed. This hazard is particularly acute during rain events, and thus it was discussed that no one should go near the water, drink it, or get it on their skin.

2. Additional hazards of the work include slips, trips, and falls, primarily along the slope to the river where unstable and slippery riprap, logs, and other debris are located. Due to recent and expected rain, staff was reminded that these surfaces could be slick and caution should be used when traversing or standing on the slope.

3. Staff was informed that the automated external defibrillator (AED) is housed in the guard building near the site entrance and Port of Portland policy requires the security staff to administer the AED when necessary. The security staff is fully trained to operate the AED. The procedure is to call the marine security phone number (provided on the cover of the HASP) if an AED is

needed and the security staff will be able to reach the work area within a few minutes. First aid kits are kept in each of the Northwest Earthmovers' vehicles at the site, along with fire extinguishers.

4. Active rail traffic is limited at the site presently because Kinder Morgan is not operating transport rail until October 14, 2011. The work is expected to be completed prior to that time. There are some rail cars being moved around on the site but not near the work area. Still, caution should be used when crossing the track and never park on or near the tracks.

5. If sawing or cutting is required, a "hot permit" will be needed. Northwest Earthmovers intends to use a saw to cut through the chains that hold the large logs anchored to the bank. They will obtain a "hot permit" for this.

6. Any leaks or spills from the equipment should be reported immediately to the site safety supervisor (Carl Johnson, Northwest Earthmovers) and to marine security (at the Port Administration Building). Two booms and plenty of diapers are housed in the Northwest Earthmovers equipment in case of spills. Fuel spills are unlikely but hydraulic leaks are not uncommon.

7. There will be no air monitoring as dust is not expected to be an issue due to the wet weather. If dust generation is visible, work will be stopped until the dust can be controlled using water spray.

8. No investigation derived waste (IDW) is anticipated to be generated, unless there is a spill which would be cleaned and properly disposed of.

Daily health and safety briefings were held each morning by Northwest Earthmovers during construction activities.

3.2.2 Use of Personal Protective Equipment

In accordance with the HASP, proper PPE for the construction work was standard Level D PPE for all work areas except for the area below the riprap on the beach. Standard Level D PPE included hard hat, safety vest, safety glasses, and steel-toed boots. In the beach area below the riprap, modified Level D PPE was designated in the HASP and included hard hat, safety vest, safety glasses, nitrile gloves, and rubber boots or boot coverings.

CDM saw no deficiencies in PPE use during construction activities, including in the modified Level D zone along the beach. CDM observed individuals within the work zone wearing proper PPE at all times, including wearing nitrile gloves and rubber boots during installation of the erosion control silt fence below Area 2 on the beach.

3.2.3 Slip, Trip, and Fall Hazards

Noted during the health and safety kickoff meeting were slip, trip, and fall hazards associated with working on the steep river bank where unstable and slippery riprap,

logs, and other debris are located. Personnel were reminded that due to rainy conditions, these surfaces could be slick and caution should be used when traversing or standing on the slope.

On October 10, 2011, the CDM health and safety lead observed that the Northwest Earthmovers construction crew was using 3-foot sections of rebar temporarily planted into the slope to mark the anchor locations for re-attaching the logs while placing riprap on the slope. The CDM health and safety lead discussed the impalement hazard the rebar posed and requested that rebar caps be used on the ends of the rebar. Rebar caps were not available onsite so Northwest Earthmovers removed the rebar and used high visibility safety tape to mark the anchor locations.

3.3 Compliance with Green Remediation Plan

Overall, the repair work was conducted in accordance with the *Wheeler Bay 2011 Repair – Green Remediation Plan* (Anchor QEA 2011b). Specific observations during the construction work are provided below.

October 6, 2011

The CDM field team lead observed that the field office was located within the Terminal 4 Administrative Building as indicated in the Green Remediation Plan.

Northwest Earthmovers personnel indicated that the two pieces of construction equipment utilized for the repair work, a track hoe and front loader, used B20 diesel fuel (biodiesel fuel blend).

October 7, 2011

CDM observed that the Northwest Earthmovers crew was using an existing stockpile of select fill located at the top of the bank to repair the shoreline in accordance with the Green Remediation Plan. The crew also removed the large woody debris (i.e., logs) from the repair area and stored it for later re-use during restoration activities.

The CDM field team lead observed that the Northwest Earthmovers track hoe operator left the engine idling when he left the cab to speak with another Northwest Earthmovers staff member. The CDM field team lead pointed out that engines are to be turned off when machinery is not expected to be used within the next 5 minutes of time in accordance with the Green Remediation Plan. The Northwest Earthmovers track hoe operator complied and turned off the engine.

