

**Southwest Division  
Naval Facilities Engineering Command  
1220 Pacific Highway  
San Diego, CA 92132-5190**

**ACTION MEMORANDUM**

**04/07/2000  
MARSH CRUST TIME-CRITICAL  
REMOVAL ACTION AT  
PARCELS 170 AND 171  
ALAMEDA POINT (THE FORMER NAVAL AIR STATION ALAMEDA),  
CALIFORNIA**

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## *LIST OF ACRONYMS*

AM	Action Memorandum
ARARs	Applicable or Relevant and Appropriate Requirements
ARRA	Alameda Reuse and Redevelopment Authority
BAAQMD	Bay Area Air Quality Management District
bgs	Below ground surface
BRAC	Base Realignment and Closure Act
Cal/EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFG	California Department of Fish and Game Code
CFR	Code of Federal Regulations
COPC	Chemicals of potential concern
DMB	Data management benchmark
DOD	Department of Defense
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
ERM	Environmental Resources Management
FFSRA	Federal Facility Site Remediation Agreement
FISCO Alameda	Fleet Industrial Supply Center Oakland, Alameda Facility/Alameda Annex
FOST	Finding of Suitability to Transfer
FR	Federal Register
FS	Feasibility Study
FSEBS	Final Sector Environmental Baseline Survey
FWBZ	First water bearing zone
H&S	Health and Safety
HHRA	Human Health Risk Assessment
IRP	Installation Restoration Program
LMP	Lead Management Plan
mg/kg	Milligrams per kilogram
MLLW	Mean lower low water
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NO <sub>x</sub>	Nitrogen oxides

O&M	Operation and maintenance
OU	Operable Unit
PAHs	Polycyclic aromatic hydrocarbons
PA/SI	Preliminary assessment/site inspection
PCBs	Polychlorinated biphenyls
PRC	PRC Environmental Management, Inc.
PRG	Preliminary Removal Goal
PWC	Public Works Corps
RAO	Removal action objective
RAP	Removal Action Plan
RCRA	Resource Conservation and Recovery Act
RI	Removal Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SVOCs	Semivolatile organic compounds
SWRCB	California State Water Resources Control Board
TtEMI	Tetra Tech EM Inc.
USC	United States Code
USEPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds

## **ACTION MEMORANDUM**

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**Southwest Division  
Naval Facilities Engineering Command  
1230 Columbia Street  
SAN DIEGO, CA 92132**

**SUBJ: ACTION MEMORANDUM FOR THE MARSH CRUST TIME-CRITICAL REMOVAL ACTION FOR PARCELS 170 AND 171 AT ALAMEDA POINT (FORMER NAVAL AIR STATION ALAMEDA), ALAMEDA, CALIFORNIA**

Site Status: Non-National Priorities List  
Category of Removal : Time Critical Removal Action

### **1.0 PURPOSE**

The purpose of this Action Memorandum (AM) is to document, for the Administrative Record, the Department of the Navy's (DoN) decision to undertake a Time-Critical Removal Action for the marsh crust, a potentially contaminated soil horizon at the Alameda Point East Housing Area (site), which is located on the eastern edge of Alameda Point in the city of Alameda, Alameda County, California. The Department of Defense, including the Navy, has the authority to undertake Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response actions, including removal actions, under 42 U.S.C. §9604, 10 U.S.C. §2705 and federal Executive Order 12580. Further, this removal action is consistent, to the maximum extent possible, with Chapter 6.8, Ca-HSC.

This AM has been prepared in accordance with the applicable requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. Section 9601, et. seq., and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)(40 CFR Part 300.415(b)(2) based on the findings of :

(i) actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

The scope of the removal action is based on reducing the possibility of exposure to human receptors. This removal action will substantially eliminate the identified exposure pathway to the marsh crust. This removal action constitutes a "time critical removal action" as define in U.S. EPA's Office of Solid Waste and Emergency Response (OSWER) Directive 9318.0-05 and is being implemented as

provided in 40 CFR Section 300.415(n)(2). There are no nationally significant or precedent-setting issues for these sites.

This AM addresses removal action alternatives, which were evaluated in support of the removal action selection determination. The document is consistent with the Navy's *Final Feasibility Study for the Marsh Crust and Ground Water at Fleet Industrial Supply Center Oakland, Alameda Facility/ Alameda Annex and Feasibility Study for the Marsh Crust and Former Subtidal Area at Alameda Point*, (Final FS) (Tetra Tech EM Inc., 31 March 2000), which is currently being reviewed by DTSC and EPA. In this AM, the Fleet Industrial Supply Center Oakland, Alameda Facility/Alameda Annex properties are collectively referred to as FISCO Alameda.

From 1900 to 1939, the area now constituting the site was covered with fill soil obtained from unknown sources, although it is likely that the fill came from dredge spoils from the Oakland Inner Harbor. According to a figure included in the Final FS, the site is divided roughly in half diagonally by two periods during which various portions of the area were covered with fill. These dates are 1887 through 1915 for the southeastern half, and 1930 through 1939 for the northwestern half.

The site occupies approximately 63 acres of relatively level property on the western portion of Alameda Island just east of and across Main Street from the main Alameda Point property. The site is approximately one-quarter mile south of Oakland Inner Harbor, and two-thirds mile north of San Francisco Bay. The site is bounded by Atlantic Avenue on the south, Arnold Avenue and warehouses within FISCO Alameda on the north, Main Street on the west, and the College of Alameda campus on the east.

The primary chemicals of concern are polycyclic aromatic hydrocarbons (PAHs), a class of chemicals found naturally in petroleum products, including gasoline, diesel, and certain mineral spirits, and also as by-products of coal or oil gasification. PAHs are found throughout the environment in the air, water, and soil. Of the more than 100 distinct PAH compounds, the following 10 compounds have been identified as constituents of concern in the marsh crust: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene, pyrene, fluoranthene, and phenanthrene. Of these 10, only the first seven have demonstrated carcinogenic potential in animal or human studies, and are thus considered the primary constituents of concern for the purposes of this document. Although considered to be non-carcinogenic, the remaining three PAHs are considered constituents of concern due to their potential to cause adverse systemic, reproductive, and developmental health effects. Other constituents of

concern that have been identified at the site are volatile organic compounds (VOCs) in groundwater under part of the site.

RAOs are either medium-specific or area-specific goals for protecting human health. Where possible, an RAO should specify (1) each contaminant of concern; (2) the exposure route and each receptor; and (3) an acceptable contaminant concentration or range of concentrations for each exposure pathway and media. The recommended RAO for human health at the site is to prevent human exposure to PAHs by restricting excavation into the marsh crust unless proper health and safety and disposal procedures are followed.

The four removal alternatives developed in the AM for evaluation of their ability to meet the RAO are:

- Removal Alternative 1: No Action;
- Removal Alternative 2: Institutional Controls;
- Removal Alternative 3: Excavation and Off-Site Disposal; and
- Removal Alternative 4: Excavation and On-Site treatment with Thermal Desorption.

For the marsh crust at the site, the comparative analysis indicates that Alternative 2, consisting of a combination of institutional controls, provides overall protection of human health and the environment, meets the threshold criteria for removal action selection and is cost-effective.

The Alameda Point East Housing Area comprises Parcels No. 170 and 171 of the former Naval Air Station (NAS) Alameda property and was used as military family housing from 1966 to 1997. Alameda Point is undergoing base closure and will be released for public use upon completion of the Navy's closure activities. The City of Alameda is working with Catellus Development Corporation to redevelop the area. This will involve demolishing the existing structures and constructing new housing. This is expected to involve excavation and other subsurface construction activities that may reach the marsh crust.

This AM is organized as follows:

- The remainder of Section 1 addresses the objectives, approach, and regulatory basis for the AM.
- Section 2 presents a discussion of the site's background and a summary of previous soil and ground water investigations for the site and surrounding area, the site's physiography, and general geologic and hydrologic conditions for the area.

- Section 3 describes the site's geology, hydrology, and soil and groundwater chemistry based on results of previous investigations.
- Section 4 summarizes information regarding potential human health and environmental effects from exposure to the primary constituents of concern in the marsh crust at the site, specifically polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs) in ground water.
- Section 5 addresses the removal action objective (RAO) presented in the Final FS report.
- Section 6 describes removal alternatives developed for evaluation of their ability to meet this RAO.
- Section 7 provides a comparative analysis of the removal alternatives and presents a recommendation for the appropriate alternative.
- Section 8 presents references cited or reviewed in preparation of the AM.
- Tables referenced in this document are presented at the end of the sections in which they are referenced.
- Appendix A presents the City of Alameda's Marsh Crust Excavation Ordinance.

## **1.1**

### ***REGULATORY BASIS FOR THE ACTION MEMORANDUM***

This AM was prepared to address regulatory agency concerns about the possibility that future construction could bring contaminated material (specifically, soil contaminated with PAHs) from the marsh crust to the surface where site users could be exposed. In the Final FS report, The Navy determined that the RAO for the site marsh crust was to “restrict excavation into the former subtidal area and marsh crust unless proper health and safety (H&S) and disposal procedures are followed.”

CERCLA § 120 requires DoN to apply State removal and remedial action law requirements at its facilities. Further, this removal action is consistent, to the maximum extent possible, with Chapter 6.8, Ca-HSC.

The following organizations have been involved in current and past activities at Alameda Point regarding the marsh crust:

- U.S. EPA Region IX
- Department of Toxic Substances Control (DTSC)

- Regional Water Quality Control Board (RWQCB)

The AM for this site is deemed consistent with: (1) the factors set forth within the National Contingency Plan (NCP) 40 CFR Part 300 based on the presentation of findings and evaluation of the following:

- The factors set forth at 40 CFR Section 300.415(b)(2) of the NCP;
- Site conditions and results of applicable historical soil and ground water investigation activities;
- A Removal Action Objective (RAO) developed for media-specific and area-specific protection of human health and the environment;
- Removal action alternatives for the site; and
- Recommendations for removal actions and associated monitoring and reporting that are consistent with the terms of the Final FS in ensuring protection of human health and the environment at the site.

Essential elements of the AM are:

- A description of the on-site contamination;
- The goals to be achieved by the removal action; and
- Any alternative removal options that were considered and the basis for subsequent rejection or acceptance.

Although this is a removal action decision document, the document has addressed the more detailed criteria for selection of remedial actions. These criteria are consistent with removal action selection factors set forth in 40 CFR Section 300.415(b)(2), which are

- (i) actual or potential exposure to nearby populations, animals, or food chains from hazardous substances or pollutants or contaminants;
- (ii) actual or potential contamination of drinking water supplies or sensitive ecosystems;
- (iii) hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;
- (iv) hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

- (v) weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;
- (vi) threat of fire or explosion;
- (vii) the availability of other appropriate federal or state response mechanisms to respond to the release; and
- (viii) other situations or factors that may pose threats to public health or welfare or the environment.

### **Threats to Public Health or Welfare**

The primary threats to public health or welfare considered in determining the appropriateness of this removal action are:

- 40 CFR Section 300.415(b)(2)(i): actual or potential exposure to nearby populations, animals, or food chains from hazardous substances or pollutants or contaminants.

The primary potential threats associated with the marsh crust are related to the risk of a construction worker who is excavating the soil, as well as people who would come into contact with contaminated soil brought to the surface. The constituents in the marsh crust are defined as deposited material found naturally in petroleum products, including gasoline, diesel, and as by-products of coal or oil gasification at an average depth of 15.3 feet below the ground surface. This removal action will substantially eliminate the identified exposure pathway to the marsh crust. Inasmuch as construction activities in the course of the planned redevelopment of the area could inadvertently bring contaminated soil to the surface if restrictions are not in place, this removal action will substantially eliminate the identified exposure pathway to the marsh crust. This removal action constitutes a “time critical removal action” as defined in U.S. EPA’s Office of Solid Waste and Emergency Response (OSWER) Directive 9318.0-05 and is being implemented as provided in 40 CFR Section 300.415(n)(2).

### **Threats to the Environment**

The primary threats to the environment considered in determining the appropriateness of this removal action are:

- 40 CFR Section 300.415(b)(2)(i): actual or potential exposure to nearby populations, animals, or food chains from hazardous substances or pollutants or contaminants.

The primary potential threat to the environment associated with the marsh crust is related to the risk if the soils were excavated and distributed on the surface soil. The potential exposure scenario would be ingestion of contaminated soil. Stormwater run-off could potentially contain materials that could be conveyed through the stormwater system. However, this is a potential risk only if the soils were moved to the surface and remained there. The constituents in the marsh crust are defined as deposited material found naturally in petroleum products, including gasoline, diesel, and as by-products of coal or oil gasification at an average depth of 15.3 feet below the ground surface. Inasmuch as construction activities could inadvertently bring contaminated soil to the surface if restrictions are not in place, this removal action will substantially eliminate the identified exposure pathway to the marsh crust. This removal action constitutes a “time critical removal action” as defined in U.S. EPA’s Office of Solid Waste and Emergency Response (OSWER) Directive 9318.0-05 and is being implemented as provided in 40 CFR Section 300.415(n)(2).

## **1.2            *OBJECTIVES OF THE ACTION MEMORANDUM***

The AM was developed to present and evaluate the following:

- Site conditions and results of historical soil and ground water investigation activities;
- RAOs developed for media-specific and area-specific protection of human health and the environment;
- Removal action alternatives for the site; and
- Recommendations for removal actions and associated monitoring and reporting that are consistent with the terms of the Final FS in ensuring protection of human health and the environment at the site.

## **1.3            *SCOPE OF THE REMOVAL ACTION***

This discussion identifies the scope of activities performed to meet the stated objectives for the AM. To develop the summary of site conditions and historical soil and ground water investigations at the site, the Navy reviewed reports and documents dating back to the late 1980s, when investigation in the area of the site was initiated. These reports and documents are included in the Administrative Record found at Alameda Point Information Repository and Alameda Public Library.

Evaluation of the RAOs in the AM includes consideration of Applicable or Relevant and Appropriate Requirements (ARARs). Applicable requirements are promulgated at the federal and/or state level to specifically address a hazardous constituent, removal action, location, or other circumstances at a hazardous waste site. Relevant and appropriate requirements, while not directly applicable to circumstances at a hazardous waste site, address problems or situations similar to those encountered at a hazardous waste site. In addition to considering ARARs, the Navy also evaluated the degree to which current natural and man-made conditions are achieving the RAOs.

The Navy used the four removal alternatives developed by the Navy for the marsh crust RAOs. These alternatives ranged from a "no action" scenario to complete excavation and either on-site treatment or off-site removal of PAH-impacted marsh crust soils buried at the site. Conceptual designs for each alternative were developed, followed by an evaluation of each alternative based on the criteria of effectiveness, implementability, and cost. These criteria are consistent with United States Environmental Protection Agency (USEPA) guidance for conducting remedial investigations and feasibility studies under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (USEPA, 1988a). A comparative analysis based on these criteria was performed to provide a basis for selecting the removal action appropriate to site conditions. Finally, recommendations for appropriate removal actions were developed, based on comparative analysis of criteria for each alternative.

## 2.0

### ***SITE BACKGROUND***

This section describes the site and surrounding area, presents site history, and outlines the history of previous environmental investigations. Much of the material contained in this section is from the Final FS and the *Base-Wide Remedial Action Plan/Record of Decision for FISCO Alameda and Alameda Point*, or Draft RAP/ROD (TtEMI, 1999d).

## 2.1

### ***SITE DESCRIPTION***

The site occupies approximately 63 acres of relatively level property on the western portion of Alameda Island just east of the main Alameda Point property across Main Street. The site is approximately one-quarter mile south of Oakland Inner Harbor, and two-thirds mile north of San Francisco Bay. The site consists of two parcels (Parcel Numbers 170 and 171 of Zone 16 at Alameda Point). The site is bounded by Atlantic Avenue on the south, Arnold Avenue and warehouses within FISCO Alameda on the north, Main Street on the west, and the College of Alameda campus on the east. Two-story apartment buildings and townhomes cover approximately 20 to 25 percent of the site while approximately 75 to 80 percent is open space consisting of paved roads and parking lots, and grassy or landscaped recreation areas. According to the *Final Sector Environmental Baseline Survey Zones 6, 13, 14, 16 (Partial), 17, 19 and 22, Naval Air Station Alameda Volume I – Text, Tables, Figures* (PRC, ERM, and GAIA Consulting, Inc., 1996), or FSEBS, the site contains electrical, water, sanitary sewer, and storm sewer lines. No underground storage tanks, aboveground storage tanks, oil/water separators, or fuel lines are located on the site. In addition, no Navy Installation Restoration (IR) sites have been identified within the site.

## 2.2

### ***LAND USE HISTORY***

### 2.2.1

#### ***Site Land Use History***

Until the 1920s, the facility and its surrounding areas existed as undeveloped marshlands and tidal flats along the San Francisco Bay fringe. Future land use at the site is expected to be residential. At adjacent properties, future land use is expected to be a mixture of commercial, industrial, recreational, and residential.

From 1900 to 1939, the area now constituting the site was covered with fill soil obtained from unknown sources (International Technology Corporation [IT], 1998), although it is likely that the fill came from dredge spoils from the Oakland

Inner Harbor. According to a figure included in the FS, the site is divided roughly in half diagonally by two periods during which various portions of the area were covered with fill. These dates are 1887 through 1915 for the southeastern half, and 1930 through 1939 for the northwestern half.

