

**Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway, Building 127, Room 112
San Diego, California 92132-5190**

**ACTION MEMORANDUM
January 18, 2002**

**CERCLA TIME-CRITICAL REMOVAL ACTION
INSTALLATION RESTORATION SITE 25
ALAMEDA POINT
ALAMEDA, CALIFORNIA**

DCN: FWSD-RAC-02-0403

**Site Status: National Priorities List
Category of Removal: Time-Critical Removal Action
CERCLIS ID: CA2170023236
Site ID: Operable Unit 5, Installation Restoration Site 25**

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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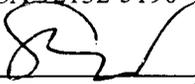
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INSTALLATION RESTORATION SITE 25

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INSTALLATION RESTORATION SITE 25

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ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
AM	Action Memorandum
ARAR	applicable or relevant and appropriate requirement
BCT	BRAC cleanup team
bgs	below ground surface
BRAC	Base Realignment and Closure
Ca-HSC	California Health and Safety Code
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
DoD	Department of Defense
DON	Department of the Navy
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EPA	U.S. Environmental Protection Agency
IR	Installation Restoration
IRP	Installation Restoration Program
LDR	land disposal restriction
mg/kg	milligrams per kilogram
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PRG	Preliminary Remediation Goal
PRP	potentially responsible parties
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TBC	to be considered

ABBREVIATIONS AND ACRONYMS

(Continued)

TCLP	Toxicity Characteristic Leaching Procedure
TCRA	Time-Critical Removal Action
TEF	toxicity equivalency factor
TEQ	Toxic Equivalent
USC	United States Code
VOC	volatile organic compound

**Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, California 92132-5190**

January 18, 2002

**SUBJECT: ACTION MEMORANDUM FOR CERCLA TIME-CRITICAL REMOVAL
ACTION AT INSTALLATION RESTORATION SITE 25, ALAMEDA
POINT, ALAMEDA, CALIFORNIA**

**Site Status: National Priorities List
Category of Removal: Time-Critical Removal Action
CERCLIS ID: CA2170023236
Site ID: Operable Unit 5, Installation Restoration Site 25**

1.0 PURPOSE

The purpose of this Action Memorandum (AM) is to document, for the Administrative Records, the Department of the Navy's (DON's) decision to undertake a Time-Critical Removal Action (TCRA) for soils containing elevated levels of polynuclear aromatic hydrocarbons (PAHs) within Operable Unit-5 [synonymous with Installation Restoration (IR) Site 25]. IR Site 25 is located within the National Priorities List-listed portion of the former Naval Air Station (NAS) Alameda. The Department of Defense (DoD) has the authority to undertake Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) responses including removal actions under 42 United States Code (USC), Section 9604, 10 USC, Section 2701, and Federal Executive Order 12580. This proposed TCRA is consistent with Chapter 6.8 of the California Health and Safety Code (Ca-HSC).

The DON, with federal regulatory oversight by the U.S. Environmental Protection Agency (EPA), is the lead agency for implementing the proposed TCRA. The DON and EPA are working in cooperation with the California Department of Toxic Substances Control (DTSC), Regional Water Quality Control Board (RWQCB) for the San Francisco Bay region, and the City of Alameda. The DON is also working in cooperation with the Alameda Reuse and Redevelopment Authority through the Base Realignment and Closure (BRAC) cleanup team (BCT), the Restoration Advisory Board (RAB), and the public to implement this removal action.

The proposed TCRA includes the excavation and off-site disposal of soil with elevated levels of PAHs from a DON-owned parcel within IR Site 25 that is currently utilized as a Coast Guard

housing area. The goal of this proposed TCRA is to substantially eliminate the potential pathways of exposures to current on-site residents, construction workers, and possible ecological receptors. The DON is expediting this removal action at this time to mitigate potential risk. The TCRA will remove and replace 2 feet of surface soil within the site boundary. The lateral and vertical extent of the TCRA is based on an action level of 1.8 milligrams per kilogram (mg/kg) of benzo(a)pyrene equivalents as determined by the DON. The total cancer risk from the PAH compounds is based on the toxicity equivalency factor (TEF) approach (EPA, 2001). TEFs are estimates of the carcinogenic potency of each PAH compound relative to benzo(a)pyrene (the most potent carcinogenic PAH).

Groundwater contamination has been reported at the site; however, this TCRA and AM only address the soil contamination. The DON is currently finalizing the Remedial Investigation Report for IR Site 25, including risk assessment studies that will identify and address the need for further action.

The proposed removal action for the site is deemed consistent with 1) the factors set forth within the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Title 40 Code of Federal Regulations (40 CFR), Part 300, and 2) Ca-HSC, Section 6.8 based on the findings regarding potential exposure of nearby human populations to pollutants or contamination. Neither nationally significant nor precedent-setting issues exist for the site.

2.0 SITE CONDITIONS AND BACKGROUND

The TCRA area is currently a Coast Guard housing complex located within IR Site 25 at Alameda Point, Alameda, California. IR Site 25 is located within the National Priorities List-listed portion of the former NAS Alameda. The IR Site 25 area is approximately 42 acres and was divided by the Alameda Point Environmental Baseline Survey (EBS) into three parcels [181, 182 (Estuary Park), and 183]. The TCRA area is located entirely within EBS Parcel 181 and is approximately 14 acres (Figures 2-1 and 2-2). The following information provides a brief overview of the site and previous investigations.

2.1 SITE DESCRIPTION

2.1.1 Removal Site Evaluation

Previous investigations have identified historical industrial operations in the Alameda Point area that were in operation from approximately 1864 through 1930. These included a manufactured gas plant located on the Oakland waterfront and an oil refinery (Pacific Coast Oil Works) on the pre-fill tip of Alameda Point. The manufactured gas plant used crude oil as a raw material and was in operation from 1903 to 1930. The oil refinery that was in operation from 1864 to 1899. Releases of oils and byproducts associated with these industrial operations are believed to have resulted in widespread contamination of the former Oakland Inner Harbor shoreline and tidal flats.

From 1887 to 1939, several filling operations, which used hydraulically placed dredged materials from the San Francisco Bay and Oakland Inner Harbor area for the purpose of creating land at Alameda Point, were also in progress. These filling operations resulted in 1) the possible placement of hydrocarbon-contaminated soils upon the TCRA site and 2) trapping of contamination in place resulting in a zone of elevated PAHs and petroleum hydrocarbons described as the "marsh crust." The first documented filling operation (1887 to 1915) occurred along the northern border of the IR Site 25 area. A second event (1930 to 1939) encompassed the entire IR Site 25 area.

In 1930, the U.S. Army acquired land at Alameda Point from the City of Alameda. In 1936, the DON acquired title to the land. After the entry of the U.S. into World War II, additional acreage was acquired and land was created by additional hydraulic fills. In 1982, the DON began site investigations at Alameda Point under the DON Assessment and Control of Installation Pollutants program. An initial assessment study was conducted to assess the entire installation and to identify where chemicals may have impacted soil or groundwater. Further characterization studies were then performed at sites identified by the initial assessment study.

In 1988, the DON received a remedial action order from the California Department of Health Services, now known as the DTSC. Remedial Investigations and Feasibility Studies were conducted on 23 sites on Alameda Point between 1988 and 1995.

In 1994 and 1995, site investigations were conducted that included the collection of soil and soil gas samples in EBS Parcel 181 (15 surface soil samples, 1 subsurface soil sample, and 17 soil gas samples). According to previous investigations, soil samples did not reveal any significantly elevated concentrations of Contract Laboratory Program (CLP) metals, CLP pesticides/polychlorinated biphenyls (PCBs), or total petroleum hydrocarbons (purgeable and extractable). Volatile organic compounds (VOCs) were not detected in the soil gas. PAHs were not sampled because they were not expected to be of concern in the area (Neptune, 2001).

In 1997 and 1998, IR Site 24 and former IR Site 25 (Estuary Park) were added to the IR program. Since that time, the Remedial Investigation/Feasibility Study area at Estuary Park has been expanded to encompass the area now defined as IR Site 25 that includes the TCRA area. Estuary Park, located in EBS Parcel 182, is not included in this TCRA and remediation will be undertaken as a separate action, as will the remainder of the IR Site 25 area.

In February 1999, 36 soil samples (21 surface and 15 subsurface) were collected in addition to several HydroPunch samples within EBS Parcel 181. In April of 1999, 33 additional surface soil samples were collected. Elevated PAH levels were detected in the northern part of EBS Parcel 181; however, concentrations appeared to decrease in the southern and eastern portion of the site. Benzo(a)pyrene-equivalent concentrations were calculated using the EPA toxicity equivalent factors for the seven carcinogenic PAHs, and these data were plotted on contour maps. Review of the data verified the PAH concentration trends; however, additional data was needed to resolve the variability of the PAH concentrations for the purpose of supporting risk exposure evaluations. In June 2001, additional soil sample locations were identified in EBS Parcel 181, and 168 locations were sampled for PAHs. Seventy-eight samples were collected within the proposed TCRA area. Data analyses of all 168 soil samples are underway and will be incorporated into the Remedial Investigation Report for the IR Site 25 area.

As described above, PAHs pose a concern with respect to the impacted soil at IR Site 25. Consistent with the current approach developed by the DON and regulatory agencies, and as described in detail in Section 3.0, an action level of 1.8 mg/kg benzo(a)pyrene equivalents has been established for PAHs as the cleanup goal for the lateral extent of the TCRA. A complete risk assessment will be prepared after the removal action is complete and will include an evaluation of groundwater and remaining PAHs in the soil. This decision was made with the understanding that the interim TCRA would eliminate immediate current resident exposure pathways to contaminated soil to a depth of 2 feet.

2.1.2 Physical Location

Alameda Point (formerly NAS Alameda) is located on the west end of Alameda Island, which lies approximately 10 miles east of San Francisco on the east side of San Francisco Bay, adjacent to the City of Oakland. Alameda Point is approximately 2 miles long from east to west and 1 mile long from north to south. Alameda Point occupies approximately 1,700 acres of land within the City of Alameda, Alameda County, California, and a portion of the City and County of San Francisco, California.

The Bay Area experiences a maritime climate with mild summer and winter temperatures. Because of the varied topography of the Bay Area, climatic conditions vary widely in proximate areas. Heavy fog occurs an average of 21 days per year. Based on data from the nearest weather station (Oakland Museum), the mean annual precipitation in the area is 23.41 inches. Most rainfall occurs between the months of November and April. Mean low and high temperatures are 52 degrees Fahrenheit (°F) and 67°F, respectively. The wind direction is predominately from the southeast and northwest. The NAS Alameda runway directions are direct indicators of the prevailing winds. The installation does not have naturally occurring surface streams or ponds, so precipitation either returns to the atmosphere by evaporation and transpiration, runs off in the storm drain system that drains north into the Oakland Inner Channel, or infiltrates into the soil.

The U.S. Army acquired the western tip of Alameda Island in 1930 from the City of Alameda. In 1936, the DON acquired title to the land from the U.S. Army and began building NAS Alameda in response to the military buildup in Europe before World War II. Construction included the continuation of filling natural tidelands, marshes, and sloughs between the Oakland Inner Harbor and the western tip of Alameda Island. During the war, the DON acquired additional land for the installation. Following the end of the war, the installation continued its primary mission of providing facilities and support for the fleet aviation activities. During its operation as an active military base, the installation provided berthing for the Pacific Fleet ships and was a major center for naval aviation.

In 1993, NAS Alameda was identified for closure, and in 1997, the base ceased all naval activities. The DON continues to lease property to the U.S. Coast Guard that currently houses Coast Guard families. The DON is currently in the process of returning the land to the City of Alameda and the U.S. Fish and Wildlife Service.