October 10, 2011

The CDM field team lead observed the Northwest Earthmovers crew re-planting conifer trees that had been salvaged during the construction of the temporary access path. Northwest Earthmovers also re-anchored the large woody debris that had been salvaged on October 7, 2011.

October 13, 2011

Northwest Earthmovers confirmed that 18-ton (larger sized) dump trucks had been used to deliver riprap to the Site to minimize the number of delivery trips required.

Section 4
Deviations

4.1 Summary of Field Change Requests

No significant field changes were requested or required during field activities. As a result, no field change request forms were submitted during this activity.

4.2 Deviations

Only one deviation was noted during the repair work. The *Wheeler Bay 2011 Repair – Green Remediation Plan* (Anchor QEA 2011b) indicated that two track hoes would be utilized during construction activities; one to transport materials from the top of the bank to the bottom of the slope and the second to move the material from the bottom of the slope to its final position. However, a front loader was used instead of a track hoe to transport materials from the top of the bank to the bottom of the slope.

Section 5
References

Anchor QEA. 2008. *Health and Safety Plan, Terminal 4 Phase I Removal Action Design Analysis Report.* June 30, 2008 (amended October 2, 2011).

_____. 2009. *Final Removal Action Completion Report, Terminal 4 Phase I Removal Action, Port of Portland, Portland, Oregon.* June 2009.

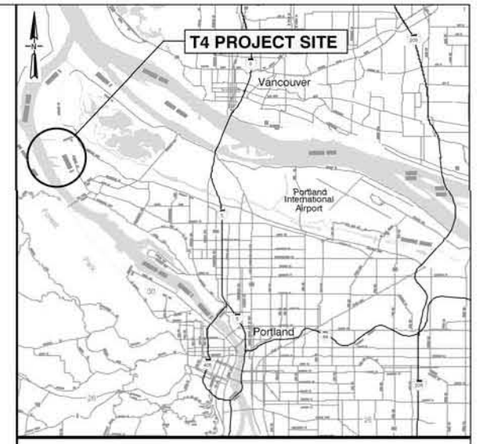
_____. 2011a. *Wheeler Bay 2011 Repair* memorandum. September 9, 2011.

_____. 2011b. *Wheeler Bay 2011 Repair – Green Remediation Plan* memorandum. September 30, 2011.

Anchor QEA and Northwest Earthmovers, Inc. *Final Removal Action Work Plan, Terminal 4 Phase I Removal Action, Wheeler Bay Shoreline Stabilization Slope Repair, Port of Portland, Portland, Oregon*. September 2010.

CDM. 2007. Standard Operating Procedures 4-1, Revision 6 and 4-2, Revision 7 for Field Logbook Content and Control and Photo Documentation. Prepared for EPA. March 2007.