### 2.2.2 *Surrounding Area History*

The FISCO Alameda property north of the site is zoned as an M-2-G general industrial (manufacturing) district with a special government-combining overlay. The area west of the site, across Main Street, is occupied by the main Alameda Point facility. Alameda Point is currently a mixed-use area with industrial and office space. San Francisco Bay lies to the west of Alameda Point. The area south of the site, across Atlantic Avenue, consists of residential developments. East of the site is housing, elementary and middle schools, and the College of Alameda. The Oakland Inner Harbor, which is north of FISCO Alameda and Alameda Point, contains a ferry terminal, shipyards, several marinas, and yacht clubs.

Before 1930, at least two large industrial sites (an oil refinery and a borax processing plant) were present on the western tip of Alameda Island just southwest of the current facility. The oil refinery was southeast of the borax plant at the southwestern corner of Main Street and Pacific Street. The borax plant was also located on the dry land at the southeast corner of what is now W. Atlantic Avenue and Orion Street (Sanborn-Ferris Map Company [Sanborn], 1897).

As discussed in a report on the regional history (IT, 1998), a number of industrial facilities were present before and during the period that fill soil was being applied to the area. Many of these industries are believed to have stored and used hazardous materials and generated hazardous wastes during their daily operations and manufacturing processes (PRC Environmental Management, Inc. [PRC], 1996). In particular, lighter hydrocarbon by-products and PAH-laden sludges are likely to have been discharged directly into the waters of San Francisco Bay or Oakland Inner Harbor. Because many of these materials are lighter than water, they would have floated and been transported by tidal flows into the marsh by the historic tidal channels. These materials are believed to have been deposited within the native peat and grass layer along the sides of the tidal channels and surface of the marsh. The "marsh crust" has been defined as deposited material that currently exists at an average depth of 15.3 feet below ground surface (bgs) at FISCO Alameda, as determined by soil samples collected for the *Final Remedial Investigation (RI) Report*, FISCO Alameda Facility/Alameda Annex Site (FISCO Alameda RI report; PRC, 1996). These same materials appear to have been deposited in sediments as deep as minus 1 foot mean lower low water (MLLW),

which is referred to as the subtidal area in the Final FS report approximately three quarters of a mile west of the facility.

A commercial airport known as the San Francisco Bay Airdrome (Airdrome) was constructed in the mid-1920s in the FISCO Alameda area immediately north of the site. The Airdrome consisted of a 2,500-foot runway, a passenger terminal, and an aircraft maintenance hangar. Maintenance of aircraft would likely have involved the use and storage of hazardous materials and the generation of associated wastes in the form of solvents, paints, and petroleum-based products (such as aircraft fuel and lubricating oil). The Airdrome reached peak operation by 1932, serving about 11,000 customers per month. Wartime activities at nearby NAS Alameda caused air traffic conflicts, resulting in closure of the Airdrome in 1941 (PRC, 1996).

The FISCO Alameda property was assigned to NAS Alameda in 1951. In 1980, the FISCO Alameda was transferred to the Naval Supply Center (NSC) Oakland (Western Division Naval Facilities Engineering Command [NAVFAC] 1988). The FISCO Alameda, in conjunction with NSC Oakland, served as the main supply facility supporting Department of Defense (DoD) operations of military fleets and shore activities in the Pacific Basin. The facility was closed in September 1998.

The western tip of Alameda Island (prior to the construction of Alameda Point) was farmed before becoming an industrial and transit center. Railroad yards and rights-of-way for Southern Pacific, Central Pacific, and small local railways were built over the site and sloughs to the north. The western terminus for the transcontinental railroad was at the southeastern corner of the site for a short period in 1869. The U.S. Army (Army) acquired the western tip of Alameda from the City of Alameda in 1930 and began construction activities in 1931. In 1936, the Navy acquired title to the land from the Army and began building NAS Alameda in response to the military buildup in Europe before World War II. The construction involved filling the natural tidelands, marshes, and sloughs between the Oakland Inner Harbor and the western tip of Alameda Island. The fill largely consisted of dredge spoils from the surrounding San Francisco Bay and Oakland Inner Harbor. After the United States entered the war in 1941, the Navy acquired more land to the west of the installation. Following the end of the war in 1945, the installation continued its primary mission of providing facilities and support for fleet aviation activities. During its operations as an active naval base, the installation provided berthing for Pacific Fleet ships and was a major center of naval aviation.

Alameda Point was identified for closure in September 1993. The installation ceased all naval operations in April 1997, and the Navy is currently in the process

of returning the land back to the City of Alameda. The City of Alameda is working with the Alameda Reuse and Redevelopment Authority (ARRA) to determine appropriate reuse activities for the land.

Alameda Point is almost entirely modified by human activity and a variety of industries and activities are located at the facility (including port facilities, aircraft repair facilities, office buildings, runways, and landfills). Alameda Point, including contiguous and noncontiguous properties such as constructed breakwaters, contains nine terrestrial and aquatic wildlife habitats. Major habitat types currently present at Alameda Point are described in the *Operable Unit #1 Remedial Investigation Report* (OU-1 RI report) (TtEMI, 1999a) and include: open water areas; estuarine intertidal emergent wetlands; non-native grassland; ruderal upland vegetation; disturbed areas; beach, urban, and ornamental landscapes; and riprap. Several special status species have been identified that occur or are expected to occur at Alameda Point (U.S. Fish and Wildlife Service (USFWS), 1993; TtEMI, 1999a).

The East Housing area was used for housing base personnel. The Reuse Plan calls for demolition of the existing structures and redevelopment as a new residential area.

## 2.3 ***PREVIOUS INVESTIGATION HISTORY***

This subsection discusses applicable historical investigation activities at the site and surrounding areas.

### 2.3.1 ***Site Investigation History***

In conjunction with the Base Realignment and Closure Act of 1990, the Navy undertook the EBS process to assess the environmental concerns associated with NAS Alameda. Through the EBS process, the Navy also met the requirements of the Community Environmental Response Facilitation Act of 1992 (CERFA), which requires the identification of uncontaminated property at DOD installations that are being closed under BRAC. The EBS/CERFA report for NAS was completed in October 1994. The EBS report covered 209 Parcels including Zone 16 (containing the East Housing Area) built upon information presented in the EBS/CERFA report.

EBS sampling included collection of shallow soil gas samples at several locations across the site. During the same interval, the Navy Public Works Corps, (PWC) collected several surface soil samples and had them analyzed for lead content. This work was performed in accordance with Department of Housing and Urban

Development guidelines. No samples of the marsh crust or shallow ground water have been collected at the Alameda Point East Housing Area.

**2.3.2**      ***Surrounding Area Marsh Crust Investigation History***

Because the eastern portion of Alameda Point was constructed on top of the same tidal marshland as the FISCO Alameda, interpretation of the nature and extent of contamination of the marsh crust at the site is based on the data compiled and presented in the Final FS and FISCO Alameda RI reports.

### 3.0

## ***RESULTS OF PREVIOUS INVESTIGATIONS***

This section describes the results of previous investigations at the site and surrounding areas.

### 3.1

## ***GEOLOGY***

The nature of surface and near-surface soil at the site has not been described during previous shallow lead and soil gas sampling events associated with the EBS program. However, soils at the site are expected to be similar to the adjacent FISCO Alameda soils that consist of artificial fill emplaced during the historical filling of the tidal marshlands and postfill construction activities during site development. The fill material is characterized by sands, clays, and silts dredged from the tidal flats in the region and mixed with material from the Merritt Sand Formation. The fill may be present to depths ranging from about 10 to 20 feet bgs.

The marshland layer underneath the artificial fill material at the FISCO Alameda facility was observed during investigations as an organic-rich peat and grass layer that is about 2 to 6 inches thick at depths that range from approximately 10 to 20 feet bgs (PRC, 1996). This peat and grass layer was also recognized during previous geotechnical investigations and was also termed the marsh crust (Lee and Praszker, 1979). Immediately below the marsh crust layer is the Bay Mud layer, which underlies the fill material across the entire site. The Bay Mud consists of recent sediments deposited in an estuarine environment. The Bay Mud generally consists of silt and gray to black clay with laterally discontinuous, poorly graded, silty and clayey sand layers. Based on soil borings completed at Alameda Point, the thickness of this unit generally ranges from less than 1 foot to 95 feet. Soil boring logs created during the ERM May 1999 soil sampling event at the site indicated a brown to gray silty clay layer in most borings from approximately 2 to 4 feet bgs, overlain with fill materials. No marsh crust layer was detected above this clay during this event.

The Merritt Sand Formation, which underlies the Bay Mud over most of Alameda, contains the first principal aquifer. The unit is believed to be eolian in origin and was deposited during the late Pleistocene and Holocene epochs. The unit ranges from 60 to 90 feet in thickness under Alameda Point and consists of yellow-brown to dark yellowish-orange, well-sorted, fine-grained sand and silty or clayey sand.

## 3.2

### **GENERAL HYDROLOGIC CONDITIONS**

Fill material above the Bay Mud Formation constitutes the shallow, unconfined water-bearing zone beneath FISCO Alameda. This shallow water-bearing zone is not considered to be a regionally extensive aquifer. The depth to shallow ground water in the artificial fill at FISCO Alameda varied between approximately 2 and 12 feet bgs, based on water levels measured during the monitoring program from June 1994 to December 1996. In general, shallow ground water is found at about 6 feet bgs at FISCO Alameda. The Bay Mud forms an aquitard between the shallow ground water and the Merritt Sand that composes much of the deeper confined aquifer beneath the facility (PRC, 1996). The ground water flow in the deeper aquifer was determined to be to the west-southwest in August 1992 and to the northeast in January 1993 (PRC, 1993). The shift in flow in the deeper confined aquifer is concluded to be the result of tidal influence. Regional ground water in the shallow aquifer below FISCO Alameda flows to the northwest, toward the Oakland Inner Harbor. This means that the groundwater generally flows off site into the Oakland Inner Harbor. Aquifer tests indicate that the Bay Mud aquitard acts as an effective hydraulic barrier between the confined aquifer and the unconfined water-bearing zone.

Over most of Alameda Point, the shallow ground water is referred to as the first water bearing zone (FWBZ). Ground water flow in the FWBZ is primarily horizontal and generally flows radially from the central portion of Alameda Point toward San Francisco Bay, the Oakland Inner Harbor, and the Seaplane Lagoon. In the southeastern region of Alameda Point, groundwater in the FWBZ generally flows from the east or northeast inland areas to the west or southwest toward the Seaplane Lagoon and San Francisco Bay. At FISCO Alameda, ground water elevation data from monitoring wells indicate a north-northwest flow direction. Hydraulic head fluctuations of approximately 1 foot were observed in some FISCO Alameda wells, suggesting that the shallow water-bearing zone may be in hydraulic communication with the Oakland Inner Harbor.

## 3.3

### **SOIL AND GROUND WATER CHEMISTRY INVESTIGATION**

The following are the results of sampling data applicable to the site and surrounding areas.

### 3.3.1

#### **Site Soil Data**

Analytical results for lead of soil samples from EBS parcels 170 and 171 are summarized in the *Lead Management Plan (LMP)* (Department of the Navy, public Works Corps [PWC], 1996). Lead results from the site indicate that seven

of 32 samples collected exceeded the California Environmental Protection Agency (Cal/EPA) residential Preliminary Remedial Goal (PRG) of 130 milligrams per kilogram (mg/kg), with one sample at 409 mg/kg, exceeding the USEPA residential PRG for lead. However, based on the distribution of lead concentrations and the fact that sampling was biased towards areas of concern (e.g., drip lines and foundations), it was concluded that the parcels are safe for the intended reuse. The findings were outlined in the Final Sector Finding of Suitability to Lease Zones 6, 13, 14 (partial), 17, 19, and 22 NAS Alameda (PRC, 1996).

Results of soil gas samples collected for the EBS at depths of 2.5 to 3 feet from 14 on-site locations indicated only one concentration of o-xylenes (3 mg/cubic meter in sample 170-0003M) above applicable PRGs. Ten soil samples collected from the ground surface to 3.5 feet at 10 locations throughout the site showed only a few trace concentrations of pesticides and the VOC acetone, all well below applicable PRGs.

### **3.3.2 *Soil and Ground Water Data for Surrounding Sites***

The Navy began investigating sites at FISCO Alameda under the IR beginning in the 1980s. Eight IR sites were identified at FISCO Alameda as a result of preliminary assessment/site inspection (PA/SI) activities under CERCLA and a Resource Conservation and Recovery Act (RCRA) facility assessment (PRC, 1996, DTSC, 1993). A Federal Facility Site Remediation Agreement (FFSRA) between the Navy and the State of California was signed in 1992 for subsequent RI/FS and response actions.

Several previous investigations have been conducted at various areas within FISCO Alameda in which samples were collected from shallow soil (soil from the surface to 10 feet bgs), deep soil (soil from 10 feet to 22.5 feet bgs), and shallow and deep ground water. During the FISCO Alameda RI, each of the IRP sites was further investigated except for IR01, the Warehouse Area adjacent to the northern boundary of the site, because the PA/SI report concluded that no further investigation was necessary in this area due to the low concentrations of metals in soils. After the evaluation of sampling results, chemicals of potential concern (COPCs) within the shallow and deep soil and the shallow groundwater were selected for evaluation in a Human Health Risk Assessment (HHRA), as described in Chapter 7 of the FISCO Alameda RI report. The report concluded that chemicals detected sporadically and at low concentrations in deep ground water were not considered COPCs.

During the FISCO Alameda RI, analytical data were collected on the marsh crust in and around IR02. Analytical results for soil indicated high concentrations of

PAHs and total petroleum hydrocarbons (TPH). PAHs are common components of TPH and were the specific components identified in the HHRA as posing potential human health risks. Because of the site's history, geology, and previous investigations, all marsh crust underlying FISCO Alameda is assumed to contain PAHs in roughly similar concentrations to those found at IR02.

The extent of the marsh crust was determined in two ways: (1) review of boring logs prepared during installation of monitoring wells or borings at all of the FISCO Alameda IRP sites to determine the depth of the transition from fill to the Bay Mud and (2) examination of soil analytical data at IR02 to determine chemical characteristics of the marsh crust and the depth and location of samples with higher SVOC concentrations. The mean depth of the marsh crust at FISCO Alameda was found to be 15.3 feet bgs. Based on available lithologic data, the marsh crust appears to be present as a thin layer between 10 to 20 feet bgs. The marsh crust geometry is expected to be complex within FISCO Alameda because of the large number of tidal channels dissecting the surface of the tidal marshland.

COPCs established in the FISCO Alameda RI for deep soils and shallow ground water were grouped into five categories: SVOCs, PCBs, TPH, metals, and VOCs. Results indicate that SVOCs, TPH, and metals are widely distributed in shallow ground water. PCBs were found mostly in surface soil and only at IR02. IR02 is the Screening Lot/Scrapyard area that is approximately 700 feet north of the northeastern site boundary. Two removal actions were completed at IR02 for soil contaminated with PCBs and lead. Two removal actions were completed for contaminated sediment and debris from the storm water drainage system at FISCO Alameda, including IR01 and IR02. A summary of these removal actions can be found in the Final FS report. Aromatic VOCs, PAHs, and TPH compounds were also detected in shallow ground water at IR02 during the RI, but the plume appears to be limited in lateral extent, and ground water modeling determined that this plume does not present an environmental risk.

Several phases of investigation have been conducted at the 25 IR sites at Alameda Point for soil, sediment, and ground water media. Due to the large number of investigations and IRP sites, a basewide RI report has not been prepared for Alameda Point. Instead, four Operable Units (OUs) were developed to streamline the investigative and reporting process. To date, RI reports for OU-1 and OU-3 (TtEMI, 1999a and 1999b) have been prepared, with the RI report for OU-2 currently in production.

#### 4.0

### ***THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT***

This section briefly addresses the conditions under which exposure to constituents found within the marsh crust could occur at the site and describes the principal health effects associated with those compounds. The primary chemicals of concern are PAHs, a class of chemicals found naturally in petroleum products, including gasoline, diesel, and certain mineral spirits, and also as by-products of coal or oil gasification. PAHs are found throughout the environment in the air, water, and soil (Agency for Toxic Substances Disease Registry [ATSDR], 1993). Of the more than 100 distinct PAH compounds identified, the following 10 compounds have been identified as constituents of concern in the marsh crust: benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene, pyrene, fluoranthene, and phenanthrene (PRC, 1996). Of these 10, only the first seven have demonstrated carcinogenic potential in animal or human studies, and are thus considered the primary constituents of concern for the purposes of this document. Although considered to be noncarcinogenic, the remaining three PAHs are constituents of concern due to their potential to cause adverse systemic, reproductive, and developmental health effects.

Due to their similarity in chemical properties, mechanisms of toxicity, and human health effects, the 10 PAHs identified above will be treated as a single group within this document, with the exception of the discussion of carcinogenicity, which applies primarily to the seven compounds that have demonstrated carcinogenic potential. Available research suggests that the carcinogenic PAHs exert their effects by a common mechanism: metabolism of the parent compound to reactive metabolites that then bind to DNA, RNA, or cell proteins, thereby altering normal cellular functions. Although the potential toxicity of these PAHs generally derive from their carcinogenic potential, additional human and animal studies suggest that adverse systemic, reproductive and developmental effects can possibly occur from acute oral and dermal exposures to both classes of PAHs.