2.1.3 Site Characteristics

The TCRA site is located entirely within EBS Parcel 181 and occupies approximately 14 acres. The site consists of a housing area occupied by approximately 21 multiple-unit structures and open parking areas. Structures and cement or asphalt paving occupy approximately 4 acres of the site. The remaining 10 acres of the site are open space covered with vegetation and soil that is proposed for excavation. The TCRA site is bordered by Estuary Park (EBS Parcel 182) to the north and west, EBS Parcels 178 through 180 to the south, and the remaining area of EBS

Parcel 181 to the east and west (Figure 2-2). As described in previous sections, the original area of IR Site 25 was tidal flats and marshland areas that were subsequently filled with dredge materials from the San Francisco Bay and Oakland Inner Harbor.

2.1.4 Release or Threatened Release of a Hazardous Substance, Pollutant, or Contaminant Into the Environment

Previous site investigations have documented the presence of PAHs in the soil. The origin of the contamination appears to be associated with historical releases of petroleum hydrocarbon compounds from industrial operations into the former Oakland Inner Harbor shoreline and tidal flats and the placement of contaminated fill within the IR Site 25 area. PAHs are a class of very stable organic molecules made up of only carbon and hydrogen. The carbon atoms form hexagonal "rings" to which hydrogen atoms are attached. These rings are fused together in a variety of configurations, with each configuration representing a specific PAH. The structures and properties of the various PAHs differ based on the amount and arrangement of the rings, which can number from two to ten or more. PAHs can be formed as products of the incomplete oxidation (burning) of organic materials and are present in considerable quantities in fossil fuels. These molecules are considered carcinogenic, but they are also very common. Sources of environmental PAHs include power plants, domestic heating systems which burn oil, coal or wood, gasoline and diesel engines, waste incineration, various industrial activities, and tobacco smoke. Moreover, petroleum refining processes contribute to localized loadings of PAHs into the environment through industrial effluents from coal gasification and liquefaction processes and accidental spillage of raw and refined petroleum.

As stated before, the TCRA site contains 21 multiple-unit structures that house Coast Guard personnel and families. The units are approximately 80 percent occupied. The units have common areas, playgrounds, and lawns.

The immediate exposure media of concern at the TCRA site is surface soil. This is because the current residents potentially could be exposed to PAHs in the soil through dermal contact, incidental ingestion, and inhalation of windblown soil particulates. Exposure via plant uptake was not considered because the consumption of produce from home gardens was anticipated to be a very small portion of annual food consumption based upon the small areas available for such gardens. The 7 percent portion of the annual diet assumed in produce uptake risk calculations cannot be supported by the limited area available. This exposure pathway will be assessed in the IR Site 25 Remedial Investigation Report. The DON will request the Coast Guard to place interim restrictions on gardening or planting of vegetables and/or other site uses will be evaluated as part of the final remedial alternative for the site once the Remedial Investigation and risk assessment are finalized. There is no current use of shallow groundwater, so this is not considered a complete exposure pathway.

2.1.5 National Priorities List Status

The National Priorities List is a list, developed by the EPA, of hazardous waste sites nationwide that pose the greatest risk to the public health and thus, warrant priority responses under CERCLA. As stated above, IR Site 25, which includes the TCRA area, is within a National Priorities List-listed portion of former NAS Alameda. IR Site 25 will be addressed under the CERCLA and NCP regulatory process.

2.2 OTHER ACTIONS TO DATE

Previous and current actions at the TCRA site are discussed below.

2.2.1 Previous Actions

Soil at Clover Park, the largest play area within EBS Parcel 181, was removed and replaced with clean backfill in October and November 2000. The Coast Guard installed new playground equipment after the removal action was completed.

2.2.2 Current Actions

The DON is currently preparing the Remedial Investigation Report for the entire IR Site 25 area including the TCRA area. No other government or private actions are currently being conducted at the TCRA site. As the lead federal agency, the DON has initiated the following community relations activities:

- Scheduled public meetings
- Regular meetings with the Alameda Reuse and Redevelopment Agency, the RAB, and the BCT
- Preparation of fact sheets and brochures describing the IR process
- Maintenance of information repositories accessible to the public

To gain a more thorough understanding of the activities associated with the TCRA, the public is encouraged to review documents contained in the information repositories that are located at:

- 1) Alameda Main Public Library (Historic Alameda High School)
2200-A Central Avenue
Alameda, California
- 2) Alameda Point, Former NAS Alameda
950 West Mall Square, Suite 141
Alameda, California

The complete Administrative Records are located at 1220 Pacific Highway, San Diego, California, and is maintained by Ms. Diana Silva, Southwest Division Naval Facilities

Engineering Command Administration Record Manager, (619) 532-3676. The Index of Administrative Records for Alameda Point is included in Appendix A.

2.3 STATE AND LOCAL AUTHORITIES' ROLE

2.3.1 State and Local Actions to Date

Federal Executive Order 12580 delegates to the DoD the President's authority to undertake CERCLA response actions. Congress further outlined this authority in its Defense Environmental Restoration Program Amendments, which can be found at 10 USC, Sections 2701 through 2705. Both CERCLA Section 120(f) and 10 USC, Section 2705 require DON facilities to ensure that the EPA and state and local officials be given the timely opportunity to review and comment on DON-proposed response actions. CERCLA Section 120 further requires the DON to apply state removal and remedial action regulatory requirements at its facilities.

Accordingly, the DTSC and RWQCB San Francisco Region have provided to the DON and EPA (lead regulatory agencies) technical advice, oversight, and approval during previous activities conducted for the TCRA site including Installation Restoration Program (IRP) activities and formulating the *Remedial Investigation Work Plan for IR Site 25* (Neptune, 2001).

2.3.2 Potential for Continued State and Local Response

The DTSC and RWQCB currently provide technical oversight to the IRP, assist at monthly program management meetings for Alameda Point, and review documents produced under the IRP for the NAS Alameda facility. It is anticipated that technical oversight will continue throughout the IRP process and that the DON's Defense Environmental Restoration Program account funds will continue to be the exclusive source of funding for this program.

3.0 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

In accordance with the NCP, the following factors must be considered in determining the appropriateness of a removal action [40 CFR, Part 300.415(b)(2)]:

- i. Actual or potential exposure to nearby human populations, animals, or the food chain 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. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that can migrate or be released
- 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
- viii. Other situations or factors that may pose threats to public health or welfare or the environment

3.1 THREATS TO PUBLIC HEALTH OR WELFARE

Of those listed above, the following two factors potentially apply to current conditions at IR Site 25 [pursuant to 40 CFR, Part 300.415(b)(2)]:

- i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants
- iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that can migrate or be released

A major portion of IR Site 25 currently contains housing complexes that are occupied by Coast Guard personnel and their families. The complexes also contain common areas that contain play areas and lawns. Previous investigations have shown that PAHs are present in soil and groundwater at IR Site 25. This is believed to have resulted from historical releases from industrial activities in adjacent areas, leading to widespread distribution of PAHs in fill used to create the new portions of Alameda Island, including the area encompassing the TCRA area. Investigations underway to characterize concentrations and distributions of these compounds and to provide data necessary for appropriate risk characterization have recently been completed.

3.1.1 Development of Risk-Based Action Level

In the interim, a risk-based action level was developed for carcinogenic PAHs to identify areas requiring cleanup based on currently available soils data. This process involved identification of relevant site-specific exposure scenarios and calculation of an appropriate action level that would be protective of current on-site residents.

Medium of Concern, Exposure Pathways, and Exposure Scenario

For this TCRA, the exposure medium of concern is surface soil (0 to 24 inches). This was selected to address exposure of current on-site residents through ingestion of surface soil, dermal contact with surface soil, and inhalation of windblown soil particulates. Exposure via plant uptake was not considered because the consumption of produce from home gardens was anticipated to be a very small portion of annual food consumption based upon the small areas available for such gardens. The 7 percent portion of the annual diet assumed in produce uptake risk calculations cannot be supported by the limited area available. In addition, groundwater was not considered because there is no current use of shallow groundwater and therefore, no exposure pathway exists. It is noted that groundwater is being characterized as part of the Remedial Investigation, and the cumulative groundwater and soil risk (including exposure via plant uptake) at IR Site 25 will be assessed in the Remedial Investigation Report and final risk assessment. The final remedy may require institutional controls (for example, deed restrictions) to restrict future development or construction in excess of 2 feet below ground surface (bgs). Restrictions on gardening or planting of vegetables may also be included. Because much of the site has already undergone residential development, the residential use scenario has served as the exposure scenario.

EPA Region 9 Preliminary Remediation Goals

Region 9 of the EPA has developed Preliminary Remediation Goals (PRGs) for residential soil (EPA, 2000). These PRGs combine current EPA toxicity values with standard default exposure assumptions to estimate concentrations in soil that are considered protective of humans, including sensitive groups over a lifetime. These are conservative values that take into account potential exposure via ingestion of surface soil, dermal contact with surface soil, and inhalation of windblown soil particulates. The PRGs correspond to a carcinogenic risk of one-in-one-million (1×10^{-6}), and a non-cancer hazard index of one.

As stated earlier, the total cancer risk from the PAH compounds is based on the TEF approach (EPA, 2001). TEFs are estimates of the carcinogenic potency of each PAH compound relative to benzo(a)pyrene (the most potent carcinogenic PAH). For example, benzo(a)anthracene is considered only $1/10^{\text{th}}$ as carcinogenic as benzo(a)pyrene, thus the TEF is 0.1; chrysene has a carcinogenic potency of $1/1000^{\text{th}}$ benzo(a)pyrene and thus the TEF is 0.001. The concentration of the PAH compound is multiplied by its TEF, and the product is termed a Toxic Equivalent (TEQ) of benzo(a)pyrene. A TEQ is calculated for each carcinogenic PAH compound in the

mixture and then the TEQs are summed to provide a total-TEQ concentration of benzo(a)pyrene. The total TEQ is used as the concentration term along with the cancer slope factor for benzo(a)pyrene to calculate total cancer risk for the PAH group.

Site-Specific Action Level

PRGs for the residential use scenario assume that an individual is present on a site for 350 days a year for 30 years. An exposure duration of 30 years was also assumed during development of the action level for the site. The residential use scenario (30-year exposure duration) was used to establish the benzo(a)pyrene-equivalent concentration associated with a target cancer risk of 3×10^{-5} , which is within the NCP acceptable cancer risk range (1×10^{-6} to 1×10^{-4}) [40 CFR, Part 300.430(e)(2)], and is expected to provide adequate interim protection of public health prior to completion of the CERCLA process at the site.

Based on the assumptions described above, the DON has established the action level (and hence the site cleanup level for the action described in this AM) for benzo(a)pyrene-equivalent PAHs in surface soil at the TRCA area at 1.8 mg/kg. This value is within the NCP target risk range.

3.2 THREATS TO THE ENVIRONMENT

As with the assessment of public health or welfare, the following two NCP-defined factors for evaluating the appropriateness of a removal action potentially apply to current conditions at the TCRA area with respect to other ecological receptors [pursuant to 40 CFR, Part 300.415(b)(2)]:

- i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants
- iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that can migrate or be released

Although risks to ecological receptors have not been assessed completely for the IR Site 25 area, such ecological risks at Estuary Park (EBS Parcel 182), which contain similar contaminants at similar concentrations, were determined to be insignificant. For the purposes of this AM, it is assumed that actions taken to mitigate risks to public health or welfare can reasonably be expected to be protective of ecological receptors at the site as well. It is also noted, however, that results of future risk assessments may indicate that further actions are necessary. If this is the case, additional remedial actions will be evaluated as appropriate.

4.0 ENDANGERMENT DETERMINATION

Assessment of threats as summarized in Section 3.0 and other information contained in the Administrative Records indicate that current conditions at IR Site 25 may present a risk to public health, welfare, or the environment and warrant conducting a TCRA.

Potential release of PAHs from this site, if not addressed by implementing the TCRA selected in this AM, may present an imminent and/or substantial threat to public health or welfare or the environment. The DON is expediting this removal action to eliminate this concern.

