



Mare Island Naval Shipyard, Vallejo, California Fact Sheet

GROUNDWATER CONTAINMENT BARRIER AND EXTRACTION TRENCH—INVESTIGATION AREA H1— INTERIM REMEDIAL ACTION PLAN

November 2003

<http://www.efds.w.navy.mil/Environmental/MareIsland.htm>

INTRODUCTION

The Department of the Navy has prepared this fact sheet to inform the community about a proposed environmental remediation activity referred to as an "Interim Remedial Action" at Mare Island in Vallejo, California. The plan is to construct a vertical groundwater containment barrier and extraction trench around a portion of the historical landfill area known as Investigation Area H1. The objective of the vertical barrier and extraction trench is to prevent contaminated shallow groundwater from migrating toward nearby wetlands and tidal marshes. This proposed action is considered an interim remedial action, which is consistent with the reasonably anticipated final remedies for areas of Investigation Area H1 posing an unacceptable risk to human health or the environment.

PROPOSED CONTAINMENT AREAS

Investigation Area H1 (shown in red on *Figure 1*) includes an area of about 230 acres. The proposed vertical barrier (shown in blue) will provide groundwater containment for about 70 acres of the following areas:

RCRA/Facility Landfill Area—Includes the original Facility Landfill, which operated from 1965 to 1977 and the later Resource Conservation and Recovery Act (RCRA) Landfill used through 1989. Wastes disposed of at the Landfill were not documented but are estimated to include over 600,000 tons of garbage, scrap metal and wood, shipboard waste, and other wastes associated with typical shipyard operations. As a RCRA Interim Status Facility, the Landfill was prohibited from accepting most hazardous wastes; however, it received certain RCRA-type wastes (asbestos-containing materials, solvent-laden rags, paint sludge, and spent sandblast abrasives).

Waste Oil Sump Area—Three unlined sumps had been constructed just south of Dump Road by 1946 for the disposal of petroleum waste oils, engine lubricating oils, and cutting oils from machine shops. Over the years of shipyard operations, the sumps reportedly received an estimated 4.5 million gallons of waste oil. The sumps were backfilled with soil in the early 1970's. Free product hydrocarbons are present throughout much of this area.