#### 4.1

### ***POTENTIAL EXPOSURE***

As discussed above, the marsh crust is a thin, subsurface layer between the Bay Mud and the overlying fill material. While the average depth of the marsh crust within the East Housing Area site alone has not been calculated, the average depth within Alameda Point as a whole is approximately 8 feet, with a range of 4 to 10 feet. Based on the proximity of the East Housing Area to the former shoreline

(prior to filling of the island), it is anticipated that the approximate depth to marsh crust (if it is present) in this area would be generally consistent with that estimated for the remainder of Alameda Point (i.e., about 8 feet bgs). Given these conditions and anticipated future activities at the site, all exposure pathways are incomplete with the exception of those associated with intrusive subsurface activities or excavation of the marsh crust boundary. Potential exposure routes related to such activities include incidental ingestion, inhalation of fugitive dust, and dermal contact.

Without a removal action consisting of either institutional controls or an actual removal of the contaminated soil, there is no mechanism to prevent construction activities from taking place that could result in an actual exposure to construction workers or future receptors at the site. Construction activities are expected to begin shortly after transfer of the parcels to the City of Alameda, thus making this time-critical removal action appropriate.

## **4.2 TOXICITY**

This section provides general information regarding acute, subchronic and chronic, and carcinogenic toxicity of PAH compounds. It also discusses the various carcinogenic classifications of PAHs.

### **4.2.1 Acute Toxicity**

Because most of the information concerning PAHs deals with their carcinogenic risk and overt signs of acute toxicity only occur at doses considerably larger than those producing tumors, very little information exists regarding acute toxicity of PAHs at low concentrations (i.e., environmental levels). No adverse effects following acute exposure have been recorded in humans. Investigations with mice have shown increased photosensitivity (Forbes et al., 1976) and allergic contact hypersensitivity (Klemme et al., 1987) following acute dermal applications of PAHs, although photosensitivity followed application of anthracene, a PAH not detected in the marsh crust in concentrations above data management benchmarks (DMB). No animal data have been found regarding adverse effects following oral or inhalation exposure to PAHs.

### **4.2.2 Subchronic and Chronic Toxicity**

Subchronic and chronic toxicity to PAHs are generally seen in rapidly proliferating tissues or organs, such as bone marrow, skin, and reproductive cells, and have been attributed to the metabolism of the parent compound to reactive metabolites. Human data are relatively limited and include:

- Reports of melanosis of the colon and rectum following prolonged consumption of anthracene-containing laxatives (Badiali et al., 1985). Again, anthracene is a PAH not detected in the marsh crust in concentrations above its DMB; and
- Development of benign warts following subchronic dermal application of benzo(a)pyrene (Cottini and Mazzone, 1939).

PAHs have been shown to be toxic to the hematopoietic and lymphoid systems in experimental animals. In mice, oral exposure to PAHs has resulted in decreased bone marrow production of blood products causing death due to hemorrhage or infection (Robinson et al., 1975). Oral exposure has also resulted in changes in gonadal morphology and reductions in mean pup weight and offspring fertility in mice (Mackenzie and Angevine, 1981), and in increased liver weight (Gershbein, 1975) and fertility reduction of exposed female rats (Rigdon and Rennels, 1964). Recorded results of dermal exposure to PAHs in mice include sebaceous gland suppression (Bock and Mund, 1958), hyperplasia (Albert et al., 1991), and immunosuppression (Andrews et al., 1991). No data were found regarding inhalation exposure resulting in subchronic or chronic PAH toxicity.

#### 4.2.3 *Carcinogenicity*

Evidence exists to indicate that certain mixtures of PAHs are carcinogenic in humans. This evidence comes primarily from occupational studies of workers exposed to mixtures containing PAHs as a result of involvement in such processes as coke production, roofing, oil refining, or coal gasification. PAHs, however, have not been clearly identified as the causative agent. Cancer in humans associated with exposure to PAH-containing mixtures occurs predominantly in the lung and skin following inhalation and dermal exposure, respectively. Oral exposure to PAHs in rats has resulted in forestomach, esophageal, and laryngeal tumors (Brune et al., 1981). A dose-response carcinogenic relationship has been noted for respiratory tract tumors in hamsters following inhalation exposure to PAHs (Thyssen et al., 1981) and for skin papillomas and carcinomas in mice following dermal exposure (Wydner and Hoffman, 1959; Albert et al., 1991; Van Duuren et al., 1967).

#### 4.2.4 *Carcinogenic Classification*

Based on data from animal studies, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene are classified as B2, or probable human carcinogens, according to the USEPA's proposed guidelines for carcinogenicity. This classification indicates that there are sufficient data from animal studies to

determine that the compounds can be carcinogenic to some organisms. However, the data are inadequate to confirm that the compounds are carcinogenic in humans (USEPA, 1989, *Risk Assessment Guidance for Superfund*, Volume 1: Human Health Evaluation Manual, EPA/540/1-89/002). The remaining three PAHs addressed in this document, pyrene, fluoranthene, and phenanthrene, are classified by the USEPA as Class D, or not classifiable as to human carcinogenicity based on no human data and insufficient data from animal research (USEPA, 1999/2000).

## 5.0

### ***REMOVAL ACTION OBJECTIVES***

This section identifies RAOs developed for medium-specific and/or area-specific protection of human health at the site. Chemical-, action-, and location-specific ARARs and To-Be-Considered (TBC) criteria for the site are also addressed.

RAOs are either medium-specific or OU-specific goals for protecting human health. Where possible, each RAO should specify (1) each contaminant of concern; (2) the exposure route and each receptor; and (3) an acceptable contaminant concentration or range of concentrations for each exposure pathway and medium. No unacceptable risks were identified in the RI. This AM is being prepared to address agency concerns about the possibility that future construction could bring contaminated material from the marsh crust to the surface where site users could be exposed.

RAOs developed for protecting human health typically address both chemical concentrations and potential exposure routes. Protection can be achieved by reducing concentrations and/or reducing or eliminating potential exposure pathways.

This AM's recommended RAO for human health is to prevent human exposure to PAHs by restricting excavation into the marsh crust unless proper health and safety and disposal procedures are followed.

Current conditions at the site satisfy the RAO to a significant degree. The marsh crust, if present, is estimated to be approximately 8 feet bgs, which has effectively prevented human exposure to PAHs to date.

The following is a discussion of ARARs for the site. This discussion is based on The Navy's technical analysis of site conditions and does not represent a legal opinion.

## 5.1

### ***APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS***

The Federal Superfund Amendments and Reauthorization Act of 1986 (SARA; United States Code [USC] Title 42, Part 11001 et seq.) and its implementing regulations (Code of Federal Regulations, Title 40, (CFR) Part 300) require consideration of ARARs. Applicable requirements are promulgated federal or state standards that specifically address a hazardous constituent, removal action, location, or other circumstance at a hazardous waste site. A requirement is

applicable when its scope and authority are intended to cover the removal actions and circumstances at a site (40 CFR 300.400[g][1]). Relevant and appropriate requirements are promulgated federal or state requirements that, while not directly applicable to the circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at a hazardous waste site, and that are well-suited to the site. (40 CFR 300.400[g][2]).

Section 121 of CERCLA requires that the selected remedy meet ARARs for on-site response actions unless a waiver is justified. USEPA has identified three classifications of ARARs: chemical-specific, location-specific, and action-specific (Office of Solid Waste and Emergency Response [OSWER] Directive 9234.101, 1988). During the RI, federal regulatory statutes were evaluated to identify potential federal ARARs. In accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300.515[h][2]), the Navy solicited the Cal/EPA for the identification of potential state chemical- and location-specific ARARs for Alameda Point (U.S. Navy 1994, 1995, 1996) which encompasses the site. On 13 November 1996, Cal/EPA responded by letter with a general list of laws it considers as ARARs.

### **5.1.1 *Chemical-Specific ARARs***

Chemical-specific ARARs are health- or risk-based numerical standards that, when applied to site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may be found in or discharged to the ambient environment to protect against unacceptable risks to human health and the environment.

Potential federal and state ARARs have been reviewed and it was determined that there are no federal or state chemical-specific ARARs.

### **5.1.2 *Location-Specific ARARs***

Location-specific ARARs are restrictions placed on the concentrations of hazardous substances or on the conduct of activities due to the characteristics of the site or its immediate environment. For example, the location of a site or proposed removal action in a flood plain, wetland, historic place, or sensitive ecosystem may trigger location-specific ARARs. Any removal action that would affect a site must comply with these requirements to the extent practicable. Potential federal and state ARARs have been reviewed and the following location-specific ARARs pertaining to removal alternatives for the marsh crust have been identified.

- The Coastal Zone Management Act (16 USC 1451) defines activities that affect land or water use in coastal zones, and Section 1456(c) specifies that federal activities that may affect the coastal zone must be consistent, to the maximum extent practicable, with approved state management programs. Within the San Francisco Bay Area, the local coastal zone management program is described in the San Francisco Bay Conservation and Development Commission Bay Plan, enacted pursuant to the McAtter-Petris Act of 1965. These requirements are cited in Table 5-1.
- Substantive requirements of the California Department of Fish and Game Code (CFG 5650) are included as ARARs, because fish and birds use the Oakland Inner Harbor. This requirement is cited in Table 5-1.

### 5.1.3 *Action-Specific ARARs*

Action-specific ARARs are technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes or substances. These requirements are triggered by the particular removal activities selected. Action-specific ARARs are discussed in conjunction with the specific removal alternatives to be analyzed.

#### 5.1.3.1 *Removal Alternative 1—No Action*

No removal action would be taken under Alternative 1. The physical condition of the marsh crust would remain unchanged. No institutional controls, containment, removal, or treatment would be implemented, and no other mitigating actions would be taken. Alternative 1 is retained throughout the AM process, as required by the NCP, to provide a comparative baseline against which other alternatives can be evaluated.

There is currently no risk to human health from the marsh crust at the site because there is no exposure pathway. The marsh crust at the site is also inaccessible to future residents; although it is accessible to construction workers, the risk is acceptable as stated in the draft OU-1 and OU-3 RI reports (TtEMI 1999a, TtEMI 1999b), and the pending OU-2 RI report. It is, however, assumed that future construction could result in the marsh crust being brought to the surface, where it could become a source of exposure to future occupants. For purposes of this AM, it is assumed that the marsh crust at the surface could pose a threat to future residents. Because of this concern, the Alternative, no removal action, may not be protective of human health.

No action-specific ARARs apply to Alternative 1.

### 5.1.3.2

#### *Removal Alternative 2—Institutional Controls*

This alternative involves the City of Alameda entering into a land-use covenant with DTSC and enacting the Marsh Crust Ordinance. No active engineering or construction would be required. The institutional controls would restrict excavation in the marsh crust unless proper health and safety and disposal procedures are followed. The institutional controls would be enforceable by the DTSC and the City of Alameda.

There is currently no unacceptable risk to human health from the site; however, future excavation activities could bring material to the surface and expose future occupants. The institutional controls would regulate uncontrolled disposal of marsh crust and implement an enforcement mechanism through the City of Alameda and DTSC. Human health would be protected by requiring that excavated soil be handled and disposed of to prevent exposure.

Since institutional controls would reduce the already low likelihood of exposure to the marsh crust, Alternative 2 is protective of human health.

No action-specific ARARs apply to Alternative 2.

### 5.1.3.3

#### *Removal Alternative 3—Excavation and Off-Site Disposal*

Although site risks are currently acceptable, Alternative 3 would involve excavation and off-site disposal of marsh crust at a Class I or II landfill. This alternative is described in further detail in Section 6.4.

The location-specific ARARs introduced in Section 5.2.2 apply to Alternative 3. The site is not located in the coastal zone, but excavation and disposal activities would be conducted to the maximum extent practicable, in accordance with the San Francisco Bay Plan (revised June 1998) because these activities may affect resources of the coastal zone at adjacent facilities. In addition, since birds and fish use the Oakland Inner Harbor, CFG 5650 has been identified as relevant and appropriate to Alternative 3. Excavation would be conducted in a manner to prevent disposition into the Inner Harbor of contaminated material that could be deleterious to birds or fish. These location-specific ARARs are listed in Table 5-1.

Excavation and disposal activities potentially trigger a variety of hazardous waste requirements under the California Hazardous Waste Control Law (California Health and Safety (H&S) Code 25100 and following sections). These requirements determine how excavated marsh crust and overburden must be managed. Samples would be collected from excavated soil and analyzed in

accordance with hazardous waste identification regulations in Title 22 of the California Code of Regulations (CCR), Sections 66261.10 - 66261.24, to determine whether soils and groundwater exhibit state or federal hazardous waste characteristics. The former marsh crust soil and other media that qualify as hazardous waste would be managed in accordance with generator requirements, 22 CCR Section 66262.34. Soils that must be managed as hazardous waste would be stockpiled within the area of contamination so that minimum technology requirements and land disposal restrictions are not triggered. As appropriate, extracted overburden would be evaluated in accordance with 22 CCR 66268.7(a) to determine whether it is subject to land disposal restrictions.

Several Bay Area Air Quality Management District (BAAQMD) regulations are potential ARARs for excavation activities. First, substantive requirements in BAAQMD Regulation 6 and Regulation 8 are ARARs for excavation activities. Specifically, Regulations 6-6-301, 6-6-302, and 6-6-305, which contain particulate and visible emissions standards, are applicable to limit emissions of dust and particulates during excavation and removal of soils. Appropriate actions, such as water spraying, to control dust emissions during excavation and transport would be taken. Regulation 8-40-301, which limits uncontrolled aeration, and Regulation 8-40-303, which contains requirements for soil storage piles, are also ARARs for stockpiling of soil.

If the soil must be managed as hazardous waste, the precipitation and drainage requirements for stockpiling of soil in 23 CCR 2546, are relevant and appropriate to Alternative 3. These action-specific ARARs are listed in Table 5-2.

Off-site transportation and disposal requirements are not ARARs. However, all substantive and administrative requirements associated with these activities would be followed.

#### 5.1.3.4 *Removal Alternative 4—Excavation and On-Site Treatment with Thermal Desorption*

Alternative 4 consists of excavation of the marsh crust, on-site treatment of soil using the thermal desorption, and backfilling and restoration of excavation areas with treated soil. This alternative is described in further detail in Section 6.5.

As described in Alternative 3, all hazardous waste ARARs identified for excavation and handling of contaminated media, and the same ARARs will be followed for this alternative. In addition, the substantive performance standards for miscellaneous RCRA units in 22 CCR 66264.601 are relevant and appropriate to operation of the thermal desorption unit. If the marsh crust materials must be managed as hazardous waste, BAAQMD Regulation 2-2-301, which requires use

of best available control technologies for new sources, may also be relevant and appropriate to the treatment of the marsh crust by thermal desorption because nitrogen oxides (NO<sub>x</sub>), VOCs, SVOCs, or other ozone precursors could be emitted in sufficient quantities for the facility to be considered a new source under BAAQMD rules. These action-specific ARARs are listed in Table 5-2, along with those previously identified for Alternative 3.

## 5.2

### ***TO-BE-CONSIDERED CRITERIA***

In addition to ARARs, TBC criteria include policies, advisories, or guidance issued by federal, state or local government. Variances may be incorporated where there are specific circumstances where compliance with a requirement may be inappropriate for technical reasons or unnecessary to protect human health and the environment (55 Federal Register (FR) 8741-8744, 8 March 1990).

To oversee and regulate investigations and cleanup and abatement activities, the Regional Water Quality Control Board (RWQCB) may refer to the California Wetlands Conservation Policy (Executive Order W-59-93); USEPA's Clean Water Act 404(b)(1) *Guidelines for Specification of Disposal Sites for Dredge or Fill Materials*; and California State Water Resources Control Board (SWRCB) Resolution No. 92-49, *Policies and Procedures for Investigation, Cleanup, and Abatement of Discharges Under Water Code, Section 13304*.

**Table 5-1 Potential Location-Specific Applicable or Relevant and Appropriate Requirements — Alameda Point East Housing Area**

Citation	ARAR Classification	Description	Comments
<b>Federal Location-Specific ARARs</b>			
Coastal Zone Management Act  16 USC 1456(c)(1)(A); 15 CFR 930	Relevant and appropriate	Requires federal agencies to conduct activities affecting the coastal zone consistent to the maximum extent practicable with approved state management programs.	Alameda Facility/Alameda Annex and Alameda Point are not located within the coastal zone, but active removal activities at the facility may affect land or water use, or natural resources of the coastal zone at adjacent facilities.
<b>State Location-Specific ARARs</b>			
McAteer-Petris Act (California Government Code Section 66600 and following sections)	Relevant and appropriate	The state management program for San Francisco Bay is contained in the Bay Conservation and Development Commission Bay Plan, enacted pursuant to the McAteer-Petris Act of 1965. It establishes requirements for prescribed activities affecting San Francisco Bay.	Alameda Facility/Alameda Annex and Alameda Point are not located within the coastal zone but active removal activities at the facility may affect land or water use, or natural resources of the coastal zone at adjacent facilities.
California Water Pollution Prohibition Act (California Fish and Game Code Section 5650)	Relevant and appropriate	Prohibits the deposition, directly or indirectly, into waters of the state of any substance or material that is deleterious to fish, plant, or bird life	Relevant to protect fish, plants or birds that may use the Oakland Inner Harbor from contamination resulting from excavation and treatment activities.

