

# DESIGN ANALYSIS REPORT

## TERMINAL 4 PHASE I REMOVAL ACTION PORT OF PORTLAND, PORTLAND OREGON

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### **Prepared for**

Port of Portland  
Portland, Oregon

### **Prepared by**

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6650 SW Redwood Lane, Suite 333  
Portland, Oregon 97224

### **In Association with**

NewFields  
Ash Creek Associates, Inc.

**April 9, 2008**



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Appendix F	Transportation and Disposal Plan
Appendix G	Pre-construction Sampling Data Report
Appendix H	Removal Action Construction Sampling and Analysis Plan
Appendix I	Removal Action Construction Quality Assurance Project Plan
Appendix J	Removal Action Construction Health and Safety Plan

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# 1 INTRODUCTION

## 1.1 Background

In 2000, the U.S. Environmental Protection Agency (USEPA) added the Portland Harbor Superfund Site to the National Priorities List. The Port of Portland (Port) is one of 10 potentially responsible parties that entered into an Administrative Order on Consent with USEPA for a Remedial Investigation/Feasibility Study (RI/FS) of the Superfund Site in fall 2001. The Administrative Order on Consent allows Early Actions to be conducted to address known contamination at specific locations within the Superfund Site.

Contaminants found in Terminal 4 (T4) sediment samples during a remedial investigation directed by the Oregon Department of Environmental Quality (DEQ) led to a determination that a Removal Action at T4 is warranted. Accordingly, the Port is conducting a Non-Time-Critical Removal Action (NTCRA) under an Administrative Order on Consent for Removal Action (the AOC) executed by the Port and USEPA in October 2003. Figure 1 shows the Removal Action boundary at T4.

The AOC sets forth the general legal requirements that govern the execution of the Early Action. Appendix A to the AOC is the statement of work (SOW) for the implementation of the Removal Action. The SOW provides a list of deliverables, their submittal schedule, and the technical requirements each deliverable has to meet in order to implement the Early Action.

As part of the execution of the Early Action, the Port completed an engineering evaluation and cost analysis (EE/CA; BBL 2005) in which various Removal Action alternatives were identified, compared, and ranked for their relative performance at meeting specific objectives associated with the evaluation criteria of effectiveness, implementability, and cost. Based on the alternatives evaluated in the EE/CA, the USEPA issued an Action Memorandum (Action Memo) on May 11, 2006 (USEPA 2006a) that documented the selection of the Removal Action. The Removal Action documented in the Action Memo included a combination of monitored natural recovery, capping, and dredging with placement of contaminated sediments in a confined disposal facility (CDF) to be built on site.

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The Port proceeded down a path to implement the Removal Action, which included several steps (30, 60, and 100 percent design deliverables) in the Remedial Design process. The Port submitted the T4 Early Action 60 Percent Design Submittal in December 2006, and from early 2007 through November 2007, the Port and USEPA teams (note: USEPA's team partners include the Tribes, DEQ, and National Oceanic and Atmospheric Administration [NOAA]) worked collaboratively on resolving technical questions and issues associated with the design.

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

Phase I of the Removal Action includes 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

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- 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 2006a) and in support of overall risk reduction in the Removal Action Area (RAA)

This Draft Design Analysis Report (DAR) presents the design details for that agreed-to Phase I remedy, which is described further in Section 2.2 and 2.4.

## 1.2 Organization of this Document

The remainder of this document provides detailed information on the development of the Prefinal Design as follows:

- **Section 2 – Phase I Removal Action Description** describes the setting of the Phase I work, summarizes the Phase I objectives and performance standards, and details the Phase I activities by subarea.
- **Section 3 – Existing Conditions** summarizes the information and data collected within the Phase I Area that will be used as the basis of the design, including physical conditions, hydrogeologic and geotechnical conditions, hydrodynamic characteristics, sediment quality, and site uses.
- **Section 4 – Dredge and Disposal Plan** provides the conceptual dredge plan for Phase I, including the basis for design, design approach, dredge design surface, volumes, equipment selection, and construction quality control.
- **Section 5 – Capping and Shoreline Stabilization Plan** provides the conceptual cap design at the Head of Slip 3, including the basis for design, design approach, source material description, volumes, and equipment selection. The section also provides the Wheeler Bay shoreline stabilization plan, including design, source material descriptions, volumes, and equipment selection.
- **Section 6 – Water Quality** discusses water quality criteria, contaminant mobility testing, and predicted water quality for the different Removal Action elements.
- **Section 7 – Substantive Requirements of Permits** discusses the regulatory requirements that must be achieved during the implementation of the Removal Action.

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- **Section 8 – Construction Schedule and Sequencing** describes the duration and order of the anticipated Phase I Removal Action construction activities.
- **Section 9 – Access and Easement Requirements** provides access and easement information related to implementation of the Phase I Removal Action.
- **Section 10 – Impact Minimization** discusses measures to minimize impacts to the environment and community.
- **Section 11 – Institutional Controls** details the actions required to maintain capped areas.
- **Section 12 – References** summarizes the references used in the document.

The appendices provide the following information:

- Appendix A – Construction Quality Assurance Plan (CQAP)
- Appendix B – Water Quality Monitoring Plan (WQMP)
- Appendix C – Outline of the Interim Monitoring and Reporting Plan (IMRP)
- Appendix D – Construction Drawings
- Appendix E – Construction Specifications
- Appendix F – Annotated Outline of the Transportation and Disposal Plan (TDP)
- Appendix G – Pre-construction Sampling Data Report
- Appendix H – Removal Action Construction Sampling and Analysis Plan (SAP)
- Appendix I – Removal Action Construction Quality Assurance Project Plan (QAPP)
- Appendix J – Removal Action Construction Health and Safety Plan (HASP)

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