Appendix A
Anchor QEA Site Figures



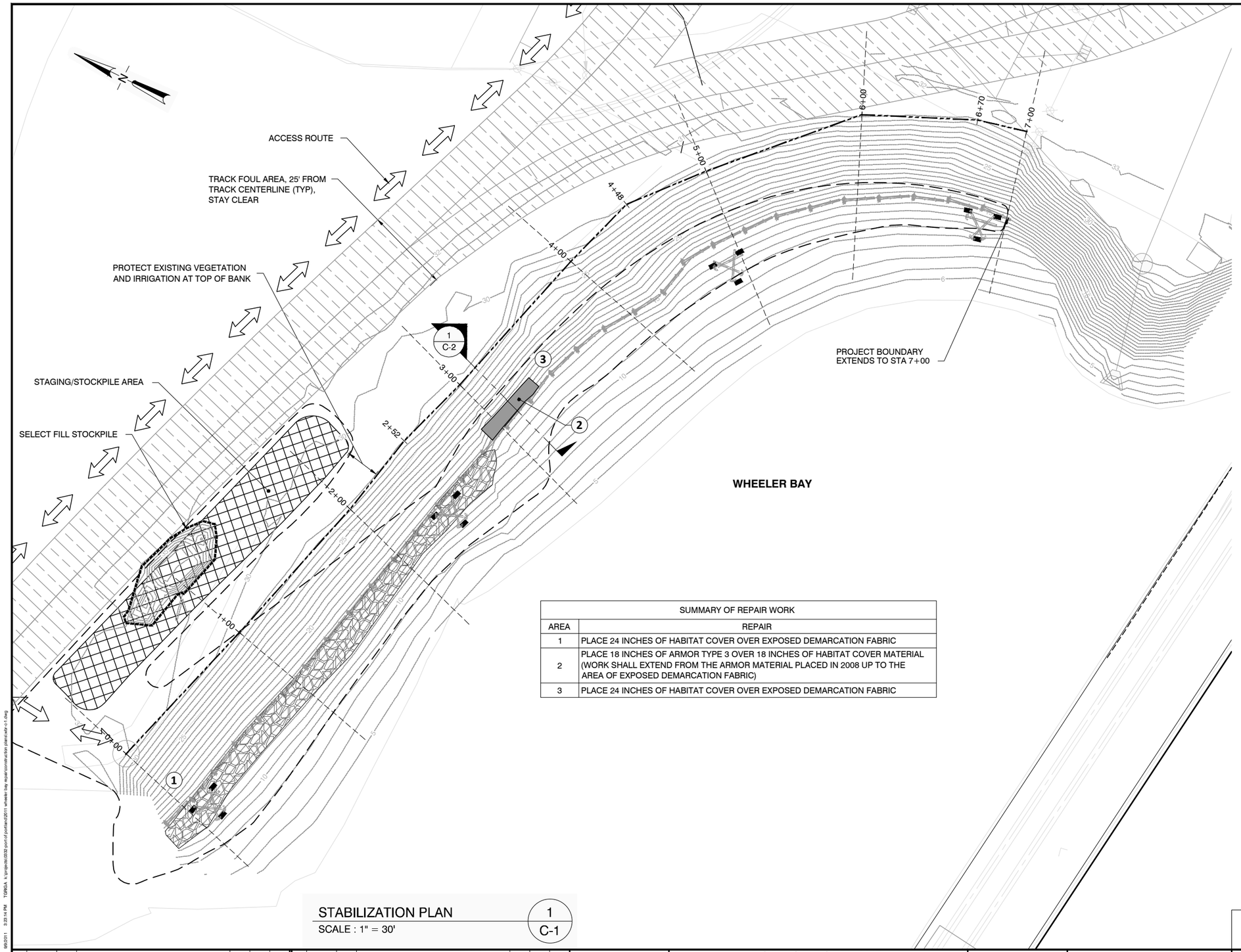
VICINITY MAP
SCALE: N.T.S.

0 300 300
SCALE IN FEET

May 21, 2009 12:06pm tighat K:\Jobs\050332-PORT OF PORTLAND\050332201 TERMINAL 4_Phase 1\RACR_PH1-FIG1.dwg RACR FIG 1

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 1
Site Plan and Vicinity Map
Terminal 4 Phase I Removal Action - Removal Action Completion Report
Portland, Oregon



LEGEND:

- PROJECT BOUNDARY
- SHORELINE SLOPE REPAIR ARMOR ROCK LIMITS (OCT 2010)
- APPROXIMATE LOCATION OF EXISTING ANCHORED LARGE WOODY DEBRIS
- EXISTING ECOLOGY BLOCK LWD ANCHORS
- EXISTING SURVEY CONTOURS (DATE:11/17/10)
- STATION LINE
- TRACK FOUL AREA
- AREA OF REPAIR AND IDENTIFICATION NUMBER

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

SUMMARY OF REPAIR WORK	
AREA	REPAIR
1	PLACE 24 INCHES OF HABITAT COVER OVER EXPOSED DEMARCATION FABRIC
2	PLACE 18 INCHES OF ARMOR TYPE 3 OVER 18 INCHES OF HABITAT COVER MATERIAL (WORK SHALL EXTEND FROM THE ARMOR MATERIAL PLACED IN 2008 UP TO THE AREA OF EXPOSED DEMARCATION FABRIC)
3	PLACE 24 INCHES OF HABITAT COVER OVER EXPOSED DEMARCATION FABRIC

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 NOVEMBER 17, 2010.
4. NO EQUIPMENT ALLOWED TO OPERATE IN FOUL AREA. STAY BACK 25 FEET FROM CENTERLINE OF TRACK.

NOTE: ELEVATIONS ARE IN NGVD NOT CRD

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

DRAFT DESIGN SET - NOT FOR CONSTRUCTION

DRAFT DOCUMENT: DO NOT QUOTE OR CITE

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

NO.	DATE	BY	REVISIONS	CK'D	APP'VD

PORT OF PORTLAND
PORTLAND, OREGON

ANCHOR QEA

720 OLIVE WAY, SUITE 1900 | SEATTLE, WA 98101 | (206) 287-9130

2011D043 — DESIGN NUMBER
820027 — PROJECT NUMBER

DESIGNED BY P. HUMMEL
DRAWN BY T. GRIGA
CHECKED BY J. VERDUIN
DATE SEPTEMBER 2011
GRAPHICAL SCALE BAR 0 1/4" 1/2" 1" 2"