**Notes:**

ARAR            Applicable or relevant and appropriate requirement  
 CFR            Code of Federal Regulations  
 USC            U.S. Code  
 FGC            California Department of Fish and Game Code

**Table 5-2 Potential Action-Specific Applicable or Relevant and Appropriate Requirements for Marsh Crust — Alameda Point East Housing Area**

Citation	ARAR Classification	Description	Comments
<b>Alternative 1 – No Action</b>			
Federal Action-Specific ARARs – None			
State Action-Specific ARARs – None			
<b>Alternative 2 – Institutional Controls</b>			
Federal Action-Specific ARARs – None			
State Action-Specific ARARs – None			
<b>Alternative 3 – Excavation and Off-Site Disposal</b>			
Federal Action-Specific ARARs *			
22 CCR Sections 66261.10 and 66261.24(a)(1)	Applicable	Establishes criteria for identifying hazardous waste.	These requirements will apply to characterize excavated soil to determine whether it must be managed as hazardous waste.
22 CCR Sections 66262.1, 66262.11, 66262.20, 66262.30, 66262.31, 66262.32, 66262.33, and 66262.34	Applicable	Establishes standards for generators of hazardous waste.	If excavated soil is hazardous waste, these requirements will apply to managing excavated soil prior to shipment off site.

**Table 5-2 (Continued) Potential Action- Specific Applicable Or Relevant And Appropriate Requirements For Marsh Crust — Alameda Point East Housing Area**

Citation	ARAR Classification	Description	Comments
22 CCR Section 66268.7(a)	Applicable	Sets requirements for testing excavated soil to see if it is restricted for land disposal.	This regulation requires generators to determine if treatment is required prior to land disposal. It will be ensured that necessary analyses are conducted.
State Action-Specific ARARs			
22 CCR Section 66261.24(a)(2)	Applicable	Establishes criteria for identifying California hazardous waste.	This requirement applies to characterize excavated soil to determine if it is California hazardous waste.
BAAQMD Regulation 6-301, 302, and 305	Relevant and appropriate	Sets requirements for controlling particulate and visible emissions during excavation and transport.	These requirements may be applicable to excavation and handling of soils.
BAAQMD Regulation 8-40-301 and 8-40-303	Applicable	Limits uncontrolled aeration of stockpiled soil.	These requirements are applicable to contaminated soils, which are excavated and stockpiled.
23 CCR 2546	Relevant and appropriate	Requires precipitation and drainage controls to limit to the greatest extent possible, inundation, erosion, or other conditions affecting stockpiled soils.	These requirements are relevant and appropriate to stockpiles generated from excavation of soil if the soil must be managed as a hazardous waste.

**Table 5-2 (Continued) Potential Action- Specific Applicable Or Relevant And Appropriate Requirements For Marsh Crust — Alameda Point East Housing Area**

Citation	ARAR Classification	Description	Comments
<b>Alternative 4 – Excavation and On-Site Thermal Desorption</b>			
Federal Action-Specific ARARs *			
22 CCR Sections 66261.10 and 66261.24(a)(1)	Applicable	Establishes criteria for identifying hazardous waste.	These requirements will apply to characterize excavated soil and treatment residuals to determine whether materials must be managed as hazardous waste.
22 CCR Sections 66262.1, 66262.11, 66262.20, 66262.30, 66262.31, 66262.32, 66262.33, and 66262.34	Applicable	Establishes standards for generators of hazardous waste.	If excavated soil is hazardous waste, these requirements will apply to managing excavated soil prior to shipment off site.
22 CCR Section 66268.7(a)	Applicable	Sets requirements for testing excavated soil to see if it is restricted for land disposal.	This regulation requires generators to determine if treatment is required prior to land disposal.
22 CCR Section 66264.601	Relevant and appropriate	Sets requirements for treatment of hazardous waste in miscellaneous units.	These requirements are relevant and appropriate to operation of a thermal desorption process for treatment of the former subtidal area and the marsh crust if the soil must be managed as a hazardous waste.

\* State regulations that are part of a federally authorized or delegated state program are generally considered federal ARARs (55 Federal Register [FR] 8742).

**Table 5-2 (Continued) Potential Action- Specific Applicable Or Relevant And Appropriate Requirements For Marsh Crust —Alameda Point East Housing Area**

Citation	ARAR Classification	Description	Comments
State Action-Specific ARARs			
22 CCR Section 66261.24(a)(2)	Applicable	Establishes criteria for identifying California hazardous waste.	This requirement applies to characterize excavated soil to determine whether it is California hazardous waste.
BAAQMD Regulation 6-301, 302, and 305	Relevant and appropriate	Sets requirements for controlling particulate and visible emissions during excavation and transport.	These requirements may be applicable to excavation and handling of soil.
BAAQMD Regulation 8-47	Relevant and appropriate	Establishes emission standards for active treatment systems that treat organic compounds in soil.	These requirements may be relevant and appropriate to operation of the thermal desorption unit.
BAAQMD Regulation 8-40-301 and 8-40-303	Applicable	Limits uncontrolled aeration of stockpiled soil.	These requirements are applicable to contaminated soil that is excavated and stockpiled.

**Table 5-2 (Continued) Potential Action- Specific Applicable Or Relevant And Appropriate Requirements For Marsh Crust — Alameda Point East Housing Area**

Citation	ARAR Classification	Description	Comments
23 CCR 2546	Relevant and appropriate	Requires precipitation and drainage controls to limit to the greatest extent possible, inundation, erosion, or other conditions affecting stockpiled soil.	These requirements are relevant and appropriate to stockpiles generated from excavation of soil if the soil must be managed as a hazardous waste.
Use of BACT for new sources (BAAQMD Regulation 2-2-301)	Relevant and appropriate	Sets substantive requirements for use of BACT if treatment technology is a new source of precursor organic compounds or NO <sub>x</sub> .	Relevant and appropriate if the thermal desorption process emits VOCs, SVOCs, or NO <sub>x</sub> and qualifies as a new source.

\* State regulations that are part of a federally authorized or delegated state program are generally considered to be federal ARARs (55 FR 8742).

**Notes:**

- ARAR                   Applicable or relevant and appropriate requirement
- BAAQMD            Bay Area Air Quality Management District
- BACT                 Best available control technology
- CCR                 California Code of Regulations
- NO<sub>x</sub>                 Nitrogen Oxides
- SVOC                Semivolatile organic compound
- VOC                 Volatile organic compound

## 6.0

### ***REMOVAL ALTERNATIVES DESCRIPTION***

The four removal alternatives developed for evaluation of their ability to meet the site RAO are described in this section. These include:

- Alternative 1: No Action
- Alternative 2: Institutional Controls
- Alternative 3: Excavation and Off-Site Disposal
- Alternative 4: Excavation and On-Site Treatment with Thermal Desorption.

The evaluation of the four removal alternatives based on applicable screening criteria is discussed in Section 6. A comparative analysis of removal alternatives and the recommended removal alternative for addressing the site RAO are presented in Section 7.

## 6.1

### ***PARAMETERS USED TO DEVELOP AND EVALUATE REMOVAL ALTERNATIVES***

This section describes the site parameters used to develop conceptual designs and evaluate each removal alternative. These site parameters, which were also utilized to develop cost estimates and perform cost comparisons of each removal alternative, include the following:

- *Site Surface Area:* The site is approximately 2,500 feet by 1,100 feet. Cost estimates prepared for each removal alternative utilize a site surface area of 63.1 acres.
- *Depth to the Water Table:* The water table is approximately 5 feet bgs at the site.
- *Depth to the Top of the Marsh Crust:* Based on physical factors such as proximity to the former shoreline and mean high tide, the depth to the top of the marsh crust at the site is assumed to be similar to that found at Alameda Point (approximately 8 feet bgs).
- *Thickness of the Marsh Crust:* The thickness of the marsh crust at the site is assumed to be 1.5 feet.

## 6.2

### ***ALTERNATIVE 1 - NO ACTION***

No removal action would be taken under Alternative 1. The physical condition of the marsh crust would remain unchanged. No institutional controls, containment, removal, or treatment would be implemented, and no other mitigating actions would be taken to restrict risk to human health and the environment that may result from potential contamination within the marsh crust at the site. Although there are existing governmental, state, and local controls for the management of contaminated soils, these could be changed in the future without regard for how these changes would affect human health.

The no action alternative is evaluated to satisfy the requirements of 40 CFR Part 300.430[e][6], which requires consideration of the no action alternative as a baseline against which other removal alternatives are compared.

## 6.3

### ***ALTERNATIVE 2 – INSTITUTIONAL CONTROLS***

Under Alternative 2, institutional controls enforceable by DTSC and the City of Alameda would be implemented to restrict excavation into the marsh crust without undertaking proper procedures to ensure that new exposure pathways are not created. This alternative involves the City of Alameda entering into a land-use covenant with DTSC and enacting the Marsh Crust Ordinance. No active engineering or construction would be conducted under this alternative.

### 6.3.1

#### ***Removal Action Components for Alternative 2***

The removal action components that constitute Alternative 2 are described below.

#### 6.3.1.1

##### ***Land-Use Covenant***

Concurrent with property transfer, DTSC and the City of Alameda will enter into and record a binding agreement to enter into the land-use covenant. The covenant defines the excavation measures and provides assurances for their future enforcement.

#### 6.3.1.2

##### ***Excavation Ordinance***

The City of Alameda has enacted Ordinance No. 2824, an excavation ordinance that defines the depth to which occupants can excavate site soil without taking special measures and the measures that must be followed when excavating below that depth. A copy of this City of Alameda approved ordinance is included in

Appendix A to this AM. The ordinance includes provisions similar to those described below.

Anyone wanting to excavate at the site is first required to contact the Chief Building Official to determine the threshold depth of marsh crust in the area of planned excavation. No permit is required if excavation would not occur below the threshold depth. In addition, no permit is required for activities such as pile driving if soil from below the threshold depth will not be brought above the threshold depth and workers will not be exposed to the soils. If any part of the excavation occurs below the threshold depth, a permit must be obtained from the Chief Building Official. The permittee is required to have a health and safety plan developed to ensure the protection of the workers and the public. After obtaining a permit for excavation, the permittee is required to notify the Chief Building Official at least 48 hours prior to the commencement of excavation activities. Underground Services Alert must also be notified.

Soil below the threshold depth is considered, by default, to be hazardous. The permittee may choose to disprove this assumption to the satisfaction of the Chief Building Official by analytical testing. The permittee may use existing information, if relevant, or analytical results obtained from new soil samples. No additional controls are required if it is determined that hazardous materials are not present below the threshold depth in the area of excavation. However, if hazardous materials are encountered below the threshold depth at any time during sampling or excavation activities, the permittee is required to manage all soil below the threshold depth as a hazardous material, following either of the options below.

Rather than performing analytical tests on soil samples, the permittee could elect to assume that the soil below the threshold depth is hazardous. The permittee would then have two options for compliance with the ordinance:

- Under option 1, all soil would be disposed of off site. Soil could not be stockpiled or used as backfill.
- Under option 2, the permittee would be required to hire a registered professional engineer or registered geologist to develop a construction site management plan and sampling plan to define the appropriate management of stockpiled soil from below the threshold depth.

### 6.3.1.3 *Five-Year Reviews*

Regular reviews would be performed every 5 years to ensure long-term compliance with institutional controls.

## 6.4

### ***ALTERNATIVE 3 – EXCAVATION AND OFF-SITE DISPOSAL***

Although site risks are currently acceptable, Alternative 3 would involve excavation to an average depth of approximately 9.5 feet across the site and off-site disposal of marsh crust soils at a Class I or II landfill. Excavation would involve site preparation; dividing the site up into several areas that could be accessed by the construction equipment; excavating and stockpiling the overburden; excavating the marsh crust; confirmation sampling to show that the marsh crust has been removed; and backfilling and restoring excavated areas with overburden and clean fill. Alternative 3 would also include the treatment of contaminated ground water removed from excavation pits during dewatering for excavation. The removal action components that constitute Alternative 3 are described below.

#### 6.4.1

##### ***Site Preparation***

Site preparation activities would include clearing and removing vegetation, constructing run-on and runoff controls for surface drainage, constructing decontamination facilities, demolishing buildings, removing concrete aprons and asphalt pavement, removing bins, relocating utilities, and removing railroad spurs and fences, as necessary. Site preparation work would also include setting up on-site staging areas, installing temporary fencing, and surveying excavation areas.

#### 6.4.2

##### ***Excavation, Stockpiling, Disposal, and Backfilling***

Marsh crust is presumed to exist throughout all 63.1 acres of the site. The marsh crust would be identified using a cleanup level established for the soil that is protective for future exposures due to construction activities. This cleanup level was not developed as part of the AM, but it is assumed that the chemicals in the marsh crust are contained within a layer of surrounding soil 1.5 feet thick.

Excavation activities would consist of excavating the entire surface area of the site to an average depth of 9.5 feet, approximately 1.5 feet below the average depth of the marsh crust. Clean fill and contaminated soil would be excavated mechanically using standard construction equipment, such as scrapers, drag lines, dump trucks, and bulldozers. The first 5 feet of soil would be dry and clean and stockpiled separately on site. The next 4.5 feet (3 feet of clean overburden and 1.5 feet of marsh crust) would require excavation with drag because the soil is saturated at a depth greater than 5 feet. An estimated total volume of 1.06 million cubic yards would be generated as clean overburden excavated from the 8 feet of clean soil from the site. The estimated volume of contaminated soil would be about 198,513 cubic yards. Shoring would be used when the depth of excavation exceeds 5 feet bgs.

Marsh crust would be screened visually, and uncontaminated material would be separated from contaminated soil. Dust would be controlled by spraying water on contaminated soil with a mobile water source during excavating, staging, and loading activities. Contaminated material would be transported in covered trucks to a Class I or II landfill. The soil would be characterized to determine disposal location. Prior to off-site disposal, contaminated soils would be stockpiled within the area of contamination.

The site would be divided into multiple excavation areas. Stockpile management areas would be set up as needed. Excavation would be conducted in one area, with other areas used for the stockpiling of overburden. Areas where remediation is completed would be used to place stockpiles from the next area to be excavated. Clean soil and overburden and contaminated marsh crust would be stockpiled separately at the site before disposal.

Once the excavation is complete, the excavation area would be surveyed and backfilled using clean overburden and replacement fill, after which the area would be compacted and regraded to original condition. The site would then be restored equivalent to surrounding conditions. After backfill and compaction, the removal action for the site would be complete.

#### 6.4.3

#### ***Ground Water Management***

Pump and piping systems would be used to remove water encountered during excavation. An estimated 19 million gallons of water would be pumped during excavation operations (saltwater intrusion quantities during excavation were found to be negligible). This water would be treated using granular activated carbon units, and the disposal of treated water would be to the San Francisco Bay or under permit to the local Publicly Owned Treatment Works (East Bay Municipal Utility District). Temporary sheet pile walls would be constructed around excavation areas to prevent or minimize seawater intrusion.

#### 6.5

#### ***ALTERNATIVE 4 – EXCAVATION AND ON-SITE TREATMENT WITH THERMAL DESORPTION***

Alternative 4 consists of excavation of the marsh crust, on-site treatment of the marsh crust using the thermal desorption process, and backfilling and restoration of excavation areas with treated soil. The removal action components that constitute Alternative 4 are described below.

### **6.5.1 Site Preparation**

Site preparation activities would be the similar to those described in Section 6.4.1 for Alternative 3.

### **6.5.2 Excavation, Stockpiling, Disposal, and Backfilling**

Excavation, backfilling with clean overburden and fill, and restoration activities for removal and treatment of the marsh crust underlying the site would be similar to the activities described in Section 6.4.2 for Alternative 3.

### **6.5.3 Ground Water Management**

Management of ground water encountered during excavation would be similar to the activities described in Section 6.4.3 for Alternative 3.

### **6.5.4 Thermal Desorption**

For thermal desorption, a vendor would mobilize a thermal desorption unit to the site and set it up in a predetermined location. Auxiliary equipment, including a loader, crusher, screening plant, and feed belt conveyor, would also be provided. A cleanup goal for treated soil would be established that is protective of future exposure due to construction activities. This cleanup goal was not developed for use in this AM, because the absence of a cleanup goal does not significantly affect the evaluation of this alternative.

The thermal desorption process has been used successfully as a full-scale soil remediation technology to treat organic contaminants such as VOCs and SVOCs, including PAHs (USEPA, 1993a). It would be operated at a temperature sufficient to volatilize PAH contaminants in the marsh crust but not destroy the contaminants. The desorption unit would heat contaminated soil, and water and contaminants would be volatilized. An inert gas, such as nitrogen or oxygen-deficient (less than 4 percent) combustion off-gas, would be injected as a sweep stream. Organic compounds in the off-gas would be collected and burned in an afterburner. Particulate matter would be removed by conventional air pollution control methods.

Operation of the thermal desorption system would create the following process residual streams: treated soil; untreated, oversized rejects; condensed contaminants and water; particulate control-system dust; clean off-gas; and spent carbon, if used. Treated soil, debris, and oversized rejects could be suitable for return on site. Treated condensed water and treated scrubber purge water (blowdown) could be purified and returned to the site wastewater treatment

facility (if available), sent for disposal to a sewer system, or used for rehumidification and cooling of the hot, dusty media. Trial-burn test runs would be required before implementing this alternative.