5.0 PROPOSED ACTIONS AND ESTIMATED COSTS

A summary of the proposed action, an evaluation of the different remedial alternatives that were considered, and applicable or relevant and appropriate federal and state requirements are discussed in this chapter.

5.1 PROPOSED ACTION

The proposed removal action consists of excavation and off-site disposal of surface soils. Excavation will be performed in unpaved areas around residential structures to a maximum depth of 2 feet bgs in an area encompassing approximately 10 acres. After excavation, the area will be brought to an approximate 6-inch minus grade using clean backfill material and then to final grade with topsoil and sod. The primary objective of the proposed action is the elimination of potential inhalation, dermal contact, and ingestion pathways to current residents, current nearby workers, and ecological receptors. The removal and disposal of the excavated material will be handled in a manner consistent with federal, state, and local regulations.

Prior to excavation, a land survey, underground utility search, waste profile soil sampling, and site clearing will be conducted. Following these preparatory activities, the removal activities will be conducted to excavate the PAH-impacted soil from the site.

Survey

A land survey will be conducted to produce a topographic map for grade control and to demark the area of excavation into 50-foot by 50-foot grids as specified for waste profile sampling.

Preconstruction Sampling

Dividing the area into 50-foot by 50-foot grids will yield approximately 180 sampling grids. Soil samples will be collected from 10 percent of the grids, randomly selected, and analyzed for VOCs, pesticides, PCBs, metals, and cyanide. Half of these soil samples will also be analyzed for fish toxicity in accordance with the Title 22, California Code of Regulations (CCR) procedures for evaluating the California hazardous waste toxicity characteristic. Four additional soil samples will be collected from the previously sampled areas with the highest concentration of PAHs and analyzed for the same aforementioned constituents including fish toxicity. Figure 5-1 shows the grid and the locations where the random samples and four "high PAH concentration" samples will be collected.

Site Clearing

Residential features, including fences and landscaping (including small bushes), will be removed prior to excavation. Utility or utility pole removal is not anticipated. Large trees selected for preservation will be marked and protected during removal activities.

Removal Activities

Soil will be excavated to 2 feet bgs within the 10-acre boundary. These excavation dimensions will yield approximately 34,000 cubic yards of soil. The work will be performed on sections of soil within the boundary area appropriately sized so that excavation and backfilling, including topsoil and sod placement, can be completed by the end of the workday. By following this work process, there will not be any areas of the excavation left open between workdays. During excavation, dust will be controlled with water application. Upwind and downwind dust monitoring will detect emissions, and emission control actions will be taken if deemed necessary. If visual sightings or monitoring indicates that an emission is above regulatory limits, work will cease, and dust abatement will take place. In addition, work will be suspended during times when wind speed exceeds 25 knots.

Excavated soil will be either immediately transported off site to a disposal facility or, due to unforeseen construction-related delays, temporarily placed on the lined stockpile area in the support zone and covered. Stockpiled soils will be scheduled for off-site transportation and disposal on a high priority basis.

Fences will be selectively replaced by the Coast Guard.

5.1.1 Contribution to Remedial Performance

All significant contamination will be excavated, removed, and disposed. The DON is finalizing the Remedial Investigation Report that will evaluate soil and groundwater contamination over the remainder of IR Site 25.

5.1.2 Descriptions of Alternative Technologies

The evaluation of remedial alternatives, included in Appendix B, describes the following alternatives that were considered prior to selection of the aforementioned proposed action: 1) no action, 2) fencing/security, 3) capping, 4) in situ stabilization, 5) excavation, stabilization, and backfill, 6) excavation, thermal desorption, and backfill, and 7) excavation and off-site disposal. Based on the remedial alternative evaluation, the excavation and off-site disposal alternative was selected based on technical feasibility, timeliness, and effectiveness. Excavation and off-site disposal is the most proven and most expeditious solution that will effectively prevent direct on-site receptor exposure to contamination. Excavation and off-site disposal is a technically uncomplicated process with a short response time, which is required since the site is a residential community.

5.1.3 Engineering Evaluation/Cost Analysis

An engineering evaluation/cost analysis is not required for the TCRA.

5.1.4 Applicable or Relevant and Appropriate Requirements

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. The requirement is applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared to the conditions at the site. An applicable federal requirement is an applicable or relevant and appropriate requirement (ARAR). An applicable state requirement is an ARAR only if it is more stringent than federal ARARs. If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations similar to the circumstances of the proposed response action and are well suited to the conditions of the site (EPA, 1988). A requirement must be determined to be both relevant and appropriate in order to be considered an ARAR.

The criteria for determining relevance and appropriateness are listed in 40 CFR, Part 300.400(g)(2) and include the following:

- the purpose of the requirement and the purpose of the CERCLA action
- the medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site
- the substances regulated by the requirement and the substances found at the CERCLA site
- any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site
- the type of place regulated and the type of place affected by the release or CERCLA action
- the type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action
- any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resources at the CERCLA site

According to CERCLA ARARs guidance (EPA, 1988), a requirement may be “applicable” or “relevant and appropriate,” but not both. Identification of ARARs must be done on a site-specific basis and involves a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is nevertheless both relevant and appropriate. It is important to note that some regulations may be applicable or, if not applicable, may still be relevant and appropriate. When the analysis determines that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable (EPA, 1988).

This section provides a brief description of potential ARARs with a determination of ARAR status (that is, applicable or relevant and appropriate). For the determination of relevance and appropriateness, the pertinent criteria were examined to determine whether the requirements addressed problems or situations sufficiently similar to the circumstances of the release or response action contemplated and whether the requirement was well suited to the site. A negative determination of relevance and appropriateness indicates that the requirement did not meet the pertinent criteria.

To qualify as a state ARAR under CERCLA and the NCP, a state requirement must be:

- A state law or regulation
- An environmental or facility siting law
- Promulgated (of general applicability and legally enforceable)
- Substantive (not procedural or administrative)
- More stringent than the federal requirement
- Identified in a timely manner
- Consistently applied

To constitute an ARAR, a requirement must be substantive. Therefore, only the substantive provisions of requirements identified as ARARs in this analysis are considered to be ARARs. Permits are considered to be procedural or administrative requirements. Provisions of generally relevant federal and state statutes and regulations that were determined to be procedural or nonenvironmental, including permit requirements, are not considered to be ARARs. CERCLA 121(e)(1), 42 USC, Section 9621(e)(1) states that “No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on site, where such remedial action is selected and carried out in compliance with this section.” The term *on site* is defined for purposes of this ARARs discussion as “the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action” (40 CFR Part 300.5).

Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. Such requirements may, however, be useful and are “to be considered” (TBC). TBC [40 CFR, Part 300.400(g)(3)] requirements complement ARARs, but do not override them. They are useful for guiding decisions regarding cleanup levels or methodologies when regulatory standards are not available.

Pursuant to EPA guidance (EPA, 1988), ARARs are generally divided into three categories: chemical-specific, location-specific, and action-specific requirements. This classification was developed to aid in the identification of ARARs; some ARARs do not fall precisely into one group or another. ARARs are identified on a site-by-site basis for remedial actions where

CERCLA authority is the basis for cleanup. As the lead federal agency, the DON has primary responsibility for identification of potential ARARs for the TCRA area. In addition, EPA guidance recommends that the lead federal agency consult with the state when identifying state ARARs for remedial actions. In essence, the CERCLA/NCP requirements at 40 CFR, Part 300.515 for remedial actions provide that the lead federal agency (DON) request that the state identify chemical- and location-specific state ARARs upon completion of site characterization. The state must respond within 30 days of receipt of the lead federal agency requests.

The following chronology summarizes the DON's efforts to obtain state assistance in identifying state ARARs for the TCRA at IR Site 25. Key correspondence between the DON and the state agencies relating to this effort has been included in the Administrative Records for this project.

The DON formally requested state chemical-, location-, and action-specific ARARs for IR Site 25 in a letter dated September 27, 2001. Letters were sent to the DTSC soliciting ARARs based on preliminary remedial technologies and process options detailed to the agencies by the DON. In preparing this ARARs analysis, the DON undertook the following measures, consistent with CERCLA and NCP:

- Identified federal ARARs for the proposed removal action addressed in the AM, taking into account site-specific information for the site
- Reviewed potential state ARARs to determine whether they satisfy CERCLA and NCP criteria that must be met in order to constitute state ARARs
- Evaluated and compared federal ARARs and their state counterparts to determine whether state ARARs are more stringent than the federal ARARs or are in addition to the federally required actions
- reached a conclusion as to which federal and state ARARs are the most stringent and/or "controlling" ARARs for the proposed removal action

5.1.4.1 Chemical-Specific ARARs

Resource Conservation and Recovery Act (RCRA) Hazardous Waste Standards

The federal RCRA requirements in 40 CFR, Part 261 do not apply in California because the state RCRA program is authorized. The authorized state RCRA requirements are therefore considered federal ARARs. The applicability of RCRA requirements depends on whether the waste is a RCRA hazardous waste, whether the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement, and whether the activity at the site constitutes treatment, storage, or disposal as defined by RCRA. However, RCRA requirements may be relevant and appropriate even if they are not applicable. The determination of whether a waste is a RCRA hazardous waste can be made by comparing the site waste to the definition of RCRA hazardous waste. The RCRA requirements in 22 CCR, Sections 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are ARARs because they define RCRA hazardous

waste. A waste can meet the definition of hazardous waste if it has the toxicity characteristic of hazardous waste. This determination is made by using the Toxicity Characteristic Leaching Procedure (TCLP). The maximum concentrations allowed for the TCLP listed in Section 66261.24(a)(1)(B) are potential federal ARARs for determining whether the site has hazardous waste. If the site waste has concentrations exceeding these values, it is determined to be a characteristic RCRA hazardous waste.

State RCRA requirements included within the EPA-authorized RCRA program for California are considered to be federal ARARs and are discussed above. When state regulations are either broader in scope or more stringent than their federal counterparts, they are considered state ARARs. State requirements such as the non-RCRA, state-regulated hazardous waste requirements may be state ARARs because they are not within the scope of the federal ARARs (57 Federal Regulation 60848). The 22 CCR, Division 4.5 requirements that are part of the state-approved RCRA program would be state ARARs for non-RCRA, state-regulated hazardous wastes.

The site waste characteristics need to be compared to the definition of non-RCRA, state-regulated hazardous waste. The non-RCRA, state-regulated waste definition requirements in 22 CCR, Section 66261.24(a)(2) are state ARARs for determining whether other RCRA requirements are potential state ARARs. This section lists the total threshold limit concentrations and soluble threshold limit concentration. The site waste may be compared to these thresholds to determine whether it meets the characteristics for a non-RCRA, state-regulated hazardous waste.

Title 27, Sections 20210 and 20220 are state definitions for designated waste and non-hazardous waste, respectively. These may be ARARs for soils that meet the definitions. These soil classifications determine state classification requirements for discharging waste to land.

5.1.4.2 Location-Specific ARARs

Coastal Resource ARARs

The Federal Coastal Zone Management Act (Coastal Zone Management Act, 16 USC, Sections 1451 through 1464) requires that all federal activities that affect the coastal zone shall be conducted in a manner consistent, to the maximum extent practicable, with approved state management programs. California's approved coastal management programs include the San Francisco Bay Plan developed by the San Francisco Bay Conservation and Development Commission. The Bay Plan's policies include limiting bay filling and maintaining marshes and mudflats to the fullest extent possible to conserve wildlife, abate pollution, and protect the beneficial uses of the bay.