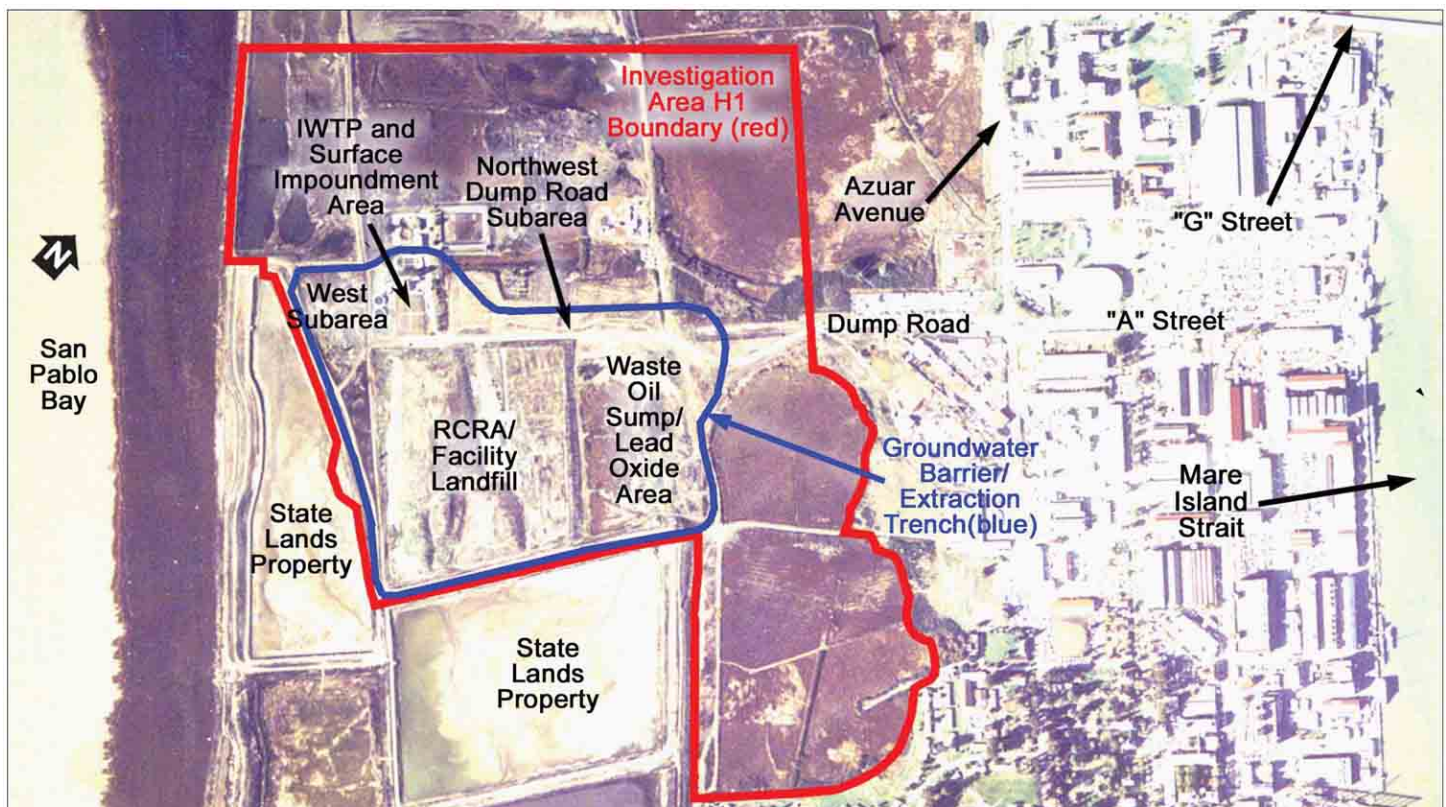


Figure 1. Alignment of the groundwater barrier and extraction trench (shown in blue) within Investigation Area H1 (shown in red).

Lead Oxide Storage Area—Spent lead-acid batteries from submarines, forklifts, and vehicles were temporarily stored and disposed of in the area. The area apparently was also used for the disposal of spent sand blast abrasives. Part of this area overlies the Waste Oil Sump Area.

IWTP and Sludge Treatment/Surface Impoundment Area—The Industrial Wastewater Treatment Facility (IWTP), includes two blending impoundments, two sludge drying impoundments, and associated facilities. The facility was used to treat industrial wastewater streams from shipyard operations between 1976 and 1995. The unlined impoundments were removed from service in 1988 and covered with soil in 1989.

Northwest Dump Road Subarea—This area was used as a landfill until the late 1950's or early 1960's. Dump Road, running through the southern portion of the subarea, was built on fill consisting primarily of soil, construction debris, and large rock and concrete fragments. Free product hydrocarbons are present in a portion of the area.

West Subarea—The West Subarea is located just west of the RCRA/Facility Landfill and IWTP facility, covering approximately 10 acres of levees and portions of former Dredge Ponds 1 and 2N. Specific types of material disposed of in the West Subarea are not known but are suspected to be similar to those disposed of in the Landfill and Northwest Dump Road Subarea.

SITE EVALUATION

Soil, sediment, surface water and groundwater within Investigation Area H1 have been extensively sampled for contaminants. Several documents, including two remedial investigations, concluded that there exists an unacceptable risk to ecological receptors and human health. The proposed vertical containment barrier completely surrounds the three major potential sources of groundwater contamination within Investigation Area H1; the RCRA/Facility Landfill, the Waste Oil Sump/Lead Oxide Area, and the IWTP sludge impoundments. The objective of this interim remedial action is to contain these potential sources of groundwater contamination and prevent the lateral migration of contaminants into the adjacent tidal marshes and wetlands comprising a portion of the Western Early Transfer Parcel, which was recently transferred to the State of California. Downward migration is limited by the thick layers of natural low-permeability geologic material (clay) which underlies the site.