Clean off-gas would usually be released to the atmosphere, although systems that use an inert gas (for example, nitrogen) would recycle the gas to the desorber after treatment. Residual treated soil would remain stockpiled on site until receipt of analytical results. Treated soil would be tested for PAHs to verify the effectiveness of the treatment processes and demonstrate that the soil no longer exhibits hazardous waste characteristics or poses a threat to human health or the environment. The soil would then be used to fill excavated areas. All soil would be stockpiled within the area of contamination prior to treatment.

## 7.0

### ***COMPARATIVE ANALYSIS OF ALTERNATIVES AND RECOMMENDATIONS***

The following discussion summarizes the degree to which the various removal alternatives meet the evaluation criteria consistent with the NCP and presents a recommendation for the preferred alternative.

## 7.1

### ***COMPARATIVE ANALYSIS OF ALTERNATIVES***

The purpose of this comparative analysis is to identify the relative advantages and disadvantages of each alternative and thereby provide a sound basis for remedy selection that is consistent with the NCP. The NCP states, "the national goal of the remedy selection process is to select remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste."

The comparative analysis presented in the following sections provides the information needed to determine the alternative or set of alternatives that best satisfies the goals of the NCP.

### 7.1.1

#### ***Overall Protection of Human Health and the Environment***

All alternatives, even Alternative 1, would protect human health and the environment under current and likely future land uses. Future construction at the site could result in contamination from the marsh crust being brought to the surface. In such an event, Alternative 1 (no action) may not be protective. Alternative 2 (institutional controls) provides a reliable method of ensuring that landowners do not excavate the marsh crust without proper procedures. Although Alternatives 3 and 4 are best at eliminating potential contamination in the marsh crust in the long term, the magnitude of effort to implement these alternatives is significant when considering that risks are acceptable under likely current and future scenarios. With regard to short-term risks, Alternatives 1 and 2 are more effective in protecting the community, current occupants, site workers, and the environment because no construction activities would be undertaken. Significant disruption to the environment and the community would be caused by construction activities involved in implementing Alternatives 3 and 4.

### **7.1.2 *Compliance with Applicable or Relevant and Appropriate Requirements***

No ARARs apply to Alternatives 1 and 2 for the marsh crust. No chemical-specific ARARs have been identified for Alternatives 3 and 4. Both Alternatives 3 and 4 would comply with all location- and action-specific ARARs.

### **7.1.3 *Long-Term Effectiveness and Permanence***

Alternatives 3 and 4 would provide the highest level of long-term effectiveness and permanence because the marsh crust would be excavated, thereby leaving no significant residual risks and removing the potential for exposure to hazardous substances in soil. Both Alternatives 3 and 4 would be adequate and reliable in concept because they would result in the removal of the marsh crust. The potential for residual risks from contaminants in the marsh crust would remain under Alternative 2; however, protection of human health would be achieved by restricting excavation in the marsh crust unless health and safety and disposal procedures were followed to minimize exposure. No removal action would be conducted under Alternative 1; therefore, Alternative 1 would provide no long-term effectiveness or permanence, and residual risk would remain at the site in the unlikely event that marsh crust soils are brought to the surface.

### **7.1.4 *Reduction of Toxicity, Mobility, or Volume through Treatment***

Alternative 4 would provide the greatest reduction in the toxicity, mobility, and volume through treatment of contaminants in the marsh crust. None of the other alternatives use treatment to reduce toxicity, mobility, or volume.

### **7.1.5 *Short-Term Effectiveness***

Because no site construction would be required under Alternatives 1 and 2, both alternatives would provide the highest level of short-term protection to the community, workers, and the environment. Both Alternatives 3 and 4 are considered less effective in the short term because of the large-scale excavation and the handling of large quantities of contaminated soil and ground water (during dewatering activities). In addition, Alternative 3 could cause an additional short-term risk to the community because of the large number of truck trips that would occur while transporting soil from the marsh crust off site for disposal.

Implementation of Alternatives 1 and 2 would have no impact on the environment, because no construction activities would be involved. Both Alternatives 3 and 4 would have significant, short-term adverse impacts to the environment because of (1) the complex nature of excavation of a large volume

and area below the ground water table and (2) the treatment and handling of a large volume of contaminated soil or residual treatment materials.

Alternative 2 would require a minimal amount of time to implement, whereas Alternatives 3 and 4 would take several years to implement.

#### **7.1.6 *Implementability***

Alternative 1 would be easy to implement, because no action would be taken. Alternative 2 could be implemented without significant delays, because no construction activities are involved. Both Alternatives 3 and 4 would be difficult to implement because of the complex nature of site conditions described previously, excavation of a large volume and area below the ground water table, and the handling requirements of a large volume of contaminated soil and treatment residuals.

#### **7.1.7 *Engineering Evaluations/Cost Analysis***

Not applicable for time-critical removal actions. However, no known costs would be associated with Alternative 1. Alternative 2 would cost about \$48,720 to implement institutional controls for the site. The estimated cost of implementing Alternatives 3 and 4 would be \$131 million and \$82 million, respectively. Though these cost figures are only estimates, with an estimated margin for error of between 30 and 50 percent, these costs would be vastly greater than the costs for Alternatives 1 and 2. The costs of implementing Alternatives 3 and 4 are grossly excessive when compared to Alternatives 1 and 2.

#### **7.1.8 *Evaluation of Remedial Action Criteria***

Although this is a removal action decision document, this evaluation has addressed the more detailed criteria for selection of remedial actions. These criteria are consistent with removal action selection factors set forth in 40 CFR Section 300.415(b)(2), which are

- (i) actual or potential exposure to nearby populations, animals, or food chains from hazardous substances or pollutants or contaminants;
- (ii) actual or potential contamination of drinking water supplies or sensitive ecosystems;
- (iii) hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;

- (iv) hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;
- (v) weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;
- (vi) threat of fire or explosion;
- (vii) the availability of other appropriate federal or state response mechanisms to respond to the release; and
- (viii) other situations or factors that may pose threats to public health or welfare or the environment.

### **Threats to Public Health and Welfare**

The primary threats to public health or welfare considered in determining the appropriateness of this removal action are:

- 40 CFR Section 300.415(b)(2)(i): actual or potential exposure to nearby populations, animals, or food chains from hazardous substances or pollutants or contaminants.

The primary potential threats associated with the marsh crust are related to the risk of a construction worker who is excavating the soil, as well as people who would come into contact with contaminated soil brought to the surface. The constituents in the marsh crust are defined as deposited material found naturally in petroleum products, including gasoline, diesel, and as by-products of coal or oil gasification at an average depth of 15.3 feet below the ground surface. This removal action will substantially eliminate the identified exposure pathway to the marsh crust. Inasmuch as construction activities could inadvertently bring contaminated soil to the surface if restrictions are not in place, this removal action constitutes a “time critical removal action” as defined in U.S. EPA’s Office of Solid Waste and Emergency Response (OSWER) Directive 9318.0-05 and is being implemented as provided in 40 CFR Section 300.415(n)(2).

### **Threats to the Environment**

The primary threats to the environment considered in determining the appropriateness of this removal action are:

- 40 CFR Section 300.415(b)(2)(i): actual or potential exposure to nearby populations, animals, or food chains from hazardous substances or pollutants or contaminants.

The primary potential threat to the environment associated with the marsh crust is related to the risk if the soils were excavated and distributed on the surface soil. The potential exposure scenario would be ingestion of contaminated soil. Stormwater run-off could potentially contain materials that could be conveyed through the stormwater system. However, this is a potential risk only if the soils were moved to the surface and remained there. The constituents in the marsh crust are defined as deposited material found naturally in petroleum products, including gasoline, diesel, and as by-products of coal or oil gasification at an average depth of 15.3 feet below the ground surface. Inasmuch as construction activities could inadvertently bring contaminated soil to the surface if restrictions are not in place, this removal action will substantially eliminate the identified exposure pathway to the marsh crust. This removal action constitutes a “time critical removal action” as defined in U.S. EPA’s Office of Solid Waste and Emergency Response (OSWER) Directive 9318.0-05 and is being implemented as provided in 40 CFR Section 300.415(n)(2).

## 7.2

### ***PROPOSED SELECTED REMOVAL ALTERNATIVE AND ASSOCIATED FINDINGS***

This AM was performed in accordance with current EPA and U.S. Navy guidance documents for removal actions under CERCLA. The purpose of this AM was to identify and analyze removal actions to address the marsh crust at Alameda Point in the city of Alameda, Alameda County, California.

The Navy finds that there is an “actual or potential exposure to nearby populations, animals or food chains from hazardous substances or pollutants” at this site as provided in 40 CFR 300.415(b)(2)(i).

Four alternatives were identified, evaluated, and ranked: Alternative 1. No Action; Alternative 2. Institutional Controls; Alternative 3. Excavation and Off-Site Disposal; Alternative 4. Excavation and On-Site Treatment with Thermal Desorption. For the marsh crust at the site, the comparative analysis indicates that Alternative 2, consisting of a combination of government controls and private property deed restrictions, provides overall protection of human health and the environment, meets the threshold criteria for remedy selection, and is cost-effective. Alternative 1 may not be protective of public health and the environment during potential future construction activities. Although protective of human health and the environment, Alternatives 3 and 4 are potentially less

effective in the short-term because of the disruption expected from such a large-scale excavation and either off-site disposal or on-site treatment. In addition, the costs for implementing Alternatives 3 and 4 are grossly excessive when compared to Alternatives 1 and 2. According to the NCP (40 CFR Subsection 430(e)(7)(iii)), “[c]osts that are grossly excessive compared to the overall effectiveness of alternatives may be considered as one of the several factors used to eliminate alternatives.” Although this NCP provision is specifically directed to the screening of removal alternatives, it is also relevant to the detailed analysis of alternatives under a AM. Consideration of Alternatives 3 and 4 shows that they would provide no significantly greater effectiveness or improved implementability than Alternative 2 and at a grossly excessive cost. For these reasons, Alternative 2 is the recommended removal alternative for this site. This recommended decision is based on the Administrative Record for the site.

Alternative 2 complies with all of the requirements in CERCLA and the NCP for selection of Time Critical Removal Actions.

The selection and implementation of Alternative 2 will ensure that no further remedial action will be required in order to support the covenant that “all remedial action necessary to protect human health and the environment with respect to” the hazardous substances in the marsh crust remaining on the property has been taken before the date of transfer of the Alameda Point East Housing Area (site), which is located on the eastern edge of Alameda Point in the city of Alameda, Alameda County, California as required by Section 120(h)(3)(A)(ii)(I) of CERCLA.

The institutional controls addressing the Marsh Crust shall include layered enforcement mechanisms. In addition to the Marsh Crust Ordinance which will be implemented and enforced by the City of Alameda, the Alameda Reuse and Redevelopment Authority is entering into a Land Use Control agreement with the State of California Department of Toxic Substances Control and deed restrictions with the Department of Navy establishing Environmental Restrictions under California Civil Code Section 1471. The ARRA will commit in the Environmental Restrictions established under these two legal instruments that it will comply with the Marsh Crust Ordinance. These Environmental Restrictions shall run with the land and bind subsequent transferees of the land within Parcels 170 and 171.

### 7.3

#### ***IMPLEMENTATION SCHEDULE***

A schedule for implementation of institutional controls will be coordinated with the City of Alameda. This removal action will satisfy the requirements of CERCLA Section 104(a)(2). The City of Alameda adopted the Marsh Crust Ordinance (Ordinance No. 2824) on February 15, 2000.

#### 7.4

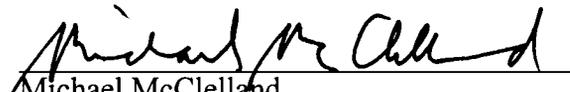
#### ***PUBLIC INVOLVEMENT***

The Navy published the Draft Action Memorandum and has made available the Administrative Record for public comment. The public comment period on the Draft Action Memorandum and Administrative Record ran from February 18, 2000 to March 20, 2000. The Draft Action Memorandum and Administrative Record was made available for public review at Alameda Public Library, 2200 Central Avenue, Alameda, California, (510) 748-4660 and Alameda Point Information Repository, 950 West Mall Square, Main Office Building (Building 1), Alameda Point, Alameda, California. A summary of the comments received and the Navy's response to those comments are attached to this Final AM as an Appendix.

7.5

***RECOMMENDATIONS***

This decision document, which represents a Time-Critical Removal Action for the marsh crust, a potentially contaminated soil horizon at the Alameda Point East Housing Area (site), which is located on the eastern edge of Alameda Point in the city of Alameda, Alameda County, California was developed in accordance with CERCLA, as amended, and is consistent with the NCP. This decision is based on the Administrative Record for the site. The Administrative Record index and list of information repositories is included in the Administrative Record. Conditions at this site meet the NCP Section 300.415(b)(2) criteria for conducting a removal action and approval of this Action Memorandum is recommended. Approval of this Action Memorandum is granted by signing below.

  
Michael McClelland  
BEC Alameda Point

7 April 2000  
Date

**REFERENCES**

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*APPENDIX A  
CITY of ALAMEDA MARSH  
CRUST EXCAVATION  
ORDINANCE*

RECEIVED

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CITY OF ALAMEDA  
ALAMEDA POINT

CITY OF ALAMEDA ORDINANCE NO. 2824  
New Series

AMENDING THE ALAMEDA MUNICIPAL CODE BY AMENDING CHAPTER XIII (BUILDING AND HOUSING) BY ADDING A NEW SECTION 13-56 (EXCAVATION INTO THE MARSH CRUST/SUBTIDAL ZONE AT THE FORMER NAVAL AIR STATION ALAMEDA AND FLEET INDUSTRIAL SUPPLY CENTER, ALAMEDA ANNEX AND FACILITY) TO ARTICLE XVII (PITS, WELLS AND EXCAVATIONS)

WHEREAS, the marshlands and near shore areas once located adjacent to the island of Alameda were filled with dredge material between approximately 1900 and 1940; and

WHEREAS, the marsh crust, and the subtidal zone extending from it, is a horizon that is identifiable in the subsurface (the interface at the bottom of the fill material) which contains remnants of grasses and other intertidal and subtidal features; and

WHEREAS, the marsh crust/subtidal zone also contains, at least locally, elevated levels of petroleum-related substances, such as semi-volatile organic compounds, which substances may pose an unacceptable risk to human health and the environment if excavated in marsh crust/subtidal zone materials, brought to the ground surface and handled in an uncontrolled manner; and

WHEREAS, proper handling, storage and disposal of materials excavated from the marsh crust/subtidal zone, pursuant to state and federal hazardous materials laws, will help eliminate unacceptable exposures and risks to human health and the environment; and

WHEREAS, the Draft Base-wide Focused Feasibility Study for the Former Subtidal Area and Marsh Crust and Ground Water (U.S. Navy, February 20, 1999) recommends implementation by the City of an institutional control, such as an excavation ordinance, as a remedial action related to the cleanup by the United States Navy of Naval Air Station Alameda and the Fleet Industrial Supply Center, Alameda Annex and Facility, which closed military installations are anticipated to be transferred to the City; and

WHEREAS, it can be seen with a certainty that adoption of a permitting program by the City that requires proper handling, storage and disposal, pursuant to existing state and federal hazardous materials laws, of materials excavated from the marsh crust/subtidal zone will not involve or require any physical activities other than optional testing of excavated materials and, therefore, is exempt from the California Environmental Quality Act pursuant to California Code of Regulations, title 14, section 15061(b)(3) because there is no possibility that the enactment of the ordinance may have a significant effect on the environment.

Approved as to Form  
  
CITY ATTORNEY

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Alameda that:

Section 1. The Alameda Municipal Code is hereby amended by adding a new Section 13-56 (Excavation Into the Marsh Crust/Subtidal Zone at the Former Naval Air Station Alameda and Fleet Industrial Supply Center) to Article XVII (Pits, Wells and Excavations) of Chapter XIII (Building and Housing) thereof to read:

**13-56 EXCAVATION INTO THE MARSH CRUST/SUBTIDAL ZONE AT THE FORMER NAVAL AIR STATION ALAMEDA AND FLEET INDUSTRIAL SUPPLY CENTER, ALAMEDA ANNEX AND FACILITY.**

**13-56.1 DEFINITIONS.**

For purposes of this Section 13-56 the following definitions shall apply:

*Bay* shall mean San Francisco Bay, including the Oakland Estuary and the Oakland Inner Harbor.

*DTSC* shall mean the California Environmental Protection Agency, Department of Toxic Substances Control.

*Earth material* shall mean any rock, natural soil or fill or any combination thereof.

*Excavation* shall mean the mechanical removal of earth material.

*Hazardous materials*, as defined in California Health and Safety Code sections 25260(d) and 25501(k), shall mean any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant or potential hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste and any material which a handler or the administering agency has reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

*Marsh crust* shall mean the underground layer that is the remnant of the tidal marsh that existed along the shoreline of Alameda Island before filling to create additional dry land. In many places, this layer contains substances from former industrial discharges that were retained in the historic marsh before filling.

*Subtidal zone* shall mean the underground layer that is the pre-filling Bay floor extension of the historic marsh. Together, the marsh crust and the subtidal zone constitute a single, continuous, underground layer that extends Bayward of the original mean higher high tide line of Alameda Island, before filling, throughout the area that was filled.