The California Coastal Act of 1976 as codified within the Public Resources Code (California Public Resources Code, Sections 30000 through 30900) and 14 CCR, Sections 13001 through 13666.4, regulates activities associated with development to control direct, significant impacts on coastal waters and protects state and national interests in California coastal resources. The

California Coastal Act policies set forth in the act constitute the standards used by the California Coastal Commission in its coastal development permit decisions and for the review of local coastal programs. These policies contain the following substantive requirements:

- Protection and expansion of public access to the shoreline and recreation opportunities (California Public Resources Code Sections 30210 through 30224)
- Protection, enhancement and restoration of environmentally sensitive habitats including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, grasslands, streams, lakes, and habitat for rare or endangered plants or animals (California Public Resources Code Sections 30230 through 30240)
- Protection of productive agricultural lands, commercial fisheries, and archaeological resources (California Public Resources Code Sections 30234, 30241 through 30244)
- Protection of the scenic beauty of coastal landscapes (California Public Resources Code Section 30251)
- Provisions for expansion, in an environmentally sound manner, of existing industrial ports and electricity-generating power plants (California Public Resources Code Section 30264).

It is noted that the Oakland Inner Harbor, which connects to San Francisco Bay, is located approximately 500 feet north of the site. Since the site is near a coastal area, a check with the California Coastal Commission was made to determine if the site was within a coastal zone. Since the TCRA area is greater than 100 feet from the coast high tide line, the site is not affected by any coastal zoning restrictions. However, implementing the TCRA at the site should be consistent with commission goals and will conform to the substantive requirements of the state management program. While the remedial action will involve short-term and temporary excavation and staging of contaminated soils, the excavation activities will be conducted in a manner that will protect the adjacent coastal zone. The selected removal action will also reduce contaminants of concern in the surface soils and thus reduce potential exposure of coastal fauna to contaminants through erosion. Best Management Practices will be established in accordance with a written Stormwater Management Plan to prevent runoff from the site from affecting the San Francisco Bay. By reducing contamination in the area, contaminants will be less available to food chains through flora as well.

5.1.4.3 Action-Specific ARARs

Federal Hazardous Waste Storage ARARs

Storage of hazardous waste in stockpiles during a response action may be subject to stringent RCRA and/or state requirements. ARARs may be relaxed if the waste meets the characteristics of the requirements listed below and the temporary storage time is in accordance with the requirements.

- Federal accumulation time (22 CCR, Section 66262.34). Waste accumulated on site, in tanks and containers, for 90 days or less is subject to limited storage requirements. The requirements include labeling, drip pads, and other storage requirements.
- Container storage (22 CCR, Sections 66264.171 through 66264.178). hazardous waste container storage requirements address use and management of containers, compatibility of wastes with containers, management of containers, inspections requirements, and secondary contaminant requirements.
- Temporary units (22 CCR, Section 66264.553). Alternative requirements that are protective of human health or the environment may replace design, operating, or closure standards for temporary tanks and container storage areas used for treatment or storage of hazardous remediation wastes during corrective action activities. These units are not subject to RCRA land disposal restrictions (LDRs). The substantive requirements at 22 CCR, Section 66264.553(b), (d), (e), and (f) are ARARs for a temporary unit.
- If wastes are determined to be hazardous, based on the hazardous waste determination described under the federal chemical-specific ARARs discussion, substantive requirements of 22 CCR, Section 66262.34 (pertaining to hazardous waste accumulation) will be applicable. The TCRA involves the stockpiling of excavated materials while waste transportation and profiling is coordinated. In addition, substantive requirements of 49 CFR, Parts 171.2(f), 172.300, 172.302, 172.303, 172.304, 172.400, and 172.504 (pertaining to the Department of Transportation requirements for transport of hazardous materials) would be relevant and appropriate for transport of materials on site.

State Waste Storage ARARs

- Waste pile requirements 23 CCR, Division 3, Chapter 15. Substantive general construction requirements under 23 CCR, Sections 2540(a) and (f), Section 2541, liner requirements at Section 2542, leachate collection and removal system requirements at Section 2543, and seismic controls at Section 2547, and groundwater and vadose zone monitoring under 23 CCR, Chapter 15, Article 5 are ARARs for waste piles. However, the following exemption applies to the TCRA:
 - Under Section 2511(d), actions taken by or at the direction of public agencies to clean up or abate conditions of pollution or nuisance resulting from unintentional or unauthorized releases of waste or pollutants to the environment are exempt from the requirements of 23 CCR, Division 3, Chapter 15 provided that wastes, pollutants, or contaminated materials removed from the immediate place of release shall be discharged according to Article 2 of this chapter and further provided that remedial actions intended to contain such wastes at the place of release shall implement applicable provisions of this chapter to the extent feasible.
- Waste piles in 27 CCR, Division 2, subdivision 1. Substantive general construction requirements under 27 CCR, Sections 20310(a), (b), and (f), Section 20320, liner requirements in Section 20330, leachate collection and removal system requirements in Section 20340, precipitation and drainage controls in Section 20365, seismic controls in Section 20375, and groundwater and vadose zone monitoring in 27 CCR, Division 2, Subdivision 1, Chapter 3, Subchapter 3 may be potential ARARs for waste piles. These

requirements are applicable for California waste classified as designated waste (Section 20210) or non-hazardous solid waste (Section 20220).

- However, under Section 20090(d), actions taken by or at the direction of public agencies to clean up or abate conditions of pollution or nuisance resulting from unintentional or unauthorized releases of waste or pollutants to the environment are exempt from the Title 27 requirements listed above provided that wastes, pollutants, or contaminated materials removed from the immediate place of release shall be discharged according to the State Water Resources Control Board (SWRCB)-promulgated sections of Article 2, Subchapter 2, Chapter 3, Subdivision 1 of this division, and further provided that remedial actions intended to contain such wastes at the place of release shall implement applicable SWRCB-promulgated provisions of this division to the extent feasible.
- If the excavated soil is determined to be neither RCRA nor non-RCRA hazardous waste, a designated waste determination must be made prior to disposal in accordance with the substantive provisions of 27 CCR, Section 20200.
- Fugitive dust may be generated during the excavation and handling of the contaminated soil. The pertinent substantive provisions of the Bay Area Air Quality Management District Regulation 2 (which exempt emission sources less than 5 tons per year) are considered an ARAR for these activities. This regulation requires that reasonably available control measures be applied to prevent fugitive-dust emissions.

State Stormwater ARARs

Although the TCRA construction activities will not involve disturbing more than 5 acres at one time, the aggregate of the acreage to be disturbed will exceed 5 acres. Therefore, the substantive provisions of the general construction stormwater permit requirements are relevant and appropriate. A Stormwater Management Plan was prepared for the project and will be complied with throughout the construction period.

5.1.5 Project Schedule

The removal action began on November 19, 2002, and to be completed in May 2002. A detailed schedule is provided in Appendix C.

5.2 ESTIMATED COSTS

The estimated costs for the different remedial alternatives are summarized in Tables 5-1 through 5-6. There is no cost associated with Alternative 1, the no further action alternative. The cost estimates for the alternatives are preliminary and should be used for comparative purposes only. They are expected to be within plus or minus 25 percent. Based on the comparative analysis of the remedial action alternatives in Appendix B, the excavation and off-site disposal alternative has been selected by the DON. The amount of soil to be excavated and transported off site is estimated to be 51,000 tons. The work will be performed in a period of time not to exceed 180 calendar days. The estimated cost is approximately \$6,212,125. The costs have been estimated based on unit cost

data for contractors, landfills, waste haulers, laboratories, equipment, materials, and professional labor from previous similar projects.

6.0 EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If action should be delayed or not taken, the potential for exposure of human and environmental populations to PAH contamination in soils will continue. Contamination could spread from the site to nearby areas by wind erosion and surface runoff.

7.0 PUBLIC INVOLVEMENT

The AM for the proposed TCRA will be discussed during community meetings and through the RAB. In compliance with the requirements of 40 CFR, Parts 300.415(n) (2) and 300.820 (b), a public notice will be issued that describes the proposed TCRA and the availability for review of the project Administrative Records and this AM. The AM has been distributed to the U.S. EPA for their review and responses to their comments are provided in Appendix D.

8.0 OUTSTANDING POLICY ISSUES

There are no outstanding policy issues with regard to the proposed removal action.

9.0 RECOMMENDATIONS AND SIGNATURES

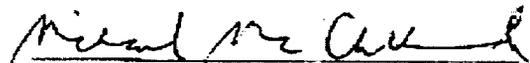
To date, the DON has not acquired evidence identifying other potentially responsible parties (PRPs) at this site. However, information acquired in the future, including, but not limited to, information acquired during the implementation of this removal action or future response actions at the site could result in the identification of other PRPs.

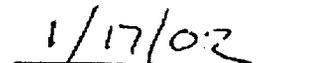
This AM was prepared in accordance with current EPA and DON guidance documents for TCRAs under CERCLA. The purpose of this AM was to identify and analyze removal actions to address contaminated soil at the IR Site 25 TCRA area, Alameda Point, Alameda. Seven alternatives were identified and evaluated (Appendix B) including the following:

- Alternative 1 - no action
- Alternative 2 – fencing/security
- Alternative 3 - capping
- Alternative 4 – in situ stabilization
- Alternative 5 – excavation/stabilization/backfill
- Alternative 6 – excavation/thermal desorption/backfill
- Alternative 7 – excavation and off-site disposal

As detailed in Section 3.0 of this document, PAH-contaminated soil at the Coast Guard housing area at Alameda Point, Alameda, California, posed a threat that met the NCP criteria for a TCRA. Because of the need for immediate action at the site, the DON intends to conduct excavation and off-site disposal of contaminated soil (Alternative 7). Excavation and off-site disposal of the contaminated soil most efficiently met all removal objectives and resulted in the most rapid reduction in risk. As documented by the signature below, the DON approved of the proposed excavation and off-site disposal of the contaminated soil.

**Base Realignment and
Closure Environmental
Coordinator:**


Michael E. McClelland, P.E.
Southwest Division
Naval Facilities Engineering Command


Date

10.0 REFERENCES

Neptune and Company, Inc. 2001. *Final Remedial Investigation Work Plan for Operable Unit-5, Alameda Point, Alameda, California*. June.

U.S. Environmental Protection Agency (EPA). 1988. *CERCLA Compliance With Other Laws Manual, Draft Guidance*. EPA/540/G-89/006, Office of Emergency and Remedial Response. Washington, DC. August.

EPA. 2000. *Region 9 Preliminary Remediation Goals (PRGs) 2000*. San Francisco, California. October.

EPA. 2001. *Region 4 Human Health Risk Assessment Bulletins – Supplement to Risk Assessment Guidelines for Superfund (RAGS)*. U.S. EPA Region 4, Atlanta, Georgia.