PROPOSED ACTION

The reasonably anticipated final remedies for the historic landfill areas within Investigation Area H1 include vertical and horizontal containment, excavation and consolidation on-site, excavation and off-site disposal, or a combination of these remedies. This time critical interim remedial action is consistent with these anticipated final remedies, and it will prevent the migration of the contaminated shallow groundwater until the final remedies are implemented. The interim remedial action will include the following elements:

Containment Barrier—Approximately 7,200 linear feet of a vertical barrier will surround the major groundwater contaminant sources within Investigation Area H1. The barrier will be constructed of a soil-bentonite mixture (*slurry wall*). Bentonite is a natural clay mineral, which swells when mixed with water and makes a flexible and nearly impermeable barrier to water movement. The slurry wall will be constructed by excavating a 3-foot wide trench, which is then filled with a water-bentonite slurry during the excavation process as shown in *Figures 2 and 3*. The water-bentonite slurry prevents groundwater intrusion into the trench and maintains integrity of the excavation sidewalls.

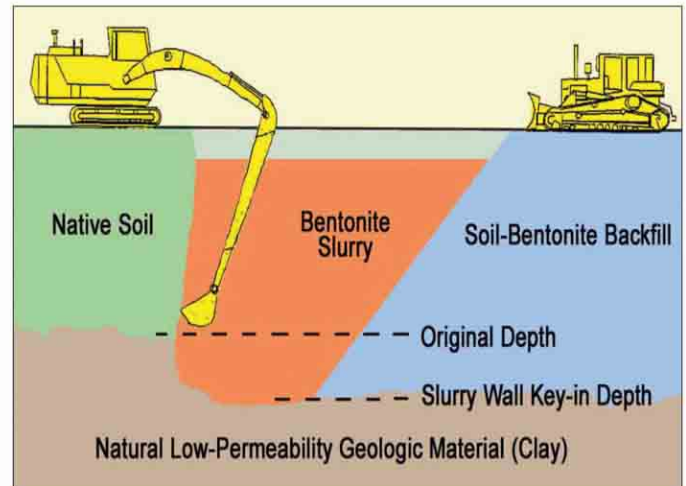


Figure 2. Side view of the slurry wall construction.



Figure 3. A typical bentonite slurry-filled trench prior to backfill with soil-bentonite mixture.

The trench will then be filled with a mixture of the excavated soil and bentonite slurry. This technology has been used for decades as a key component of levees to contain rivers within urban, navigation, and agricultural areas. Depth of the slurry wall will range from 15 to 25 feet below the surface. The slurry wall will be extended five feet into the thick layer of natural, low-permeability geologic material (clay) underlying the containment area as shown in *Figure 4*.

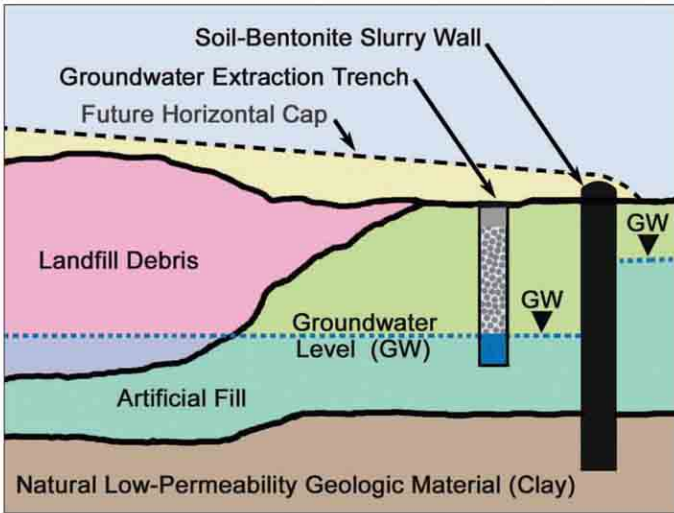


Figure 4. Cross-section view of extraction trench and slurry wall.

Groundwater Extraction Trench—A trench located approximately 20 feet inside the slurry wall will collect contaminated groundwater from the inside of the containment area. The 8 to 10 foot deep trench will consist of a horizontal perforated pipe within drain rock and a number of sumps and pumps to extract and convey groundwater to a central treatment location. The level of groundwater inside the slurry wall will be maintained lower than the groundwater level outside the slurry wall to ensure an inward hydraulic gradient toward the containment area (*shown in Figure 4*). This will prevent any contaminated groundwater from escaping the containment area even if the slurry wall becomes damaged.