TERMINAL 4

WHEELER BAY BANK REPAIRS 2011
STABILIZATION REPAIR PLAN

SUBMITTED BY ROGER ANDERSON — PROJECT ENGINEER

TYPE CD | DRAWING NO. T4 2011 500 00 2/3 (C-1)

9/9/2011 3:23:14 PM TGRIGA k:\projects\0332.port of portland\2011 wheeler bay repair\construction plans\wb-c-1.dwg

Appendix B
Field Notes

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

ALL-WEATHER

ENVIRONMENTAL FIELD BOOK

Name CDM

Address 14432 SE Eastgate Way
Bellevue, WA 98007

Phone (425) 519-8300

Project EPA/Terminal 4
Portland Harbor
Portland, OR

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book:

Page Pattern		Cover Options	
Left Page	Right Page	Polydura Cover	Fabrikoid Cover
Columnar	1/4" Grid	Item No. 550	Item No. 550F

CONTENTS

Reference Page Index

CONTENTS

PAGE	REFERENCE	DATE

Location Terminal 4 - Portland Date 10/6/11

Project / Client Oversight of Wheeler Bay Repair Work

0750 Arrive at T4 + Admin building for kickoff meeting. Weather overcast, 50°F.

0818 Begin Health and Safety meeting. Attendees: Jennifer Jones (CDM), Tim Stone (Anchor QEA), Jeff Haugens and Carl Johnson (Northwest Earthmovers), John Durst, Roger Anderson, and Bill McCormack (Port of Portland). Plan for today is to install silt fence and prepare for riprap delivery. AED is available at the security gate. Security responds to emergency and are trained to use AED. No AED is on-site - this is Port of Portland policy to have security respond. Site hazards: chemical = pencil pitch, grease oils and fuels, PCBs and VOCs. Level D PPE required. We will be out of the contamination area except during installation of pencil pitch. Biological hazards of Willamette River were discussed.

Jennifer Jones 10/6/11

Location Terminal 4- Portland Date 10/6/11

Project / Client Oversight of Wheeler Bay Repair Work

0820 Orange construction fence is demarkation of contamination. Exposed in a couple spots. Below this line is contamination area. Will not go below that. Haz is not for area below.
No air monitoring anticipated. Dust will not be an issue during this time of year but if more is visible dust, it will be controlled with water. Biggest hazard is slips, trips, and falls on riprap and on steel sheets. Train is not active until Oct. 14. Some train activity will occur but minimal. PPE = hard hats and vests.
First Aid kit in Carl's truck and Carl is trained to administer 1st Aid.
Modified Level D for installing silt fence - add rubber boots + nitrile gloves. Spill equipment - 2 booms + diapers available on-site.
NO IDW anticipated to be generated.

Jennifer Simms 10/6/11

Location Terminal 4-Portland Date 10/6/11

Project / Client Oversight of Wheeler Bay Repair Work

0910 End Health & Safety Meeting
0940 Arrive at Wheeler Bay site with Jim Stone, Carl Johnson, and Jeff Hargens. Walk down bank to observe repair area. Carl and Jeff discussing the amount of riprap needed to place (approx. 50 linear feet along shoreline adjacent to existing riprap. This is "area 2" on design figures. In addition, "select fill" (sandy gravel) will be placed in area 1 and area 3 which are located downstream + upstream of area 2, respectively. In these areas select fill will be added to fill in eroded areas. Will need to move at least 3 large logs that are chained and cabled to an anchor in the bank. Need more chain to put the logs up on new riprap. Select fill is known as "fish mix". There is a stockpile of this material at the top of the bank. They can use if necessary.

Jennifer Simms 10/6/11

6

Location Terminal 4- Portland Date 10/6/11

Project / Client Oversight of Wheeler Bay Repair Work

1040. Tasks for this project include:
1. Install silt fence
2. Remove select fill and stockpile on beach
3. Install new riprap
4. Reinstate select fill
5. Construct temporary access road - this will occur before tasks 2-4.
6. Remove logs/anchor chain - this will occur before task 3 + 4 + maybe part of 2 where necessary
7. Topsoil placement
8. Landscape installation (hydroseeding)

Took photos of shoreline work area:

Photo #	Description
1	Area 2 where riprap will be installed. Orange demarkation line showing contaminated area is visible
2	Wider view showing areas 2+3
3	Looking upstream
4	Looking downstream toward end of riprap
5	From downstream end showing large log
6.	"pencil pitch" on beach
7	Slope where access road will be

Jennifer Jones 10/6/11

Location Terminal 4 - Portland Date 10/6/11

7

Project / Client Oversight of Wheeler Bay Repair work.