TABLES

TABLE 5-1

COST ESTIMATE FOR ALTERNATIVE 2 – FENCING/SECURITY^{1,2}

Item	Cost
Project and construction management and procurement	\$ 126,880
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 25,600
Fencing	\$ 150,000
Subtotal Direct Costs	\$ 302,480
Contingency (20%)	\$ 60,490
Fee (10%)	\$ 30,248
ESTIMATED TOTAL COSTS	\$ 393,224

(1) Costs include indirect costs where applicable

(2) Accuracy approximately plus or minus 25%

TABLE 5-2

COST ESTIMATE FOR ALTERNATIVE 3 – CAPPING^{1,2,3}

Item	Cost
Project and construction management and procurement	\$ 1,310,080
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 323,739
Clear, grub, and tree removal	\$ 151,500
Excavation and capping	\$ 7,762,755
Contaminated soils and liquids transportation treatment and off-site disposal	\$ 232,397
Soil, liquid, and air samples analyses	\$ 148,510
Site restoration	\$ 160,000
Subtotal Direct Costs	\$10,229,781
Contingency (20%)	\$ 2,045,956
Fee (10%)	\$ 1,022,978
ESTIMATED TOTAL COSTS	\$13,298,715

(1) Costs include indirect costs where applicable

(2) 8,470 cubic yards of soil will need to be excavated and disposed off site at an appropriate landfill

(3) Accuracy approximately plus or minus 25%

TABLE 5-3

COST ESTIMATE FOR ALTERNATIVE 4 – IN SITU STABILIZATION^{1,2}

Item	Cost
Project and construction management and procurement	\$ 1,310,080
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 323,739
Clear, grub, and tree removal	\$ 151,500
In situ stabilization	\$ 2,371,600
Contaminated liquids transportation treatment and off-site disposal	\$ 20,647
Soil, liquid, and air samples analyses	\$ 301,872
Site restoration	\$ 434,428
Subtotal Direct Costs	\$ 5,045,665
Contingency (20%)	\$ 1,010,933
Fee (10%)	\$ 505,467
ESTIMATED TOTAL COSTS	\$ 6,571,065

(1) Costs include indirect costs where applicable

(2) Accuracy approximately plus or minus 25%

TABLE 5-4

**COST ESTIMATE FOR ALTERNATIVE 5 –
EXCAVATION/STABILIZATION/BACKFILL^{1,2,3}**

Item	Cost
Project and construction management and procurement	\$ 1,028,800
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 323,739
Clear, grub, and tree removal	\$ 151,500
Excavation, ex situ stabilization, backfilling, and compaction	\$ 5,082,000
Contaminated liquids transportation treatment and off-site disposal	\$ 20,647
Soil, liquid, and air samples analyses	\$ 301,872
Site restoration	\$ 434,428
Subtotal Direct Costs	\$ 7,483,785
Contingency (20%)	\$ 1,496,757
Fee (10%)	\$ 748,379
ESTIMATED TOTAL COSTS	\$ 9,728,921

(1) Costs include indirect costs where applicable

(2) 51,000 tons of soil assumed to be excavated, treated on site and used as backfill material

(3) Accuracy approximately plus or minus 25%

TABLE 5-5

**COST ESTIMATE FOR ALTERNATIVE 6 – EXCAVATION/THERMAL
DESORPTION/BACKFILL^{1,2,3}**

Item	Cost
Project and construction management and procurement	\$ 1,028,800
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 323,739
Clear, grub, and tree removal	\$ 151,500
Excavation, on-site thermal desorption, backfilling, and compaction	\$ 4,743,200
Contaminated liquids transportation treatment and off-site disposal	\$ 20,647
Soil, liquid, and air samples analyses	\$ 201,584
Site restoration	\$ 434,428
Subtotal Direct Costs	\$ 7,044,697
Contingency (20%)	\$ 1,408,939
Fee (10%)	\$ 704,470
ESTIMATED TOTAL COSTS	\$ 9,158,106

(1) Costs include indirect costs where applicable

(2) 51,000 tons of soil assumed to be excavated, treated on site and used as backfill material

(3) Accuracy approximately plus or minus 25%

TABLE 5-6

**COST ESTIMATE FOR ALTERNATIVE 7 –
EXCAVATION AND OFF-SITE DISPOSAL^{1,2,3}**

Item	Cost
Project and construction management and procurement	\$ 747,520
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 323,739
Clear, grub, and tree removal	\$ 151,500
Excavation, backfilling, and compaction	\$ 1,267,112
Contaminated soils and liquids transportation treatment and off-site disposal	\$ 1,291,147
Soil, liquid, and air samples analyses	\$ 422,312
Site restoration	\$ 434,428
Subtotal Direct Costs	\$ 4,778,557
Contingency (20%)	\$ 955,711
Fee (10%)	\$ 477,850
ESTIMATED TOTAL COSTS	\$ 6,212,125

(1) Costs include indirect costs where applicable

(2) 51,000 tons of soil assumed to be excavated, transported, and disposed off site at an appropriate landfill

(3) Accuracy approximately plus or minus 25%

FIGURES

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CTO: #0040

APPROVED BY: AE

CHECKED BY: VR
REVISION: 0

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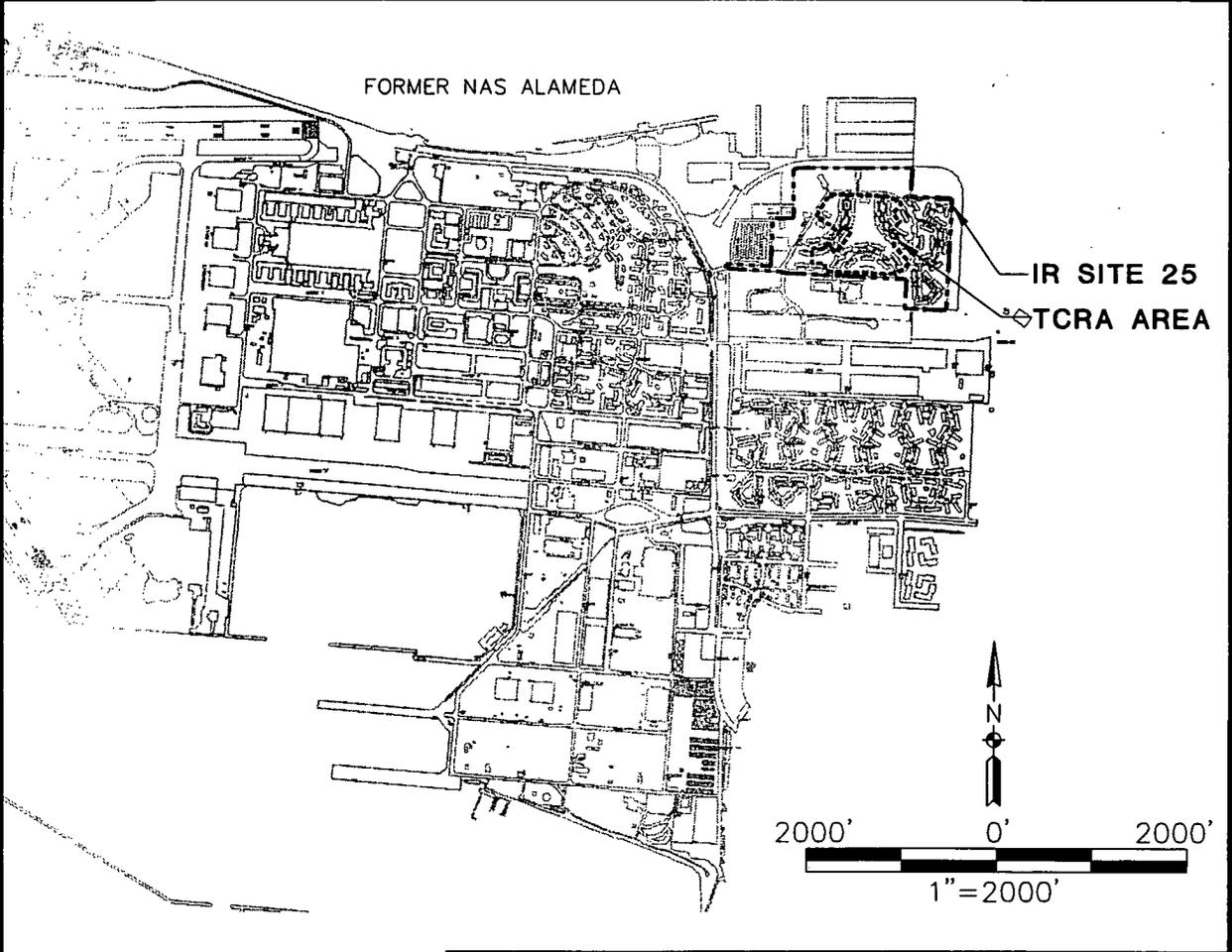
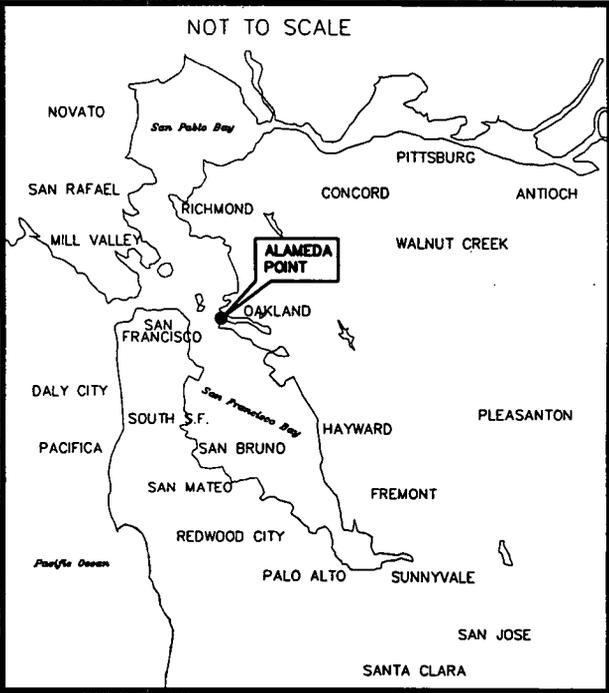
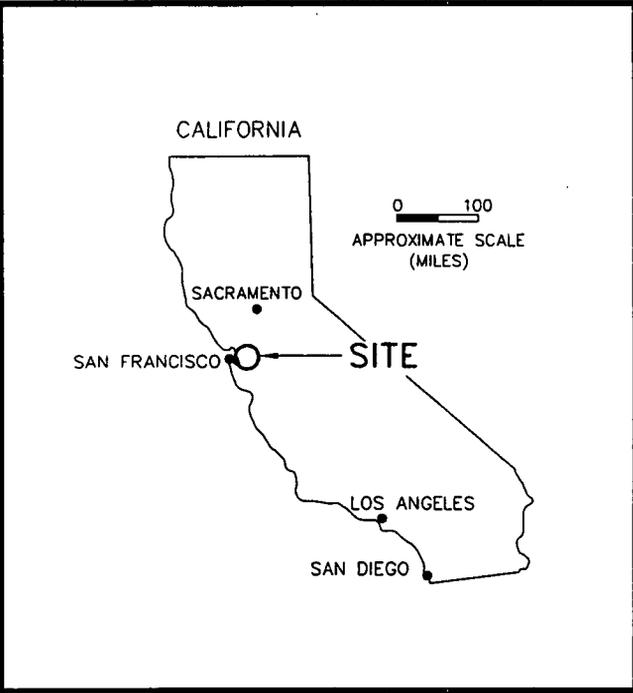