*Threshold depth* shall mean the depth below which a permit is required by this Section 13-56. The threshold depth is conservatively identified with the elevation above which there is little likelihood that substances from the historic marsh or Bay floor would have mixed during filling, including a margin of safety above the elevation of the historic marsh surface or subtidal zone. In no event will the threshold depth be above mean higher high water.

**13-56.2 Permit Required.**

- a. It shall be unlawful for any person, including utility companies and their employees and contractors, to excavate below a threshold depth above the marsh crust/subtidal zone within the area of the former Naval Air Station Alameda and Fleet and Industrial Supply Center, Alameda Annex and Facility, as depicted in Exhibit A, hereto, without first obtaining a permit in writing from the Chief Building Official.
- b. All excavation below the threshold depth in the area subject to this Section 13-56 shall be performed solely in accordance with the permit as approved and issued by the City.

**13-56.3 Depth of Excavation Subject to Permit Requirement.**

The Chief Building Official shall establish a threshold depth, consistent with DTSC's remedial decision documents pertaining to the marsh crust/subtidal zone, below which a permit shall be required for excavation pursuant to this Section 13-56. The threshold depth may vary by location. The Chief Building Official shall publish a map depicting the parcels and threshold depths for which a permit is required under this Section 13-56. The Chief Building Official may update the map, consistent with DTSC's remedial decision documents pertaining to the marsh crust/subtidal zone, as necessary to incorporate any new information concerning the depth of the marsh crust/subtidal zone received by the City since the preparation of the initial map or last update.

**13-56.4 Exception to Permit Requirement.**

- a. No permit shall be required under this Section 13-56 for pile driving or other penetration of the marsh crust/subtidal zone that involves neither (i) bringing materials from below the threshold depth to above the threshold depth; nor (ii) exposure of construction workers to soil excavated from below the threshold depth.
- b. No permit shall be required under this Section 13-56 for excavation associated with emergency repair of public infrastructure facilities; provided, however, that soil excavated from below the threshold depth in the area of the marsh crust/subtidal zone, as depicted on Exhibit A, must be managed as though it were hazardous in accordance with Subsection 13-56.8b.

**13-56.5 Permit Application.**

Application for a permit shall be made in writing on forms available in or from the Building Services Office and shall be filed in the Building Services Office. Subsection 13-1.2 of Article I of Chapter XXIII regarding Appeals (Section 105.1), Appeal Fee (Section 105.2), Expiration (Section 106.4.4), Permit Fees (Section 107.2) and Plan Review Fees (Section 107.3) shall apply to all permits issued pursuant to this Section 13-56. The information required to be provided on the application shall be determined by the Chief Building Official and shall include at a minimum:

- a. A description and map of the property that is to be excavated sufficient to locate the area of proposed excavation on Exhibit A.
- b. Detailed plans, prepared by a registered civil engineer licensed in the State of California, of the excavation work to be done, including a drawing with dimensions to scale of all proposed excavation activity.
- c. A statement of the maximum depth of excavation.
- d. All elevations in plans and application materials submitted to the City shall be referenced to City Datum and shall show depth below ground surface.
- e. A cost estimate for purposes of determining the amount of the bond required to be obtained pursuant to Subsection 13-56.11.

**13-56.6 Certifications and Acknowledgments.**

- a. The following certifications shall be required as part of the permit application:
  1. The applicant shall sign a certification prepared by the Chief Building Official acknowledging receipt of notice that the property to be excavated may be in the area of the marsh crust/subtidal zone, and that hazardous materials may be encountered during excavation.
  2. The applicant shall sign a certification prepared by the Chief Building Official acknowledging that federal and state hazardous materials laws and regulations will apply to storage, transportation and disposal of any materials excavated from the marsh crust/subtidal zone that are hazardous materials.
  3. The applicant shall sign a certification prepared by the Chief Building Official acknowledging liability for disturbing and removing all materials from the marsh crust/subtidal zone in accordance with this Section 13-56 and the permit.

- b. All building and excavation permits issued for construction or excavation within the area subject to this SubSection 13-56 shall contain the following written warning:

“Pursuant to Section 13-56 of Article XVII of Chapter XIII of the Alameda Municipal Code, excavation work in the area of the marsh crust/subtidal zone within the area of the former Naval Air Station Alameda and Fleet and Industrial Supply Center, Alameda Annex and Facility, as depicted in Exhibit A to Section 13-56 of Article XVII of Chapter XIII of the Alameda Municipal Code, may be subject to special materials handling requirements. The permittee acknowledges that he or she has been informed of the special materials handling requirements of Section 13-56 of Article XVII of Chapter XIII of the Alameda Municipal Code and that hazardous materials may be encountered during excavation.”

**13-56.7 Notification Prior to Start of Excavation.**

- a. After receipt of a permit and no less than two (2) business days (forty-eight (48) hours minimum) before commencement of any excavation activity in the area subject to this Section 13-56, the permittee shall notify the Chief Building Official of the planned start of excavation. Said notification shall include a schedule for any excavation work that will last for more than one day.
- b. The permittee shall give adequate notice to Underground Service Alert prior to commencing any excavation activity subject to this Section 13-56.

**13-56.8 Materials Handling.**

The permittee shall elect to follow one or more of the courses of action set forth below before beginning any excavation activities in the area subject to this Section 13-56. Unless otherwise demonstrated by the permittee by means of reconnaissance investigation pursuant to Subsection 13-56.8a, or unless the permittee prepares site management plans pursuant to Subsection 13-56.8c, soil below the threshold depth in the area of the marsh crust/subtidal zone, as depicted on Exhibit A, must be managed as though it were hazardous pursuant to Subsection 13-56.8b. The permittee may elect to follow Subsection 13-56.8a, but must comply with Subsection 13-56.8b or 13-56.8c if testing demonstrates that the materials below the threshold depth are hazardous materials. Copies of all reconnaissance testing results and/or existing information used to satisfy the reconnaissance investigation requirements of Subsection 13-56.8a shall be reported to and filed with the City. All observations or encounters with the marsh crust/subtidal zone during excavation shall be reported to the City.

- a. **Reconnaissance Investigation to Rule Out the Presence of Hazardous Materials Below the Threshold Depth.**

The permittee may elect to use reconnaissance borings, pursuant to a plan prepared by a qualified registered engineer or registered geologist, licensed in the State of California, to rule out, to the satisfaction of the Chief Building Official, the presence of hazardous materials below the threshold depth in the area to be excavated. As part or all of the reconnaissance plan, the permittee may make use of existing information, where appropriate, if the existing information is directly relevant to the location and depth to be excavated and contains observations or results of analyses that assist in concluding whether hazardous materials are present. The reconnaissance report shall include a description of all observations from below the threshold depth evidencing the presence or absence of the marsh crust/subtidal zone.

1. If hazardous materials are found below the threshold depth within the area to be excavated at any time (during reconnaissance or during excavation), the permittee shall comply with either Subsection 13-56.8b or Subsection 13-56.8c, at his or her election.
2. If hazardous materials are not found below the threshold depth within the area to be excavated, no additional materials controls, except as otherwise may be required under applicable federal, state or local law, are required under this Section 13-56.

**b. Handling Materials Excavated From Below the Threshold Depth as Hazardous Materials.**

If the permittee has not ruled out the presence of hazardous materials pursuant to Subsection 13-56.8a, or elects not to prepare a site management plan and materials testing program pursuant to Subsection 13-56.8c, the permittee shall presume that materials excavated from below the threshold depth must be disposed at an appropriately permitted disposal facility. In addition, no excavated materials from below the threshold depth may be stockpiled prior to disposal or returned to the excavation.

**c. Preparation of Construction Site Management Plan for Handling Materials Excavated From Below the Threshold Depth.**

1. In lieu of handling materials excavated from below the threshold depth pursuant to the restrictions in Subsection 13-56.8b, the permittee may elect to hire a qualified registered engineer or registered geologist, licensed in the State of California, to develop a site-specific construction site management plan, including a materials testing program, to the satisfaction of the Chief Building Official. The construction site management plan shall include, at a minimum, provisions governing control of precipitation run on and run off from stockpiled soils, soil segregation, securing of stockpiled soils, duration of stockpiling, and contingency plans for handling materials excavated from below the threshold depth that prove to be hazardous materials.

2. The permittee shall hire a qualified registered engineer or registered geologist, licensed in the State of California, to oversee compliance with the approved construction site management plan, and shall transmit to the Chief Building Official upon completion of the project written certification of compliance with the construction site management plan. The certification report shall include a description of all observations from below the threshold depth evidencing the presence or absence of the marsh crust/subtidal zone.

**13-56.9 Health and Safety Plan.**

The applicant shall cause to be prepared by a certified industrial hygienist, and keep on the construction site at all times, a health and safety plan to protect workers at the excavation site and the general public to the satisfaction of the Chief Building Official. The Chief Building Official may prepare and provide to applicants a model health and safety plan which, if used by the applicant, shall be modified by the applicant's certified industrial hygienist to suit the specific requirements of the applicant's project.

**13-56.10 Excavation Site Best Management Practices.**

All excavation and materials handling activities permitted under this Section 13-56 shall be conducted in accordance with applicable Alameda Countywide Clean Water Program Best Management Practices and City of Alameda Storm Water Management and Discharge Control Program Ordinance requirements.

**13-56.11 Bonds.**

Upon a finding by the Chief Building Official that a permit should issue for excavation pursuant to this Section 13-56, a surety or performance bond conditioned upon the faithful performance and completion of the permitted excavation activity shall be filed with the City. Such bond shall be executed in favor of the City and shall be maintained in such form and amounts prescribed by the Risk Manager sufficient to ensure that the work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions.

**13-56.12 Nonassumption of Liability.**

In undertaking to require applicants for certain excavation permits to comply with the requirements of this Section 13-56, the City of Alameda is assuming an undertaking only to promote the general welfare. The City is not assuming, nor is it imposing on itself or on its officers and employees, an obligation for breach of which it is liable in money damages to any person who claims that such breach proximately caused injury.

**13-56.13 Construction on City Property.**

- a. The Chief Building Official shall prepare standard work procedures that comply with all the requirements of this Section 13-56 for all City

construction or improvement activities involving excavation below the threshold depth in the area subject to this Section 13-56. All departments, boards, commissions, bureaus and agencies of the City of Alameda that conduct construction or improvements on land under their jurisdiction involving excavation below the threshold depth in the area subject to this Section 13-56 shall follow such standard work procedures.

- b. The City shall include in all contracts involving excavation below the threshold depth in the area subject to this Section 13-56 a provision requiring City contractors to comply with all the requirements of this Section 13-56. All contracts entered into by departments, boards, commissions, bureaus and agencies of the City of Alameda that authorize construction or improvements on land under their jurisdiction involving excavation below the threshold depth in the area subject to this Section 13-56 also shall contain such standard contract provision.

**13-56.14 Severability.**

If any section, subsection, subdivision, paragraph, sentence, clause or phrase of this Section 13-56 or any part thereof is for any reason held to be unconstitutional or invalid or ineffective by any court of competent jurisdiction, such decision shall not affect the validity or effectiveness of the remaining portions of this Section 13-56 or any part thereof. The City Council hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, clause or phrase of this Section 13-56 irrespective of the fact that one or more sections, subsections, subdivisions, paragraphs, sentences, clauses or phrases be declared unconstitutional or invalid or effective.

**13-56.15 Permit Fee.**

No permits for excavation in the marsh crust/subtidal zone shall be issued unless a fee has been paid. The fee shall be set by City Council resolution.

**13-56.16 Penalties.**

- a. Any person, including utility companies and their employees and contractors, violating any of the provisions of this Section 13-56 shall be deemed guilty of a misdemeanor, and each person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of this Section 13-56 is committed, continued or permitted, and such violation may be prosecuted and punished as an infraction or misdemeanor pursuant to the provisions of Section 1-5.1 of the Alameda Municipal Code .
- b. Any person, including utility companies and their employees and contractors, that commences any excavation without first obtaining the necessary permits therefor shall, if subsequently allowed to obtain a permit, pay an amount, in

addition to the ordinary permit fee required, quadruple the permit fee otherwise required.

**13-56.17 Retention and Availability of Permit Files**

The City shall maintain files pertaining to all permits issued under this Section 13-56, and shall make such files available to DTSC for inspection upon request during normal business hours.

**13-56.18 Amendment of Section 13-56**

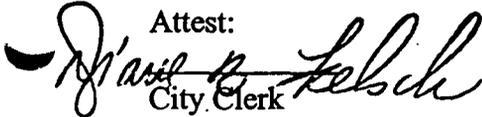
This Section 13-56 shall not be repealed or amended without thirty (30) days prior written notice to the DTSC Deputy Director for Site Mitigation.

Section 2. This Ordinance shall be in full force and effect from and after the expiration of thirty (30) days from the date of its final passage.



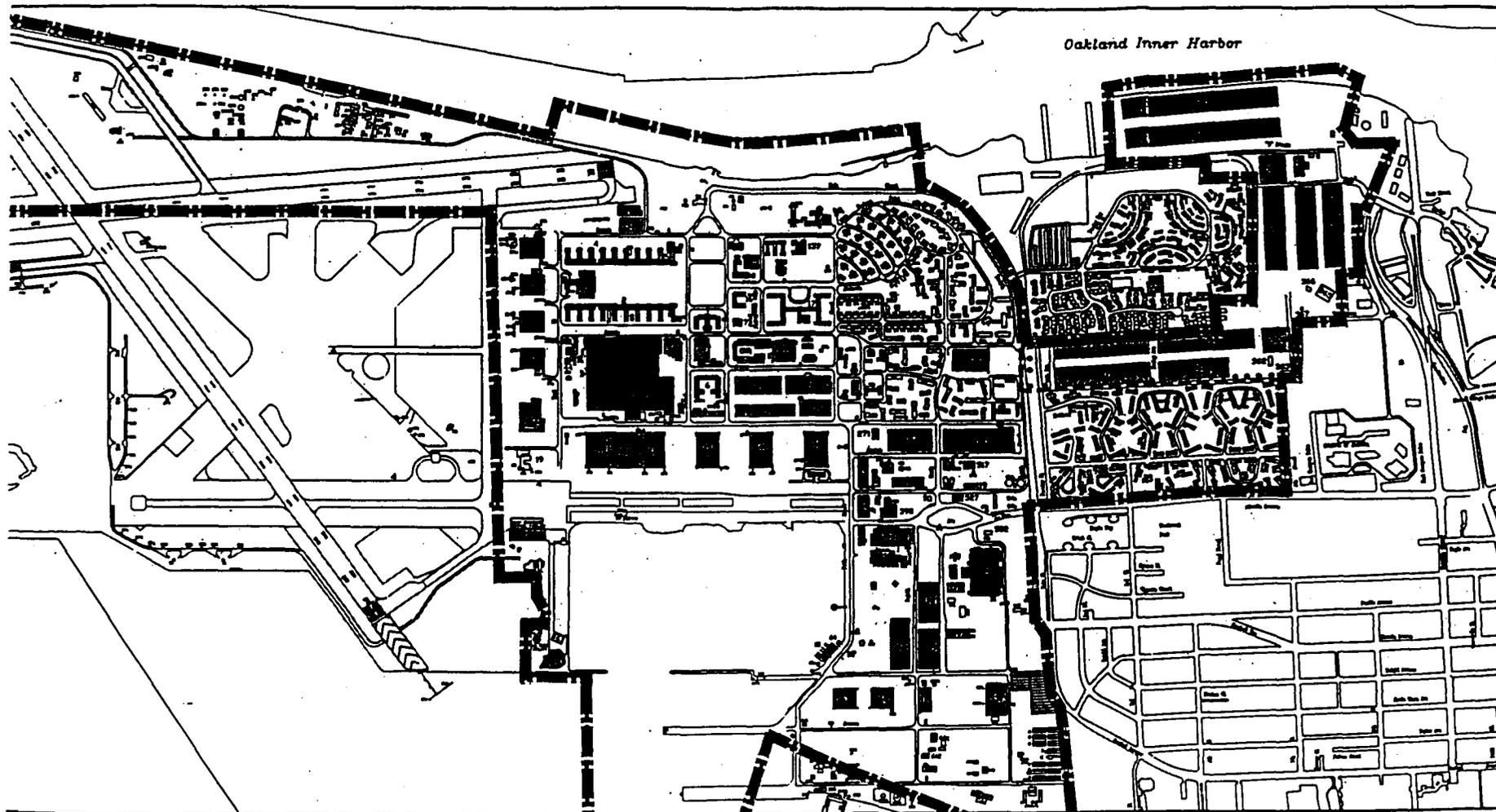
Presiding Officer of the City Council

Attest:



City Clerk

\*\*\*\*\*



Oakland Inner Harbor

**LEGEND:**

 Marsh Crust / Subtidal Area



*Marsh Crust / Subtidal Area*

I, the undersigned, hereby certify that the foregoing Ordinance was duly and regularly adopted and passed by the Council of the City of Alameda in regular meeting assembled on the 15th day of February, 2000, by the following vote to wit:

AYES: Councilmembers Daysog, DeWitt, Johnson, Kerr and  
Mayor Appezzato - 5.

NOES: None.

ABSENT: None.

ABSTENTIONS: None.

IN WITNESS, WHEREOF, I have hereunto set my hand and affixed the official seal of said City this 16th day of February, 2000.