1045 Discussed with Jim Stone use of B20 fuel in equipment. Equipment will consist of track hoe and loader as in approved green remediation plan.
1050 Port of Portland staff arrive. Jessica Hamilton and other staff stopped by to observe work area. They are visiting site for other reasons. Jessica + Jim Stone discussed that the window when Kinder Morgan trains are not operating is until October 14. Jim Stone indicated shoreline repair work will be done by end of next week (10/14).
1100 Carl left area to get another Northwest Earthmovers worker to help with silt fence.
1105 Port staff depart area.
1120 Carl and assistant arrive back at work area.
1125 Carl and assistant heading down to construct silt fence. They are wearing nitrile gloves and rubber boot covers since may encounter perch pit.
1130 Depart site.

Jennifer Jones 10/6/11

Location Terminal 4-Portland Date 10/7/11

Project / Client Oversight of Wheeler Bay Repair work

0815 Arrive at site Weather drizzly, overcast, 52°F. Walked down to Wheeler Bay shoreline and met Jim Stone, Anchor. Carl Johnson and an assistant with Northwest Earthmovers had begun work to move away the large logs from areas where fill and/or riprap is to be added. Large logs were first unhooked from their anchors and then pushed aside with the track hoe. A front end loader is also being used to bring "fish mix" fill from the stockpile at the top of the site down in bucket loads that are then placed in Area 3 and scraped up by the track hoe and brought to Area 1. Photo # 1 shows temporary access path at top of slope where front loader is parked.

end of shift 10/7/11

Location Terminal 4- Portland Date 10/7/11

Project / Client Oversight of Wheeler Bay Repair work

0840 Took photos:

Photo #	Description
2	Access path looking downslope
3	Looking upslope from beach at access path
4	Bringing fill with loader to track hoe for placement in Area 1
5	Placing fill in Area 1
6	Close-up of "fish mix" fill in Area 1
7	For duplicate of EPA photos from 2010: looking upstream view of WB
8	View of shoreline at Area 1 looking upstream
9	Silt fence along beach
10	For duplicate of EPA photo in 2010: Wheeler Bay overview looking downstream
11	Loader at top of slope showing access path after a few passes
12	Access path from beach looking upslope
13	Fill in completed Area 1
14	Completed Area 1 - from downslope.

0930 Completed filling Area 1

0945 Began filling Area 3. Jeff Jargens, Northwest Earthmovers arrived.

Jenn Jones 10/7/11

Location Terminal 4- Portland Date 10/7/11

Project / Client Oversight of Wheeler Bay Repair Work

0955 Tim, Carl, and Jeff walked to top of slope and left ~~loader~~ 99 10/7/11 track hoe idling. I mentioned they need to cut the engine to keep idling at a minimum ≤ 5 minutes in accordance with green remediation plan. Carl agreed and went to turn off engine.

1000 Riprap is to be delivered this morning. Then they will begin to place the riprap and will likely be done on Monday. Chains for logs are to be delivered Monday, so will likely be able to complete the job then, according to Jeff. Plan to hydroseed disturbed areas on Tuesday if they are ready.

1005 Took photo #15 showing stockpile of "fish mix" fill at top bank.

1015 Carl and assistant PJ left site to go and cut chains for the log anchors. They did not receive their hot permit so must leave site to cut the chains

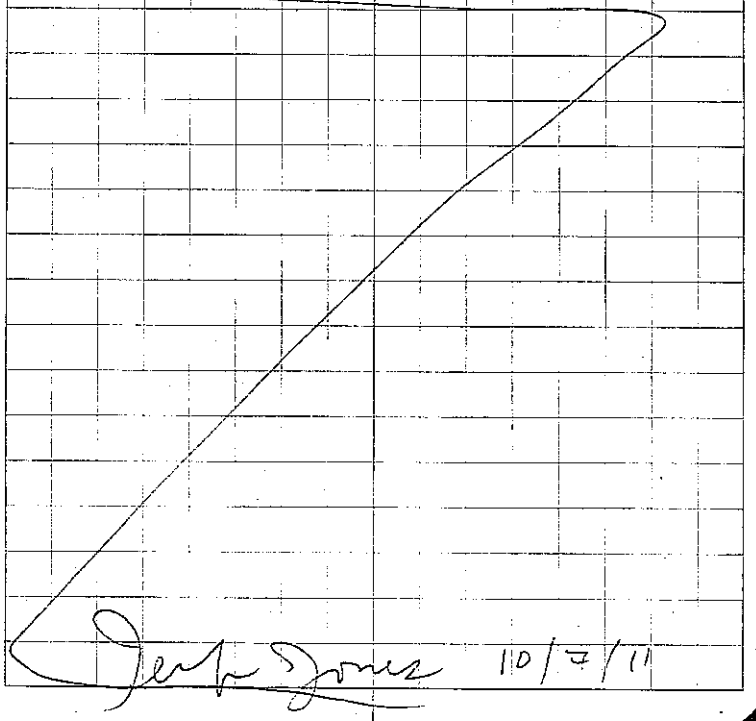
Jenn Jones 10/7/11

Location Terminal 4- Portland Date 10/7/11

Project / Client Oversight of Wheeler Bay Repair Work

1030 Carl and PJ returned and began extending chains from anchor that is cabled into the ground. Will reattach these chains to the large logs after riprap is placed. Riprap not yet delivered.