Figure 2-1
SITE VICINITY MAP

ALAMEDA POINT - IR SITE 25

FOSTER  WHEELER
ENVIRONMENTAL CORPORATION

DRAWING NO:
02040322.DWG

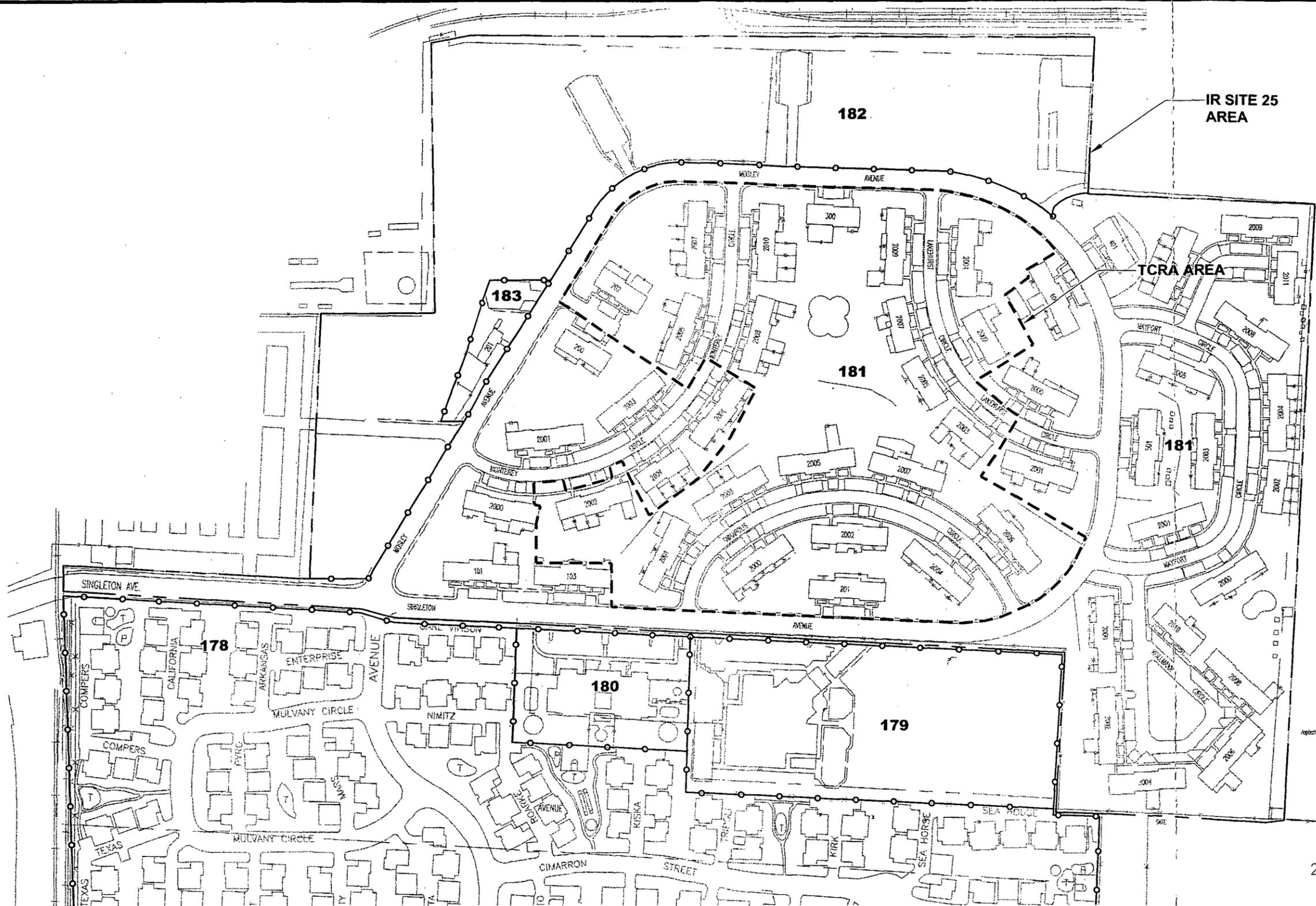
DCN: FWS-D-RAC-02-0403
CTO #0040

APPROVED BY: AE

CHECKED BY: VR
REV: REVISION 0

DRAWN BY: MD
DATE: 01/17/02

F:\1990-RAC\CTO-0040\DWG\020403\02040322.DWG
PLOT/UPDATE: JAN 17 2002 11:06:10



- LEGEND:**
- TIME-CRITICAL REMOVAL ACTION (TCRA) BOUNDARY
 - INSTALLATION RESTORATION (IR) 25 SITE BOUNDARY
 - ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY
 - 181** EBS PARCEL NUMBER

Figure 2-2
SITE LOCATION MAP

ALAMEDA POINT - IR SITE 25

FOSTER WHEELER
ENVIRONMENTAL CORPORATION

DRAWING NO: 02040351.DWG
 DCN: FWSD-RAC-02-0403 CTO #0040
 APPROVED BY: AE
 CHECKED BY: VR
 DRAWN BY: MD
 DATE: 01/17/02
 REV: REVISION 0

I:\1990-RAC-0040\DWG\020403\02040351.DWG
 PLOT/UPDATE: JAN 17 2002 11:12:43

LEGEND:
 - - - TCRA BOUNDARY
 * SELECTIVE SAMPLE LOCATIONS FOR WASTE CHARACTERIZATION
 ○ RANDOM SAMPLE LOCATIONS FOR WASTE CHARACTERIZATION

GRID	NORTHING	EASTING
B5	N 474147.74	E 1483751.54
C4	N 474178.47	E 1483786.17
C14	N 473676.04	E 1483784.99
C15	N 473646.17	E 1483781.25
E16	N 473575.23	E 1483874.65
F6	N 474091.22	E 1483922.64
F16	N 473570.25	E 1483919.48
G1	N 474326.15	E 1483981.19
G5	N 474141.06	E 1483981.95
G14	N 473696.94	E 1483980.12
G16	N 473577.71	E 1483991.70
J1	N 474326.15	E 1484130.98
J7	N 474014.67	E 1484146.83
K3	N 474231.29	E 1484182.26
L9	N 473932.25	E 1484231.26
M6	N 474080.91	E 1484281.12
M12	N 473798.06	E 1484300.61
O16	N 473590.16	E 1484381.46
Q5	N 474118.03	E 1484482.29
Q8	N 473985.53	E 1484482.29
P11	N 473846.21	E 1484450.20
S16	N 473591.41	E 1484580.69

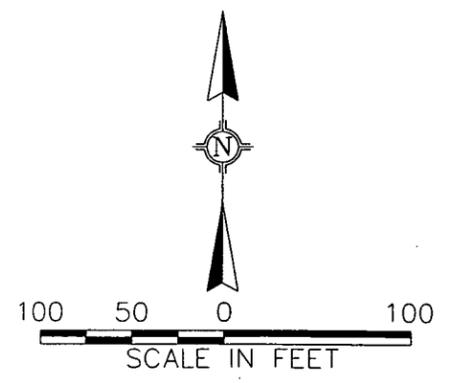
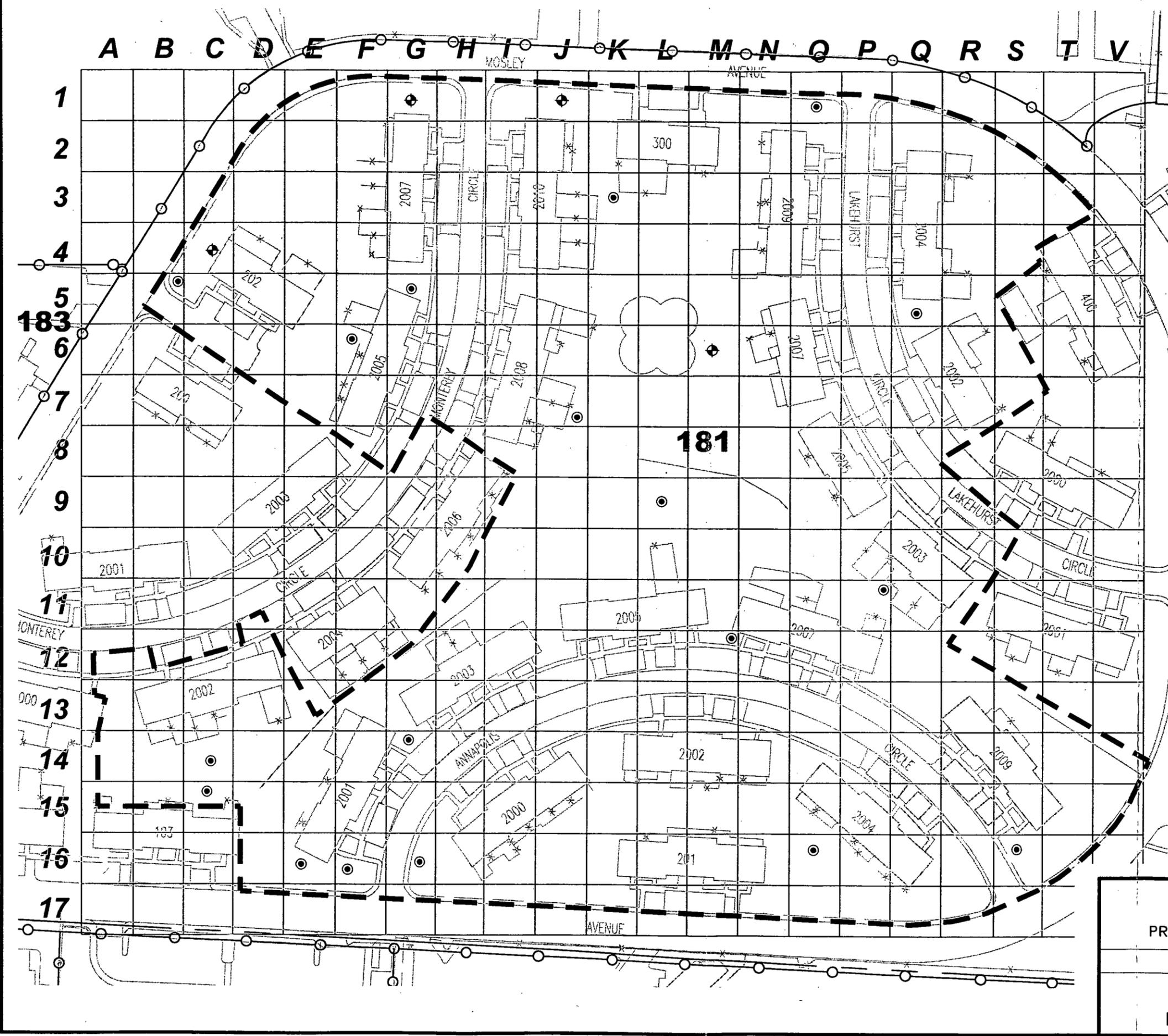


Figure 5-1
 EXCAVATION BOUNDARY AND
 PRE-CONSTRUCTION SAMPLE LOCATIONS

ALAMEDA POINT - IR SITE 25

FOSTER WHEELER
 ENVIRONMENTAL CORPORATION



APPENDIX A

INDEX OF ADMINISTRATIVE RECORDS
FOR ALAMEDA POINT, IR SITE 25

ALAMEDA POINT NAS

DRAFT ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE / RECORD NUMBER)

INDEX OF ADMINISTRATIVE RECORDS FOR ALAMEDA POINT SITE 25

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 001680 NONE	01-21-2000 07-06-1999	NAVFAC - WESTERN DIVISION	DRAFT RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR 6 JULY 1999 (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS) SIGN-IN SHEET IS CONFIDENTIAL	ADMIN RECORD CONFIDENTIAL	FS RAB	001 002	IRON MOUNTAIN 45359751
MM NONE	NONE 10.4				RI TECH MEMO	006 007	
0050		NAVFAC - WESTERN DIVISION			TPH UST	008 015 016 017 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3 OU 4	

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 001679 NONE	01-21-2000 08-03-1999	NAVFAC - WESTERN DIVISION	RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR 3 AUGUST 1999 (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	FS PCB	001 002	IRON MOUNTAIN 45359751
MM NONE	NONE 10.4				RAB RI	003 004	
0015		NAVFAC - WESTERN DIVISION			UXO	005 009 010 013 014 017 019 020 021 022 023 024 025 1112 360 400 410 BLDG. 14 BLDG. 162 BLDG. 5 OU 1 OU 2 OU 3 OU 4	

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 001678 NONE	01-21-2000 09-07-1999	NAVFAC - WESTERN DIVISION	DRAFT RESTORATION ADVISORY BOARD MEETING SUMMARY FOR 7 SEPTEMBER 1999 (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	BTEX EBS	003 004	IRON MOUNTAIN 45359751
MM NONE 0050	NONE 10.4	NAVFAC - WESTERN DIVISION			RAB TPH	005 009 010 011 012 013 014 015 019 021 022 023 025 BLDG. 14 BLDG. 400 BLDG. 410 BLDG. 5 BLDG. 530 OU 2	
N00236 / 001677 NONE	01-21-2000 10-05-1999	NAVFAC - WESTERN DIVISION	DRAFT RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR 5 OCTOBER 1999 (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	BTEX FFA	001 002	IRON MOUNTAIN 45359751
MM NONE 0020	NONE 10.4	NAVFAC - WESTERN DIVISION			RAB TDS UST	005 010 014 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3	