Groundwater Treatment System—The groundwater collected from the extraction trench will be conveyed to a small treatment enclosure located approximately 600 feet away from the containment barrier boundary where free product hydrocarbons (oil) will be removed with an oil/water separator. Elevated levels of naturally occurring arsenic in groundwater, if present, will also be reduced prior to discharge. Treated water from the plant will meet acceptance requirements of the Vallejo Sanitary and Flood Control District. The flow rate of extracted groundwater is expected to be less than 40 gallons per minute. The Navy will operate the groundwater extraction and treatment system as part of the overall containment and long-term monitoring if on-site containment is part of the selected final remedy.

Containment System Monitoring—Groundwater monitoring wells and piezometers will be used to collect groundwater samples. Groundwater elevations within and around the slurry wall will be observed to ensure that an inward groundwater gradient is maintained and that contaminants are not migrating away from the containment area. Funding has been provided by the Navy for landfill groundwater monitoring, which will be continued for a minimum of 30 years or in perpetuity if necessary.

REGULATORY CONSIDERATIONS

This interim remedial action for Investigation Area H1 is consistent with the factors set forth in the National Contingency Plan (NCP) and the Comprehensive

Environmental Response, Compensation, and Liability Act (CERCLA), which allow the use of engineering controls such as containment for waste that poses a relatively low long-term threat.

INTERIM REMEDIAL ACTION PLAN

An Interim Remedial Action Plan has been prepared consistent with the factors set forth in the NCP. The implementation of this Interim Remedial Action Plan will reduce risks to human health or the environment from migration of contaminated groundwater until the final remedies are in place.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The California Department of Toxic Substances Control (DTSC) has prepared an Initial Study to evaluate the potential impacts to the environment. DTSC has determined that the project will not have a significant impact on the environment and intends to issue a CEQA negative declaration.

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MARE ISLAND MAILING LIST

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Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

Name _____

Address _____

City _____ State ____ Zip _____

E-mail (optional) _____

Affiliation _____

Public Comment Period: December 8, 2003—January 9, 2004

The California Department of Toxic Substances Control (DTSC) is requesting public comments on the Draft Interim Remedial Action Plan for the Groundwater Containment Barrier and Extraction Trench, during the 30-day public comment period of December 8, 2003 through January 9, 2004.

The Draft Interim Remedial Plan is available for review at the *JFK Library, 505 Santa Clara Street in Vallejo*; and by appointment only at:

Cal-EPA-DTSC (File Room)
700 Heinz Ave., Suite 200
Berkeley, CA 94710
Telephone: 510-540-3800

All public comments will be considered and responded to while making the final decision for this site. In order to be incorporated into the final document, written comments must be postmarked by January 9, 2004.

The public is invited to provide written comments directly to the following contacts:

Navy BRAC Environmental Coordinator
Commander, Southwest Division
Naval Facilities Engineering Command
attn: Jerry Dunaway (Code 06CM.JD)
1220 Pacific Highway
San Diego, California 92132-5190
Phone (619) 532-0975

DTSC Remedial Project Mgr
Chip Gribble
Cal-EPA-DTSC
700 Heinz Ave., Suite 200
Berkeley, CA 94710
Phone (510) 540-3773

Public Meeting in December

DTSC and the Navy will hold a public meeting (during the planned December Mare Island Restoration Advisory Board Meeting) to explain this project to the community, reply to questions, and receive public comments on:

Thursday
December 11, 2003
7:00 pm
Mare Island Marketing Center
375 "G" Street
(just across Mare Island Causeway)
Vallejo, CA

RAB Meetings are held monthly, usually the last Thursday at 7:00 pm, in the Joseph Room at the JFK Library in Vallejo. The public is welcome to attend and express their concerns.

Contact Myrna Hayes,
RAB Community Co-Chair at
707-557-9816 or Jerry Dunaway,
Navy Co-Chair at 707-562-3104
with any questions.