1040 Departed site.



Jenn Jones 10/7/11

Location T4- Portland Date 10/10/11

Project / Client Oversight of Wheeler Bay Repair

1320 Arrive at site and met Tim Stone (Anchor QEA) and Carl Johnson (Northwest Earthmovers). Weather mostly cloudy, 63°F. Tim Stone stated that repair work was almost complete. Carl Johnson and his assistant were re-planting trees that had been salvaged from the temporary access path. Only things left to do are to install the chain on the logs and hydroseed the disturbed soil area along the access path. Took photos #1-7 as follows:

Photo #	Description
1	New riprap in Area 2 - looking downstream
2	Area 2 looking toward shore
3	Area 2 looking upstream
4	Area 3 w/24" of new fill
5	Disturbed soil along access path
6	Re-planting trees in access path
7	Replanted trees in access path

1355 Shawn Oliviera, CDM Health + Safety, arrives.

Jennifer Jones 10/10/11

Location T4- Portland Date 10/10/11

Project / Client Oversight of Wheeler Bay Repair

1405 Carl Johnson began cutting chain. He obtained a "hot work" permit from the Port to do that.

1415 Carl began attaching chain to logs. Took photo #8 showing this.

1430 Carl stated plant mix is not ready for hydroseeding tomorrow. Will plan to hydroseed Wed or Thursday of this week - to be done by Thursday at the latest.

1435 Tim Stone stated that the Port will be conducting a final survey to document the size of the riprap for their mitigation ~~requirements~~ 10/11/11 requirements.

1455 Departed site.

Jennifer Jones 10/10/11

14

Location T4- Portland Date 10/13/11

Project / Client Oversight of Wheeler Bay Repair

0856 Arrive at site No one else is present. Weather overcast, 53°F.
0915 Kelly Madelitsch, Port of Portland arrived. We are waiting on hydroseeder to arrive.
0946 Jeff Hargens, Northwest Earthmovers, arrived with hydroseeder. Marine Security arrived to open gate down to Wheeler Bay. Ross Anderson, Port of Portland Engineer, also arrived. Hydroseed company is FOX. Jeff stated they are using the same seed mix and fertilizer as last time. Took photo #1 of seed mix list. Supplier is Sunmark seeds in Portland. Hydroseeder is Fox Erosion Control and Landscape Inc.
1000 Jeff confirmed that 18 ton "boulder trucks" were used to deliver the riprap for this repair.
1010 Took Photos # 2-6 of hydroseeding in progress. Photo # 5 shows fiber mix. Photos # 6, 7 + 8 10/13/11 Show overview of completed repair.
1030 Departed site
Jamie Jones 10/13/11