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Diane Felsch, City Clerk  
City of Alameda

*APPENDIX B*  
*PUBLIC COMMENTS*

**RESPONSE TO COMMENTS ON ACTION MEMORANDUM  
PARCELS 170 AND 171, FORMER NAVAL AIR STATION, ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
<b>Department of Toxic Substances Control (DTSC)</b>		
1	<p>The marsh crust as a widespread contaminant type, and Parcels 170 and 171 as a specific geographic area, were excluded from the National Priorities List (NPL). As such, approval is being taken by DTSC under authority provided in Chapter 6.8 of the California Health and Safety Code (H&amp;SC). DTSC has prepared a Draft Removal Action Workplan and Negative Declaration, pursuant to the California Environmental Quality Act, which proposes actions that will establish a remedy for hazardous substances at depth under East Housing (Parcels 170 and 171). The public comment period for DTSC's Removal Action Workplan will run from March 21, 2000 through April 19, 2000. DTSC may change the remedy as a result of comments received during that period.</p>	Comment noted.
<b>U. S. Environmental Protection Agency</b>		
1	<p>U.S. EPA Comments on the former Alameda Naval Air Station Action Memorandum for a Time- Critical Removal Action at East Housing Area-BRAC Parcels 170-171, dated February 18, 2000.</p> <p>U.S. EPA has serious concerns regarding the Navy's apparent intention to implement the institutional controls for the Marsh Crust at East Housing through a time-critical removal. Our concerns are as follows.</p> <p><b>A removal action is not appropriate for the Marsh Crust Institutional Controls.</b></p> <p>a. Selecting the Marsh Crust ICs through a removal action is not consistent with the purpose of removals, and is contrary to the Navy's position that the Marsh Crust contamination does not pose an immediate threat.</p> <p>According to DOD guidance concerning removals, "A removal action typically addresses situations that present an immediate or short-term threat to human health or to the environment, whereas a remedial action typically addresses situations that present a more long-term threat to human health or the environment." <u>Expediting BRAC Cleanups Using CERCLA Removal Authority</u>, Spring 1997.</p> <p>Similarly, U.S. EPA has stated in recent guidance as follows: "In order for the lead agency to make a determination that a removal action is warranted, the lead agency must first make the determination, preferably in the action memorandum, that there is a release or threat of release ... which may present an imminent and substantial danger to public health or welfare." S. Luftig memo dated 2/14/00, referencing CERCLA 42 USC 104(a)(1).</p> <p>Given the Navy's consistent position that the Marsh Crust contamination does not pose a current threat, it is difficult to see how the Navy could justify a removal action to address either "an immediate or short-term threat" or "an imminent and substantial danger."</p> <p>Even with a non-time-critical removal, the decision maker should be able to justify that the threat to human health or the environment is "sufficiently serious that the added time needed to comply with remedial requirements (e.g. completion of a RI/FS and ROD) would be</p>	<p>On (February 18, 2000), the Department of Navy published a notice in the Alameda, California local newspaper announcing the availability of a Draft Action Memorandum and supporting administrative record for a Time Critical Removal Action (TCRA) consisting of an institutional control based upon the City of Alameda proposed Ordinance No. 2824 which was subsequently adopted by the City of Alameda on February 15, 2000 (hereinafter referred to as the "Marsh Crust Ordinance"). The Marsh Crust Ordinance established a local regulatory program for regulating excavations into the subsurface marsh crust contamination in a manner that would protect human health and the environment.</p> <p>On March 14, 2000, USEPA Region IX provided comments to the Navy regarding the Navy's utilization of its CERCLA "time-critical" removal action (TCRA) authority to select a response action for the marsh crust at the NAS Alameda East Housing parcel. More specifically, USEPA Region IX stated that a removal action is not appropriate for Marsh Crust Institutional Controls and that a TCRA is especially inappropriate.</p> <p>The Navy responds as follows to the specific points raised by USEPA: <b>A removal action is appropriate for Marsh Crust Institutional Controls.</b></p> <p style="padding-left: 40px;">a. <u>A removal action addressing the Marsh Crust is consistent with CERCLA authority as well as DoD and USEPA policy.</u></p> <p>The Navy undertakes removal actions pursuant to the authority set forth in Section 104(a)(1) of CERCLA as provided under Executive Order 12580. That authority provides that the President may undertake a removal action "Whenever (A) any hazardous substance is released or there is a substantial threat of such a release into the environment, or (B) there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare,..." There is no legal requirement for an "immediate threat" to public health or the environment to justify taking a removal action. There is no "imminent and substantial danger" or "endangerment" finding required for responding to hazardous substances under Subsection 104(a)(1)(A) of CERCLA.</p> <p>The Navy believes that USEPA Headquarter's removal action policies contradict USEPA Region IX's March 14, 2000 letter. USEPA's removal action policy memorandum titled "Environmental Review Requirements for Removal Actions" (OSWER Directive No. 9318.0-05) specifically states that "removal actions may be taken in response to a threat rather than being limited to an 'immediate and significant' threat. As a result of these changes, removal actions may now be undertaken in less urgent situations than previously."</p> <p>The Navy believes that USEPA Region IX may have misquoted the February 14, 2000 USEPA policy memorandum regarding Non-time Critical Removal Actions signed by Steve Luftig. More specifically, USEPA Region IX appears to have misquoted the policy regarding whether it is necessary to establish "an imminent and</p>

**RESPONSE TO COMMENTS ON ACTION MEMORANDUM  
PARCELS 170 AND 171, FORMER NAVAL AIR STATION, ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
	<p>unacceptable. " Luftig 2/14/00 memo footnote 6. With regard to the Marsh Crust, the Navy has not indicated why the time needed to comply with remedial requirements would be unacceptable. This would be especially difficult to do since the Marsh Crust FS has nearly been completed.</p> <p>b. Selecting the ICs through a removal action is not consistent with the eight removal action considerations found at 40 CFR 300.415(b)(2).</p> <p>Although the action memorandum lists the eight removal considerations found at 40 CFR 300.415(b)(2), there is no indication that most of these considerations were actually taken into account. For example, one consideration is "high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate." U.S. EPA's understanding is that the Navy's position has consistently been that the Marsh Crust contamination does not pose an immediate threat precisely because it is not "at or near the surface." Similarly, there is no indication that the Navy took into consideration "the availability of other appropriate federal or state response mechanisms to respond to the release," especially since the remedial action process is well under way.</p> <p>c. U.S. EPA considers removal actions inappropriate when the selected remedy is institutional controls. For example, U.S. EPA's recent guidance on ICs and federal facilities indicates that the selection of ICs needs to be documented in a ROD or a post-ROD document such as an RD/PA workplan (<u>Institutional Controls and Transfer of Real Property under CERCLA 120(h)(3)(A),(B),or (C)</u> Feb.2000,p.5). When contamination is left in place, the public needs a full opportunity to be informed of the various options under consideration. We realize that the Marsh Crust situation is unique for many reasons, and that the remedy for the Marsh Crust has already progressed through the draft final FS stage and has been discussed extensively between the Navy and the regulatory agencies. U.S.EPA is not concerned that the Navy is choosing an inappropriate remedy. However, we do not support the vehicle being used.</p>	<p>substantial endangerment to public health or welfare" in order to support a removal action determination. USEPA Region IX selectively quoted from Section 104(a)(1)(A) and the latter half of Section 104(a)(1)(B) while failing to note that the "imminent and substantial endangerment" requirement only applied to Section 104(a)(1)(B).</p> <p>In contrast to the Navy, USEPA often includes "imminent and substantial endangerment" findings in its own removal Action Memoranda in order for those documents to serve as administrative record support for enforcement actions undertaken by USEPA pursuant to Section 106(a) of CERCLA. This may be why USEPA's February 14, 2000 policy regarding Non-time Critical Removal Actions (NTRAs) discusses this topic.</p> <p>Assuming arguendo that even if the Navy were required to make such an "imminent and substantial endangerment" finding in its Action Memorandum, there is no need to demonstrate an "immediate or short-term threat" in order to establish an "imminent and substantial endangerment."</p> <p>In addressing this issue in the context of reviewing USEPA enforcement actions under Section 106(a) of CERCLA, Federal courts have long ruled that "if the public health or welfare or the environment <u>may</u> be exposed to a risk of harm, an endangerment <u>may</u> exist...An endangerment is not actual harm (emphasis supplied)." See <u>U.S. v. Conservation Chemical Company</u> 619 F.Supp. 162, 192 (W.D. Mo. 1985) and <u>In Re: Circle Smelting Site ASARCO Incorporated and Federated Metals Corporation</u>; USEPA Environmental Appeals Board (1996 WL 193859).</p> <p>The Spring 1997 DoD policy memorandum titled "Expediting BRC Cleanups Using CERCLA Removal Authority" that was cited and quoted by USEPA Region IX in its March 14, 2000 comments does not purport to establish an "immediate threat" requirement that is inconsistent with CERCLA, the NCP, and USEPA policy as discussed above. The Navy believes that the statement was taken out of context by USEPA Region IX and is merely a generalized "layman's language" introductory statement meant to educate the public on a broad generalized distinction between "removal" and "remedial" response actions. The word "typically" was intentionally used to modify the "immediate threat" statement to make it clear that the statement is a generalization that may not be accurate in a site-specific situation.</p> <p style="text-align: center;">b. <u>Selection of the Marsh Crust Institutional Control is appropriate under the NCP removal action factors found at 40 CFR Section 300.415(b)(2).</u></p> <p>Section 300.415(b)(2) of the NCP lists eight factors to be considered in determining whether a removal action is appropriate. The Navy does not understand USEPA's concerns in that the Navy specifically listed and addressed those factors and stated that they formed the basis for the Navy's determination that a removal action was appropriate.</p> <p>The Action Memorandum specifically identified 40 CFR Section 300.415(b)(2)(i) as articulating the "primary threat" addressed by the removal. This Section of the NCP provides for consideration of the following factor in determining whether a removal action is appropriate: "Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants."</p> <p>This factor is addressed in some detail in Section 4.0 of the Action Memorandum which clearly indicates that the primary threat is the risk of exposure after subsurface excavation into the marsh crust in the course of future development of the property. The City of Alameda had informed the Navy in (-add date) that it had an urgent need to initiate development on the East Housing Parcel in the Spring of 2000 in order to facilitate the transfer of property from the Navy to the Local Reuse Authority (LRA). This created a more immediate threat of exposure to the subsurface Marsh Crust through excavation.</p>

**RESPONSE TO COMMENTS ON ACTION MEMORANDUM  
PARCELS 170 AND 171, FORMER NAVAL AIR STATION, ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
		<p style="text-align: center;"><u>c. Institutional Controls may be selected as a "Removal Action" under CERCLA.</u></p> <p>There is no requirement in CERCLA or the NCP providing that institutional controls may only be selected as a "remedial action" and/or prohibiting selection of institutional controls as a "removal action." Neither USEPA nor DoD policy contain such a limitation or prohibition.</p> <p>The Navy believes that CERCLA provides clear authority for the selection and implementation of institutional controls as "removal actions." "Removal Action" is defined very broadly in Section 101(23) of CERCLA to include, "...such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment,..."</p> <p>In addition, the CERCLA statutory definition of "removal action" specifically provides, "The term includes, in addition, without being limited to, security fencing or <u>other measures to limit access</u>..." (emphasis supplied) Institutional controls are clearly among the "other measures to limit access" covered by the definition. Similarly, Section 300.415(d)(1) of the NCP provides for removal actions consisting of "Fences, warning signs, or other security or <u>site control precautions</u> (emphasis supplied) -where humans or animals have access to the release." There is no similar express language regarding institutional controls in the definition of "remedial action" in Section 101(24) of CERCLA.</p>
2	<p><b>A <u>time-critical</u> removal action is especially inappropriate.</b></p> <p>a. The action memorandum states that the removal action constitutes a time-critical removal as defined in OSWER Directive 9318.0-05. That directive, however, defines a time-critical removal action as an action "initiated in response to a release or threat of release that poses a risk to public health or welfare or the environment, such that <u>cleanup or stabilization actions must be initiated within six months</u> following approval of the action memo." (p. 2, emp. in orig.) The Navy has not demonstrated that the Marsh Crust contamination is such a release or threat of release, and it is difficult to imagine how such a showing could be made, especially given the Navy's persistent statements that there is no immediate threat.</p> <p>b. We are also concerned with the public perception resulting from dealing with the Marsh Crust as a time-critical removal. Labeling an action a time-critical removal indicates that there is an imminent problem which must be dealt with quickly. Both the label ("time critical") and the requirement (that action must be taken within 6 months) inform the public that there is a threat that must be dealt with immediately. That is not the case with regard to the Marsh Crust contamination. In addition, categorizing an action as a, time-critical removal lessens the amount of required documentation and public scrutiny for the action. We believe this is especially inappropriate in cases such as this one in which the contamination is being left in place.</p>	<p><b>A time-critical removal action is appropriate.</b></p> <p>USEPA removal action policy has divided CERCLA removal actions into three broad categories ever since the issuance of the seminal USEPA policy memorandum "Environmental Review Requirements for Removal Actions" (OSWER Directive No. 9318.0-05) dated April 13, 1987:</p> <ul style="list-style-type: none"> <li>a. Emergency removal actions</li> <li>b. Time-critical removal actions (TCRAs).</li> <li>c. Non-time critical removal actions (NTCRAs).</li> </ul> <p>This policy has not been rescinded or superceded by USEPA and continues to form the policy basis for the current removal action community relations provisions set forth in the NCP at 40 CFR Section 300.415(n). DoD generally adheres to this policy.</p> <p>Once sufficient risk is established to warrant a non-emergency removal action, the distinction between the TCRA and NTCRA is based in part upon the length of the planning period preceding the execution of the cleanup. If the planning period is less than six months, a TCRA is appropriate. If the planning period is greater than six months, a NTCRA and preparation of an Engineering Evaluation/Cost Analysis (EE/CA) is required.</p> <p>USEPA guidance at OSWER Directive No. 9318.0-05 and the Federal courts have both addressed the factors to be considered in evaluating the length of the removal action planning period for purposes of selecting between the TCRA and NTCRA categories and procedures. OSWER Directive No. 9318.0-05 provides that "This six month time frame within which response must be initiated is based upon the determination that a threat exists that must be addressed within six months of approval of an Action Memorandum. This determination is independent of the question of resource or contractor availability to actually commence the action within that time frame, or delays due to unexpected weather conditions, etc. Thus if initiation of a time-critical action is delayed past six months for these reasons, it is still considered time-critical for the purposes of NEPA compliance."</p> <p>Citing to these provisions of OSWER Directive No. 9318.0-05, the Federal District Court in <u>Environmental Health Coalition v. John Dalton</u> (Civil No. 96-947-BTM(CM), August 12, 1996) addressed the legality of a Navy TCRA undertaken to address an IR Site upon which a BRAC realignment construction project had been planned.</p>

**RESPONSE TO COMMENTS IN ACTION MEMORANDUM  
PARCELS 170 AND 171, FORMER NAVAL AIR STATION, ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
		<p>The Court ruled that the time-critical nature of the removal action in that case was not lost because of the Navy's need to adhere to a construction schedule for a BRAC realignment project atop the IR site which could not accommodate a removal action planning period of six months or greater. The need to expedite the removal action to ensure the availability of funds and contractor resources for construction did not deprive the removal action of its time-criticality. USEPA Office of General Counsel personnel were instrumental in recommending that the Department of Justice base their successful legal arguments defending the TCRA in that case on OSWER Directive No. 9318.0-05.</p> <p>In the instant case, the threat posed by the contaminants in the Marsh Crust is time-critical because of imminent redevelopment of the East Housing Parcel by the LRA and the associated threat of Marsh Crust hazardous substances being excavated and brought to the surface creating a potential for human exposure and illegal disposal. The regulatory timeframes required for following NTCRA or remedy selection procedures should not be a factor in evaluating the time-criticality of the threat. Because the Marsh Crust Ordinance had already been enacted by the City, the removal action planning period was very short. There was no need for additional planning or design before publication of the draft Action Memorandum for public comment. Therefore, the time-criticality and planning period requirements for TCRA were satisfied.</p>
3	<p><b>There has been insufficient communication with U.S. EPA and the other regulatory agencies.</b></p> <p>U.S. EPA is concerned regarding the lack of communication with U.S. EPA regarding using the removal action memorandum as the vehicle for selecting the Marsh Crust institutional controls. During the several months during which Marsh Crust issues have been discussed, our understanding was that the remedies would be analyzed in an FS and finalized in a RAP/ROD. While this process has progressed more slowly than we had hoped, we are now at the draft final FS stage, and the Navy should be able to progress to a RAP/ROD very expeditiously.</p>	<p><b>There has been sufficient communication with the regulatory agencies and suitable public participation.</b></p> <p>There was adequate communication with the regulatory agencies concerning this removal action. DTSC initiated its own removal action planning efforts in late 1999 to develop and publish a Removal Action Workplan (RAW) for public comment proposing the selection of the Marsh Crust Institutional Control as a removal action under CERCLA, the NCP, and State law. The Navy subsequently decided to follow the same regulatory course of action.</p> <p>The public was not deprived of the opportunity to participate in the selection of the Marsh Crust Institutional Control. In addition to the City of Alameda's own public proceedings to enact the Marsh Crust Ordinance, the Navy published a notice in the local newspapers on (February 18, 2000) regarding the availability of the administrative record for the TCRA (including the draft Action Memorandum) for public review and comment for the thirty day time period required by 40 CFR Section 300.415(n)(2)(ii). The NCP provides for the same amount of time for public review and comment on a CERCLA Proposed Plan for remedial action—thirty days (40 CFR Section 300.430(f)(3)(i)(C)). The documentation included in the administrative record for the TCRA included RI and FS reports addressing the marsh crust contamination that had been available in the basewide administrative record for some time and had been circulated for review and comment by the BCT, RAB, and the local community.</p>
4	<p><b>The large number of "competing" remedy selection documents could cause confusion and unnecessary expenditures.</b></p> <p>We are concerned that with so many "competing" decision documents being drafted -- the RAP/ROD, the Removal Action Memorandum, and the State Removal Action Workplan -- there could be significant public confusion and loss of confidence that the property is being remediated and transferred in an orderly fashion, as well as unnecessary expenditures of financial resources and review time by the Navy as well as by the regulatory agencies. DOD guidance specifies that the BEC shall work with U.S. EF-A and State BCT members at closing installations to decide when to implement a removal action and to ensure that all the requirements are met, including the community relations activities. (<u>Expediting BRAC Cleanups</u>, cited above). This was not done with regard to the removal decision.</p>	<p>The Navy appreciates this comment, but points out that these documents have arisen from different authorities in response to different regulatory requirements. The Navy and DTSC had initially discussed the possibility of a joint document, however, the resulting schedules differed, and the documents were prepared independently. The Navy strives to work together with the BCT members to accomplish the transfer and closure as expeditiously as possible while minimizing significant environmental impacts.</p>