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 001676 NONE	01-21-2000 11-11-1999	NAVFAC - SOUTHWEST DIVISION	DRAFT RESTORATION ADVISORY BOARD MEETING SUMMARY OF 11 NOVEMBER 1999 (INCLUDES 11/2/99 AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	EBS EIS	001 002	IRON MOUNTAIN 45359751
MM NONE 0030	NONE 10.4	NAVFAC - SOUTHWEST DIVISION			FFA FOSET	004 006	
					FOST GW PCB RAB UXO VOC	007 008 010 012 015 016 017 018 020 024 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3 OU 4	
N00236 / 001681 NONE MM MM	02-15-2000 01-04-2000 NONE NONE	NAVFAC - WESTERN DIVISION DIVISION	RESOTRATION ADVISORY BOARD (RAB) MEETING MINUTES FROM JANUARY 4, 2000. (WITH ENCLOSURES)	ADMIN RECORD INFO REPOSITORY REPOSITORY	CAP CEQA FS	001 002 005 005	IRON MOUNTAIN 45359751
NONE 0026		NAVFAC - SOUTHWEST DIVISION			MTG MINS OU RAB UST	010 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3 OU 4	

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 001685 NONE	03-28-2000 02-01-2000		DRAFT - RAB MEETING MINUTES FOR 1 FEBRUARY 2000 (INCLUDES AGENDA, HANDOUTS AND SIGN IN SHEET) (PORTIONS OF THE SIGN IN SHEET ARE	ADMIN RECORD CONFIDENTIAL	FOST FS	001 025	IRON MOUNTAIN 37041347
MM NONE 0040	NONE	NAVFAC - SOUTHWEST DIVISION	CONFIDENTIAL)		PAH RAB UXO	OU 2 OU 3 OU 4	
N00236 / 000003 NONE LTR LTR	08-07-2000 07-19-2000 NONE NONE	ARC ECOLOGY K. KLOC NAVFAC - NAVFAC - SOUTHWEST DIVISION	COMMENTS FROM ARC ECOLOGY ON THE DRAFT REMEDIAL ACTION PLAN/RECORD OF DECISION AND THE PROPOSED PLAN FOR THE MARSH CRUST & FORMER	ADMIN RECORD INFO REPOSITORY REPOSITORY	GW REMEDIAL ROD	025	IRON MOUNTAIN 37041347
NONE 0009		M. MCCLELLAND	SUBTIDAL AREA (ALAMEDA POINT) AND FOR THE MARSH CRUST & GROUNDWATER (FISC-ANNEX), INCLUDES RESOLUTION OF THE RAB DATED 4/4/00				
N00236 / 000027 SWDIV SER 06CA.RW/870 06CA.RW/870 MEMO MEMO NONE 0017	10-27-2000 10-20-2000 NONE NONE	NAVFAC - SOUTHWEST DIVISION DIVISION M. MCCLELLAND NAVFAC - SOUTHWEST DIVISION	ACTION MEMORANDUM FOR TIME-CRITICAL REMOVAL OF PAH-CONTAMINATED SOIL AT (INCLUDES SWDIV TRANSMITTAL LETTER THE CLOWN PARK PLAY AREA - BY R. WEISSENBORN)	ADMIN RECORD INFO REPOSITORY REPOSITORY	ACTMEMO PAH REMOVAL SOIL TCRA TPH	025 OU 5	IRON MOUNTAIN 80462377
N00236 / 000051 NONE LTR LTR NONE 0003 0003	01-05-2001 11-01-2000 NONE NONE	U.S. EPA, SAN FRANCISCO, CA P. RAMSEY P. RAMSEY NAVFAC - SOUTHWEST DIVISION R. WEISSENBORN	EPA REVIEW AND COMMENTS ON THE ACTION MEMORANDUM FOR TIME-CRITICAL REMOVAL ACTION OF PAH-CONTAMINATED SOIL AT CLOWN PARK PLAY AREA {SEE AR #52 - NAVY'S RESPONSES TO COMMENTS BY EPA}	ADMIN RECORD INFO REPOSITORY REPOSITORY	ACTMEMO COMMENTS PAH SOIL TCRA	025 OU 5	IRON MOUNTAIN 80462382
N00236 / 000052 SWDIV SER 06CA.RW/1042 06CA.RW/1042 LTR LTR NONE 0003	01-05-2001 12-20-2000 NONE NONE	NAVFAC - SOUTHWEST DIVISION DIVISION M. MCCLELLAND U.S. EPA, SAN U.S. EPA, SAN FRANCISCO, CA P. RAMSEY	NAVY'S RESPONSES TO COMMENTS BY EPA ON THE ACTION MEMORANDUM FOR TIME-CRITICAL REMOVAL ACTION OF PAH-CONTAMINATED SOIL AT THE CLOWN PARK PLAY AREA {SEE AR #51 - COMMENTS BY EPA}	ADMIN RECORD INFO REPOSITORY REPOSITORY	ACTMEMO COMMENTS PAH SOIL TCRA	025 OU 5	IRON MOUNTAIN 80462382

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 000082 NONE LTR LTR NONE 0007	04-12-2001 04-04-2001 NONE NONE	DTSC, BERKELEY, CA M. CASSA M. CASSA NAVFAC - SOUTHWEST DIVISION R. WEISSENBORN	REVIEW AND COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION WORK PLAN (WITH ENCLOSURE) {SEE AR #56 - DRAFT REMEDIAL WORK PLAN & #83 - COMMENTS BY EPA}	ADMIN RECORD INFO REPOSITORY REPOSITORY	COMMENTS GW ROI WORK PLAN	025 OU 5	IRON MOUNTAIN 80462396
N00236 / 000083 NONE LTR LTR NONE 0010 0010	04-12-2001 04-05-2001 NONE NONE	U.S. EPA, SAN FRANCISCO, CA A. COOK A. COOK NAVFAC - SOUTHWEST DIVISION R. WEISSENBORN	REVIEW AND COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION WORK PLAN (WITH ENCLOSURE) {SEE AR #56 - DRAFT REMEDIAL INVESTIGATION WORK PLAN, #73 - EPA PRELIMINARY COMMENTS & #82 - COMMENTS BY DTSC & #100 - NAVY'S RESPONSE TO COMMENTS}	ADMIN RECORD INFO REPOSITORY REPOSITORY	COMMENTS GW PAH RI SOIL WORK PLAN	025 OU 5	IRON MOUNTAIN 80462396
N00236 / 000056 SWDIV SER 06CA.RW/0082 & 06CA.RW/0082 & 0596 PLAN GS-10FV-0073K 0450	01-31-2001 06-04-2001 NONE NONE	NEPTUNE AND COMPANY, INC. D. NEPTUNE D. NEPTUNE NAVFAC - SOUTHWEST DIVISION R. WEISSENBORN	FINAL REMEDIAL INVESTIGATION WORK PLAN FOR OPERABLE UNIT (OU) 5 - INCLUDES SWDIV TRANSMITTAL LETTER BY R. WEISSENBORN {SEE AR #73 - PRELIMINARY COMMENTS BY EPA, #82 - COMMENTS BY DTSC & #83 - COMMENTS BY EPA & #100 - NAVY'S RESPONSE TO COMMENTS}	ADMIN RECORD INFO REPOSITORY REPOSITORY	PAH RI WORK PLAN	025 OU 5	IRON MOUNTAIN 80462382
N00236 / 000225 1809 MISC	08-13-2001 07-24-2001 00076	IT CORPORATION NAVFAC - SOUTHWEST DIVISION	RESPONSE TO COMMENTS ON THE CHEMICAL TREATABILITY STUDY FOR SITE 25	ADMIN RECORD INFO REPOSITORY	COMMENTS PAH	025	SOUTHWEST DIVISION
N62474-98-D-2076 0012							
N00236 / 000224 1859 PLAN	08-13-2001 08-03-2001 00076	IT CORPORATION A. SEARLS NAVFAC - SOUTHWEST DIVISION	FINAL WORK PLAN - CHEMICAL OXIDATION TREATABILITY STUDY	ADMIN RECORD INFO REPOSITORY	DDT DQO MTBE PAH WORK PLAN	025	SOUTHWEST DIVISION
N62474-98-D-2076 0400							

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location Box No.
N00236 / 000249 SWDIV SER 06CA.AD\1041 06CA.AD\1041 LTR LTR NONE	10-11-2001 09-27-2001 NONE NONE	NAVFAC - SOUTHWEST DIVISION DIVISION A. DICK DTSC, DTSC, BERKELEY, CA	NAVY'S REQUEST FOR DTSC TO IDENTIFY POTENTIAL APPLICABLE OR RELEVANT (ARARS) FOR A PROPOSED TIME CRITICAL AND APPROPRIATE REQUIREMENTS	ADMIN RECORD INFO REPOSITORY REPOSITORY	ARAR PAH SOIL TCRA	025	SOUTHWEST DIVISION

UIC=N00236
No Keywords
Sites=025
No Classification

Monday, November 19, 2001

This Administrative Record (AR) Index includes references to documents which cite bibliography sources.
These bibliographic citations are considered to be part of this AR but may not be cited separately in the index.

Page 7 of 7

APPENDIX B
EVALUATION OF REMOVAL ALTERNATIVES

APPENDIX B

EVALUATION OF REMOVAL ALTERNATIVES

This attachment lists several removal alternatives considered to mitigate the TCRA site contamination. The objective of this removal action is to mitigate contamination by remediating the upper 2 feet of the soil layer. This evaluation will specify the actions taken under each alternative and provide advantages and limitations of each option. Each alternative was qualitatively evaluated based on technical feasibility, cost, and effectiveness.

Alternative 1 – No Action

No actions are taken. The contaminated soil in the upper two feet would remain in place.

Advantage

- No cost is incurred.

Limitation

- Source is not mitigated. The contaminated soil would remain and would require institutional controls (for example, deed restrictions).
- Does not eliminate or reduce hazard index or lifetime cancer risk to acceptable levels.
- There is no reduction in mobility, toxicity, or volume of contaminants.

Alternative 2 – Fencing/Security

The site is surrounded by fencing and kept secure from unauthorized entry.

Advantages

- Direct exposure through inadvertent site access is eliminated.
- Costs are very low.
- Time to implement action (response time) is short.

Limitations

- Source is not mitigated and would require institutional controls (for example, deed restrictions).
- The site is already populated with residents.
- There is no reduction in mobility, toxicity, or volume of contaminants to on-site receptors.

Alternative 3 – Capping

A low-permeability cap is placed over the site. The cap can be constructed of clay, asphalt, or concrete. Alternatively, a RCRA engineered cap consisting of clay, geotextile liners, and native soil, can be constructed, which would provide a more effective barrier.

Advantages

- Direct exposure to chemicals is eliminated.
- Capital and maintenance costs are moderate.
- There is reduction in mobility.
- Response time is moderate.

Limitations

- Constructibility is difficult since capping would be required in narrow spaces between existing buildings.
- Source is not removed.
- Use of the land may be limited and require institutional controls (for example, deed restrictions). To use the land for additional purposes, further action may be required.
- Long-term maintenance is required.
- There is no reduction in toxicity or volume of contaminants.

Alternative 4 – In Situ Stabilization

A specialized rig is used to drill into the soils, inject a stabilization mixture (typically a cementitious mixture), and blend the mixture into the soils. The stabilization mixture binds the contaminants to the soil and reduces contaminant mobility caused by natural processes such as wind and rain.

Advantages

- Direct exposure to chemicals is reduced and/or eliminated.
- Response time is moderate.

Limitations

- Implementation of this method is difficult since in situ mixing of stabilizing agents would be required in narrow spaces between existing buildings.
- Source is not removed, and the stabilized material will remain in place and will still contain PAHs.