15

Location Date

Project / Client

Appendix C
Field Oversight Photographs

October 6, 2011

Photos 001 and 002

October 6, 2011

Photos 003 and 004

October 6, 2011

Photos 005 and 006

October 6, 2011

Photo 007

October 7, 2011

Photos 001 and 002

October 7, 2011

Photos 003 and 004

October 7, 2011

Photos 005 and 006

October 7, 2011

Photos 007 and 008

October 7, 2011

Photos 009 and 010

October 7, 2011

Photos 011 and 012

October 7, 2011

Photos 013 and 014

October 7, 2011

Photo 015

October 10, 2011

Photos 001 and 002

October 10, 2011

Photos 003 and 004

October 10, 2011

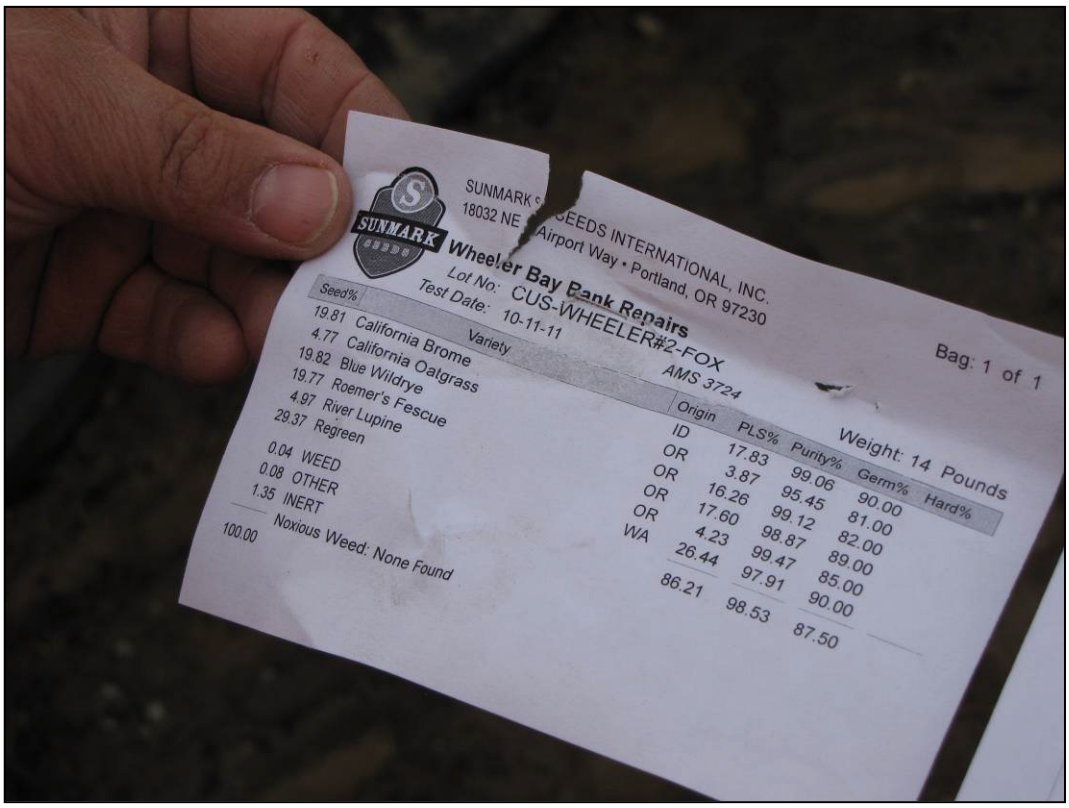
Photos 005 and 006

October 10, 2011

Photos 007 and 008

October 13, 2011

Photos 001 and 002



October 13, 2011

Photos 003 and 004

October 13, 2011

Photos 005 and 006

October 13, 2011

Photos 007 and 008

Appendix D
Health and Safety Inspection Report

CDM Field Safety Report: Terminal 4 2011 Wheeler Bay Repair

Health and Safety Summary

Provided By: Shawn Oliveira, CIH, CSP

10/10/11:

0700 hrs: Shawn Oliveira arrived onsite and meet Tim Stone (Anchor QEA) at entrance guard shack, after a brief discussion, Tim escorted me to the jobsite. Upon arriving, NW Earthmovers was conducting a daily safety meeting to discuss the hazards related to the planned cover placement activities.

General health and safety (H&S) components were reviewed, including: required PPE; emergency response and evacuation routes; work zone establishment (i.e., support zone, exclusion zone, contamination reduction zone); means of communication; and site layout hazards (e.g., traffic, slip/trip/fall hazards). Activities planned for the day included placement of cover rock, and placement of large logs and stumps over the cover rock.

Initial inspection efforts focused on site documentation such as the presence of the updated site H&S plan (HASP) dated October 2, 2011, site specific activity hazard analysis (AHA), an emergency action plan, safety meeting sign in sheets, and worker training. A Hazard Communication program was in place including required worker training, and site specific MSDS's. Visitor PPE was available for use onsite.

NW Earthmovers performed a pre-work inspection on the excavator, which appeared to be in excellent condition, and free of leaks. Dust control was excellent due to the wet weather, and overall the site appeared clean and well organized. Surface runoff and erosion controls were in place and in good condition. A spill response kit was onsite and ready for use in case of emergency.

PPE compliance was observed by NW Earthmovers personnel, hard hats, steel toed boots, safety vest and safety glassed were in use.

10:00 hrs: NW Earthmovers placing cover rock. Fully charged and tagged fire extinguisher was observed on the excavator as well as in the NW Earthmovers truck. Proper fuel storage containers were used. Adequate drinking water and toilet facilities were present. Defined equipment and personnel pathways had been adequately established, and an employee parking area was defined.

The excavator operator was skilled, and clearly incorporated safety into his approach. During this particular activity, NW Earthmovers had stuck 3 foot long sections of re-bar into the slope to identify chain tie in points for the logs. This was perhaps the only safety issue observed, in that the re-bar presented an impalement hazard if someone were to slip and fall down the slope.