**RESPONSE TO COMMENTS ON ACTION MEMORANDUM  
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REF	COMMENT	RESPONSE
5	<p><b>Specific problems with the removal action memorandum:</b></p> <p>A specific problem we have with the Removal Action Memorandum is its statement that the primary concern with regard to the Marsh Crust is the construction worker scenario (p. 1- 12). This is not consistent with the statements in the draft final FS that the primary threat would be if contaminated soil were brought to the surface and disposed of without controls. This has been discussed at length among the Navy and the regulatory agencies.</p>	<p>The Navy agrees with this comment. Although exposure of construction workers to excavated contaminated soil is a concern, the primary concern is for human receptors that would be exposed over the long term to contaminated soil that has been brought to the surface. This issue has been clarified in Section 1 of the Action Memorandum.</p>
<p><b>Patrick G. Lynch, P.E., Clearwater Revival Company</b></p>		
1	<p>Current Site Conditions According to the Action Memorandum the basis for the time-critical removal action is:</p> <p style="padding-left: 40px;">“40 CFR Section 300.415(b)(2)(1): Actual or potential exposure to nearby populations, animals, or food chains from hazardous substances or pollutants or contaminants.</p> <p style="padding-left: 40px;">The primary potential threat associated with the marsh crust is related to the risk of a construction worker who is excavating the soil.” [p.1-6]</p> <p>According to 40 CFR 300.415(a)(1):</p> <p style="padding-left: 40px;">“In determining the appropriate extent of action to be taken in response to a given release, the lead agency shall review ... <u>current site conditions</u>, to determine if a removal action is appropriate.” (emphasis added)</p> <p>There are no construction workers currently excavating soil from the marsh crust at the East Housing toxic waste release site. The potential threat associated with the marsh crust, future construction work, is therefore not a <u>current site condition</u>.</p> <p>At the March 7, 2000, Alameda Point Restoration Advisory board meeting, Michael McClelland, US Navy, indicated that the actual purpose of the time-critical removal action was to facilitate transfer of Navy property to the City of Alameda. The Navy’s basis for conducting a time-critical removal action is a future site condition. The Action Memorandum therefore misrepresents the basis for the time-critical removal action.</p> <p>The Navy’s proposed non-time critical removal action is clearly illegal under federal law. Federal law is explicit. <u>Current site conditions</u> are the basis for determining the appropriateness and extent of a removal action.</p>	<p>The Navy believes that the marsh crust contaminants currently exist at the site. However, given the nature of the site and the contaminants, the contaminants are isolated and contained by the overlying soil. This situation represents the current site conditions. The presence of the marsh crust contaminants at depth does not represent an actual exposure pathway. The contaminants present a potential exposure pathway, if excavation or other construction activities occur that could bring the contaminants to the surface.</p> <p>Without institutional controls to prevent uncontrolled intrusion into the marsh crust, excavation of the marsh crust contaminants and placement on the surface would complete the exposure pathway. Therefore, the institutional controls are intended to prevent improperly controlled excavation or construction activities. Since the City of Alameda has indicated that redevelopment activities are imminent, the time-critical removal action is the appropriate mechanism for addressing this situation.</p> <p>Also, the Navy has found no evidence that toxic wastes were disposed of or released at the East Housing parcels. Therefore, the Navy does not refer to these parcels as the East Housing toxic waste release site. The evidence strongly suggests that fill material was placed on top of the existing marsh crust contaminants.</p>

**RESPONSE TO COMMENTS ON ACTION MEMORANDUM  
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REF	COMMENT	RESPONSE
	<p>Legal Definition of Removal According to 42 U.S.C. 5121 et seq.:</p> <p>The terms "remove" or "removal" means the cleanup or removal of released hazardous substances from the environment, such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under section 9604(b) of this title, and any emergency assistance which may be provided under the Disaster Relief and Emergency Assistance Act.</p> <p>The U.S.C. does not explicitly refer to institutional controls in defining removal actions. Similarly, 40 CFR 300.415(e) which provides a general rule for appropriate removal actions, does not list institutional controls. While it is a stretch to consider an institutional control such as the marsh crust ordinance as a removal action, the U.S.C., does explicitly consider the sampling of the marsh crust and the disposal of the removed material to constitute a removal action.</p> <p>Therefore, the removal action does not include the placement of an institutional control since the requirements of the marsh crust ordinance are already codified in state and federal laws. Instead the removal action consists of all sampling and soil disposal actions taken to comply with existing state and federal laws into perpetuity. Because the removal action will continue for decades, the removal action would exceed the statutory limits for cost and duration of removal actions.</p>	<p>The cited reference includes the statement, "The term includes, in addition, without being limited to, security fencing or other measures to limit access,..." (emphasis supplied). The institutional controls selected in this Action Memorandum are clearly measures that limit access to the underlying contaminants.</p> <p>Further, the reference is not intended to be an exclusive list of removal techniques, as evidenced by the statement, "...without being limited to,..."</p> <p>The removal action requires that sampling only takes place when intrusive subsurface activities take place that could potentially bring contaminants to the surface.</p>
2	<p>Six Month Planning Period Available</p> <p>The proposed removal action has been planned since February 20, 1999, when the Draft Base-wide focused Feasibility Study for the Former subtidal Area and Marsh Crust and Groundwater was published. The proposed time-critical removal action for East Housing is no different than the alternative proposed by this February 1999 Focused Feasibility Study for the entire marsh crust. The Navy has been planning this action for over 12 months. It is appropriate that any removal action at the East Housing Area be conducted under 40 CFR 300.415(n)(4) because a planning period of six months was available to the Navy. An Engineering Evaluation/Cost Analysis must be prepared, public hearings must be held, and responses to public and agency comments must be prepared prior to initiating on-site activities.</p>	<p>The need for the time-critical removal action is necessitated by the City of Alameda's indication that it intends for Catellus Development Corporation to begin redevelopment of the East Housing area.</p> <p>Lacking the institutional controls of the Marsh Crust Ordinance and this Action Memorandum, there would be no precautions in place to prevent the inadvertent contamination of surface soils following any excavation or other construction activities that penetrate the marsh crust.</p>

**RESPONSE TO COMMENTS ON ACTION MEMORANDUM  
PARCELS 170 AND 171, FORMER NAVAL AIR STATION, ALAMEDA POINT, ALAMEDA, CALIFORNIA**

REF	COMMENT	RESPONSE
3	<p>Six Month Planning Period Available</p> <p>The proposed removal action has been planned since February 20, 1999 when the Draft Base-wide Focused Feasibility Study for the Former Subtidal Area and Marsh Crust and Groundwater was published. The proposed time-critical removal action for East Housing is no different than the alternative proposed by this February 1999 Focused Feasibility Study for the entire marsh crust. The Navy has been planning this action for over 12 months. It is appropriate that any removal action at the East Housing Area be conducted under 40 CFR 300.415(n)(4) because a planning period of six months was available to the Navy. An Engineering Evaluation/Cost Analysis must be prepared, public hearings must be held, and responses to public and agency comments must be prepared prior to initiating on-site activities.</p>	<p>The need for the time-critical removal action is necessitated by the City of Alameda's recent indication that it intends for Catellus Development Corporation to begin redevelopment of the East Housing area.</p> <p>The time-critical removal action is necessary to prevent the inadvertent contamination of surface soils following any excavation or other construction activities that penetrate the marsh crust.</p>
4	<p>Initial Action; not final Action</p> <p>According to the Action Memorandum, the proposed time-critical removal action:</p> <p style="padding-left: 40px;">"...will ensure that no further action will be required in order to support the covenant that 'all remedial action necessary to protect human health and the environment with respect to' the hazardous substances in the marsh crust remaining on the property has been taken before the date of transfer of the Alameda Point East Housing Area... (p. 7-4)</p> <p>To the contrary, the effect of the time-critical removal action is to delay indefinitely the remedial actions necessary to protect human health and the environment until some date following transfer.</p>	<p>The time-critical removal action is a final action. Further remedial actions will be necessary only if excavation or other construction activities occur that penetrate to the marsh crust with the potential to bring contaminants to the surface.</p> <p>This action relies on the effective containment and isolation of the marsh crust contaminants beneath the overlying soil.</p>
5	<p>Failure to Contact responsible Parties</p> <p>The Navy has determined that Pacific Gas and Electric Company, and Chevron Oil Company are the responsible parties for the marsh crust contamination found in the East Housing Area (Tetra Tech EM Inc., 2000, Draft Final Feasibility Study for the Marsh Crust and Groundwater at Fleet Industrial Supply Center Oakland, Alameda Facility/Alameda Annex and Feasibility Study for the Marsh Crust and Former Subtidal Area at Alameda Point, <u>Draft Final</u>," January 6).</p> <p>According to 40 CFR 300.415(a)(2) the Navy was required to determine whether these corporations could and would perform the necessary removal action promptly and properly. What efforts did the Navy make to contact the responsible parties?</p>	<p>According to 40 CFR 300.415(a)(2), the Navy should make an effort to the extent practicable to determine whether they can and will perform the necessary removal action promptly and properly.</p> <p>The Navy believes that tracking down the original responsible parties will not provide any benefit to the resolution of the conditions at the site, but would instead delay efforts and prolong the potential for a future exposure.</p>
6	<p>Timing of Removal Action</p> <p>Under Federal law the Navy was required to begin a removal action as "soon as possible" [40 CFR 300.415(3)] after determining a removal action was appropriate. The Action Memorandum does not provide any data that the 10 primary chemicals of concern have ever been found in samples from the marsh crust at the East Housing toxic waste release site. Instead the Action Memorandum infers that the marsh crust contamination exists beneath East Housing based on the results of sampling conducted in 1994 from other Navy toxic waste sites.</p> <p>In other words the Navy will begin a time-critical removal action at the East Housing toxic waste site five years after the Navy collected environmental data that determined a removal action was appropriate.</p>	<p>The Navy has pursued this action as a time-critical removal action, based on the City of Alameda's recent indications that redevelopment of the area is scheduled at an accelerated pace. The time-critical removal action is needed to avoid the possibility that marsh crust contaminants are inadvertently brought to the surface as the result of uncontrolled construction activities.</p>
7	<p>Extent of Removal Action</p> <p>East Housing toxic waste release site consists of 63 acres of the over 700 acre marsh crust and</p>	<p>This time-critical removal action has been developed to address future conditions to prevent future exposure scenarios resulting from construction activities that penetrate the marsh crust contaminants. It has not been developed to correct alleged activities at other locations at Alameda Point.</p>

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REF	COMMENT	RESPONSE
	<p>subtidal area. With the notable exception of East Housing, the Marsh Crust and Subtidal area has been the site of significant construction activity by the Navy, the City of Alameda, and utility companies since 1994. Why has a removal action similar to the one proposed for East Housing never been undertaken in the other 600 plus acres of the marsh crust and subtidal area?</p> <p>Since 1994, the Navy has failed to comply with 40 CFR 300.415 in performing construction work within the Marsh Crust and Subtidal Area. A June 30, 1998, letter from CRC to the Alameda Point Base Cleanup Team requested that the Navy comply with 40 CFR 300.415 during excavation of fuel lines at Installation Restoration sites located in the marsh crust and subtidal area.</p> <p>Since 1994, the marsh crust contamination has been repeatedly brought to the surface without proper health and safety procedures and proper environmental controls. A considerable volume of soil containing marsh crust contamination was disposed of in two abandoned water tanks located along the Alameda/Oakland Estuary. A considerable volume of soil containing the marsh crust contamination was disposed of in off-site class II landfills though the marsh crust contamination is listed RCRA waste that is banned from land-filling. Therefore much of the disposal of marsh crust contamination has been illegal.</p> <p>Based on the Action Memorandum, significant impacts to public health and the environment would have resulted from this construction work and the improper disposal of marsh crust contamination. In fact, significant impacts to human health and the environment have occurred. Perhaps the best indicator of the lack of proper controls and disposal procedures is the absence of any sampling for polynuclear aromatic hydrocarbons during construction activities that have already taken place throughout the marsh crust and subtidal area.</p>	
8	<p>Failure to consider Community Acceptance</p> <p>The intended purpose of the time-critical removal action is to further delay the Navy's response to community comments on the marsh crust remedy which the navy received from CRC on March 19, 1999, and February 17, 2000. CRC's comments addressed several technical inadequacies in the Feasibility Study that remain un-addressed. Until a rationale response to CRC's comments are prepared it is highly probable that actions necessary to protect public health and the environment will be required following transfer of the property to the City of Alameda.</p>	The Navy seeks to address and resolve all comments, as evidenced by the responses to comments provided here.
9	<p>Technical Impracticability of Marsh Crust Ordinance</p> <p>Many community members have noted that the marsh crust ordinance misappropriates Navy removal action costs onto the City of Alameda and others. These costs represent a significant burden that would discourage compliance with the conditions of the marsh crust ordinance. For example:</p> <p>On October 18, 1999, an emergency response occurred at Alameda Naval Air Station to address an unlabeled, uncovered and leaking container that stored radioactive contaminated soil excavated from the threshold depth of the marsh crust. The emergency response at Building 5 Radioactive Material Removal Action was necessary because containers (roll-off boxes) designed for solid waste were used to store a RCRA liquid waste. Soils contaminated by the marsh crust are found below the groundwater table and when excavated contain "free liquids."</p>	<p>This time-critical removal action has been developed to address future conditions to prevent future exposure scenarios resulting from construction activities that penetrate the marsh crust contaminants. It has not been developed to correct alleged activities at other locations at Alameda Point.</p> <p>The Navy would like to point out that the institutional control selected in this Action Memorandum is considerably more practical than the alternatives of excavating and disposing or treating on-site the marsh crust contaminants.</p>

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	<p>In order to remove "free liquids" from these solid waste containers, the Navy treated, without RCRA authorization, the radioactive and contaminated soil by uncontrolled aeration. The unlabeled containers of radioactive and marsh crust contamination were left uncovered in a publicly accessible area to allow moisture, together with radon, chlorinate solvents and marsh crust contaminants, to volatilize into the atmosphere.</p> <p>Containers are not available to store bulk RCRA liquid hazardous wastes with the high solids content found in the marsh crust contamination. The use of drums, with a 0.25 cubic yard capacity, would be impractical for managing large volumes of marsh crust contamination.</p>	
10	<p>Removal Action and Development Incompatible</p> <p>The removal action is intended to accommodate redevelopment including the installation of new infrastructure. It is CRC's opinion that the nature of contamination found in the marsh crust prohibits the use of thermoplastic piping/conduit for buried utilities. The fire service lines, sanitary sewers, and water supply systems in the new development would be subject to frequent failure due to deterioration of piping caused by the marsh crust. The failure of fire services, and sanitary sewers would represent a threat to public safety and the environment. Emergency repairs would be delayed by requirements of the marsh crust ordinance.</p> <p>In order to ensure that public health and safety, and the environment are protected by the removal action, please identify thermoplastics that are compatible with the marsh crust contamination, and explain why the use of compatible construction materials is not currently a condition of the City of Alameda marsh crust ordinance.</p>	This comment is noted.
11	<p>Closing</p> <p>The US Navy has caused or permitted contamination of the marsh crust. Therefore, the US Navy has not only a legal, but an ethical and moral obligation to cleanup the contamination in a manner that at a minimum, protects human health and the environment and minimizes burdens on future generations. I am disappointed that the US Navy remains unwilling to meet this obligation in its former host community of Alameda.</p>	<p>Given the alternatives available for the site, including the massive excavation and transportation of contaminated soil through Alameda, the Navy has determined that the institutional controls selected in this Action Memorandum is the most practical and desirable in terms of the protection of human health and the environment. The overlying soil is effectively containing and isolating the marsh crust contaminants.</p>