I requested that re-bar caps be used. Anchor QEA indicated that the re-bar was temporary, and they did not have caps onsite. They agreed with the hazard and immediately went about removing the re-bar and used high visibility safety tape as a marker instead.

Excellent PPE compliance was observed.

14:00 hrs: NW Earthmovers installed logs into chain tie in points. The NW Earthmovers operator was taking care to place the logs in a safe manner, and established good communication with his helper. The helper stayed on the slope above any log handling activity in case one of the logs was to roll down the slope.

Discussed overall safety observations with Tim Stone and Jennifer Jones (CDM). Key hazards identified were the obvious slip, trip, and fall hazards presented by the steep slope, as well as the cover rock and logs.

15:00 hrs: Depart site.

Overall Safety Summary

Based on this review of the activities performed by Port of Portland contractors on October 10, 2011 at T4 Wheeler Bay, all program elements are in place to the degree required by Federal OSHA standards and the project HASP as documented in the safety review inspections.

SafetyNet Inspection Review

The SafetyNet system employs a user-friendly platform to quickly and efficiently record observations of field activities. Checklists are stored on a personal digital assistant (PDA) or "smartphone" device and are used by H&S personnel to evaluate work progress and compliance with the site HASP. Observations of activities are objectively treated as either safe or unsafe. Safe observations are uploaded to a server and tracked accordingly. Unsafe observations are treated as an open issue that must be corrected. Information related to the unsafe observation, such as the type and severity of the hazard, recommended corrective action, party responsible for implementing the corrective action, and the timeframe required to complete the corrective action, must be entered. Unsafe observations (i.e., open issues) remain open until a corrective action had been confirmed. The time duration of open issues is also tracked.

The SafetyNet inspections allow for a comprehensive assessment of all program elements required under the HASP.

The following table provides a summary of the SafetyNet inspections performed by CDM H&S at the T4 Wheeler Bay site on 10/10/11.

Inspection Type	Inspections	Observations	Unsafe Conditions	% Safe
Safety	2	52	1	98.1

Category	Sub-Category	Observations	Conditions		% Safe
			Unsafe Conditions	Safe Conditions	
Administration	Summary	15	0	15	100.0%
	Document pre-const mtgs	1	0	1	100.0%
	Emergency action plan	3	0	3	100.0%
	Emergency communication plan	1	0	1	100.0%
	First aid kit available	3	0	3	100.0%
	JHA/AHA submitted each trade	1	0	1	100.0%
	MSDS manual	1	0	1	100.0%
	Safety manual	2	0	2	100.0%
	Safety meetings	2	0	2	100.0%
	Visitor PPE available	1	0	1	100.0%

Category	Sub-Category	Observations	Conditions		% Safe
			Unsafe Conditions	Safe Conditions	
Environmental	Summary	7	0	7	100.0%
	Dust Control Adequate	1	0	1	100.0%
	Haz waste/RCRA requirements	3	0	3	100.0%
	SWWPP/Runoff controlled	1	0	1	100.0%
	Spill response awareness	1	0	1	100.0%
	Vehicle / machinery leaks	1	0	1	100.0%
Fire Protection	Summary	3	0	3	100.0%
	Ext charged and inspected	1	0	1	100.0%
	Fire suppression equip avail	1	0	1	100.0%
	Proper fuel containers used	1	0	1	100.0%
Hazard Communications	Summary	4	0	4	100.0%
	Copy of program	1	0	1	100.0%
	Employees trained	1	0	1	100.0%
	MSDS' (site specific)	1	0	1	100.0%
	Readily available	1	0	1	100.0%

Category	Sub-Category	Observations	Conditions		% Safe
			Unsafe Conditions	Safe Conditions	
Housekeeping	Summary	3	0	3	100.0%
	Clear access to bldg/site	1	0	1	100.0%
	Designated employee parking	1	0	1	100.0%
	Roadway around proj clear	1	0	1	100.0%
Motorized Equipment	Summary	4	0	4	100.0%
	Back up alarm functioning	1	0	1	100.0%
	Glass free of obstructions	1	0	1	100.0%
	Operator appears competent	1	0	1	100.0%
	Seat belts used	1	0	1	100.0%
P.P.E.	Summary	13	1	12	92.3%
	Glasses / face shields	5	0	5	100.0%
	Hard Hats	5	0	5	100.0%
	Rebar caps	1	1	0	0.0%
	Work Boots	2	0	2	100.0%

Category	Sub-Category	Observations	Conditions		% Safe
			Unsafe Conditions	Safe Conditions	
Site / Public Protection	Summary	3	0	3	100.0%
	Adequate drinking water	1	0	1	100.0%
	Adequate toilets	2	0	2	100.0%