- Use of the land may be limited and would require institutional controls (for example, deed restrictions). To use the land for additional purposes, further action may be required.
- The chemicals are not removed or destroyed, only fixed in place.
- There is risk that the stabilization formulation will not adequately bind contaminants to soil.
- Complete mixing of soil with stabilizing agent in situ is difficult to achieve, potentially leaving unstabilized soils in place.
- Relatively high costs.

Alternative 5 – Excavation/Stabilization/Backfill

Soil is excavated and mixed with a stabilization mixture (typically a cementitious mixture). The stabilized mixture is then backfilled at the site and compacted to local standards. The stabilization mixture binds the contaminants to the soil and reduces contaminant mobility caused by natural processes such as wind and rain.

Advantages

- Direct exposure to chemicals is eliminated.
- The cost is moderate.
- Response time is moderate.

Limitations

- Source is not removed, and the stabilized material will remain in the soil and contain PAHs.
- Use of the land may be limited. To use the land for additional purposes, further action may be required. The chemicals are not removed or destroyed, only fixed in place.
- There is risk that the stabilization formulation will not adequately bind contaminants to soil.
- Excavations remain open until material is replaced which creates potential short-term exposure risk via airborne contaminants.

Alternative 6 – Excavation/Thermal Desorption/Backfill

Soil is excavated at the site and thermally treated. The treated mixture is then backfilled and compacted to local standards.

Advantages

- Contaminants are removed from soil in the upper 2 feet.
- Response time is moderate.

Limitations

- The cost is high.
- Soil is sterilized.
- Excavations remain open until material is replaced, which creates potential short-term exposure risk via airborne contaminants.

Alternative 7 – Excavation/Off-Site Disposal

Soil is excavated and disposed of at a permitted facility. Clean material is imported, backfilled, and compacted to local standards.

Advantages

- Contaminated soil in the upper 2 feet is permanently removed.
- Potential exposure through inhalation, ingestion, and dermal contact is mitigated.
- Response time is short.
- There is a reduction in toxicity or volume of contaminants.

Limitations

- There is a risk that if remediation becomes necessary at the off-site disposal facility, generators could be liable for cleanup of that facility.
- Excavations remain open until material is placed, which creates potential short-term exposure risk via airborne contaminants, unless excavation and backfilling are performed in sections so that excavations are backfilled and compacted daily.
- The cost is high.
- It may require institutional controls (for example, deed restrictions) to restrict future development or construction in excess of 2 feet bgs.

APPENDIX C
PROJECT SCHEDULE

Alameda Point, IR Site 25 Soil Removal

PMO/Pre-Award Activities

CTO Award	10JUL01A		
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Pre-Construction Submittals

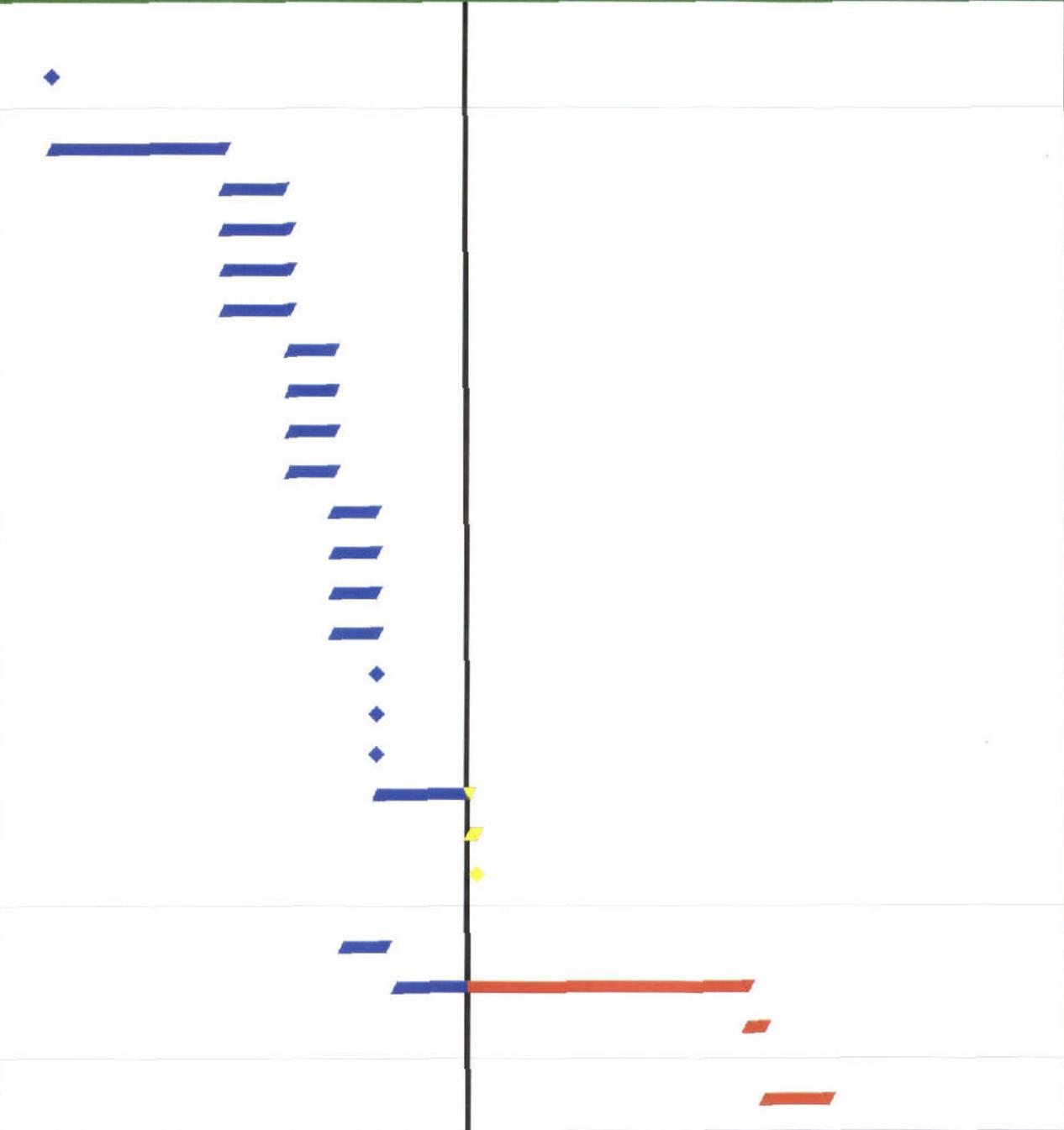
Await Client Authorization to Proceed	10JUL01A	25SEP01A	
Draft Action Memo	26SEP01A	22OCT01A	
Draft Removal WorkPlan	26SEP01A	25OCT01A	
Draft SAP/QAPP	26SEP01A	25OCT01A	
Draft SHSP	26SEP01A	25OCT01A	
Navy Review Draft Removal WP	26OCT01A	14NOV01A	
Navy Review Draft Action Memo	26OCT01A	14NOV01A	
Navy Review Draft SAP/QAPP	26OCT01A	14NOV01A	
Navy Review Draft SHSP	26OCT01A	14NOV01A	
Final Removal WorkPlan	15NOV01A	03DEC01A	
Final SAP/QAPP	15NOV01A	03DEC01A	
Final SHSP	15NOV01A	03DEC01A	
Revised Draft Action Memo	15NOV01A	04DEC01A	
Submit Final SAP/QAPP		03DEC01A	
Submit Final SHSP		03DEC01A	
Submit Final Removal WorkPlan		03DEC01A	
Navy Review Revised Draft Action Memo	05DEC01A	15JAN02	
Final Action Memo	16JAN02	18JAN02	
Submit Final Action Memo		18JAN02	

Construction

Mob/ Baseline Air Monitoring	19NOV01A	07DEC01A	
Time Critical Soil Removal Action	13DEC01A	22MAY02	
Demob	23MAY02	30MAY02	

Post Construction Submittals

Draft Post Construction Report	31MAY02	28JUN02	
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Start Date	10JUL01		Early Bar
Finish Date	27SEP02		Progress Bar
Data Date	14JAN02		Critical Activity
Run Date	17JAN02 13:21		
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Foster Wheeler Environmental Corp.
 Southwest Division RAC III
 CTO 40 - Alameda Point,
 IR Site 25 Time Critical Soil Removal



Activity Description	Early Start	Early Finish	2002																
			J	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
Navy Review Post Construction Report	01JUL02	15JUL02																	
Final Post Construction Report	16JUL02	29JUL02																	
Technical Completion		29JUL02																	
Job Closeout																			
Project Closeout	30JUL02	27SEP02																	
CTO Closeout		27SEP02																	

Start Date 10JUL01
 Finish Date 27SEP02
 Data Date 14JAN02
 Run Date 17JAN02 13:21
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 Early Bar
 Progress Bar
 Critical Activity

Foster Wheeler Environmental Corp.
 Southwest Division RAC III
 CTO 40 - Alameda Point,
 IR Site 25 Time Critical Soil Removal



APPENDIX D
RESPONSE TO U.S. EPA COMMENTS

**RESPONSE TO COMMENTS
ACTION MEMORANDUM (November 26, 2001)
CERCLA TIME-CRITICAL REMOVAL ACTION
INSTALLATION RESTORATION SITE 25
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

DCN: FWSD-RAC- 02-0380

January 14, 2002

Ms. Anna-Marie Cook
U.S. Environmental Protection Agency
75 Hawthorne Street (SFD-8-2)
San Francisco, CA 94105-3901

Mr. Richard C. Weissenborn, P.E.
Remedial Project Manager
BRAC Operations, Code 06CA.RW
1230 Columbia, Suite 1100
San Diego CA 92101

General Comments from EPA:

Comment 1. It would be helpful to include a brief description of what PAHs are and why they are harmful. In this description, the most acutely toxic component of PAHs, benzo(a)pyrene, should be called out rather than just referred to as BaP.

Response 1. The following brief description of PAHs was added into Section 2.1.4 of the Action Memo (AM):

“PAHs are a class of very stable organic molecules made up of only carbon and hydrogen. The carbon atoms form hexagonal “rings” to which hydrogen atoms are attached. These rings are fused together in a variety of configurations, with each configuration representing a specific PAH. The structures and properties of the various PAHs differ based on the amount and arrangement of the rings, which can number from two to ten or more. PAHs can be formed as products of the incomplete oxidation (burning) of organic materials, and are present in considerable quantities in fossil fuels. These molecules are considered carcinogenic, but they are also very common. Sources of environmental PAHs include power plants, domestic heating systems which burn oil, coal or wood, gasoline and diesel engines, waste incineration, various industrial activities, and tobacco smoke. Moreover, petroleum refining processes contribute to localized loadings of PAHs into the environment through industrial effluents from coal gasification and liquefaction processes and accidental spillage of raw and refined petroleum.”

RESPONSE TO COMMENTS
ACTION MEMORANDUM (November 26, 2001)
CERCLA TIME-CRITICAL REMOVAL ACTION
INSTALLATION RESTORATION SITE 25
ALAMEDA POINT, ALAMEDA, CALIFORNIA

DCN: FWSD-RAC- 02-0380

January 14, 2002

Comment 2. Page 2-4, Section 2.1.5. It may be more accurate to state that Site 25 is part of the NAS Alameda NPL Site.

Response 2. The AM was revised as requested.

Comment 3. Page 3-2. We suggest expanding the discussion in the second to last paragraph to provide more explanation on how other carcinogenic components of PAHs are normalized to benzo(a)pyrene, and summed together to provide a total concentration of PAHs in the soil that can be equated to risk. For anyone who is not familiar with this concept, the explanation currently provided in the AM falls short of being sufficiently informative.

Also, we would recommend removing the phrase “selection of the Action Level for IR Site 25 focused on the PRG for BaP which is 0.062 mg/kg” because it may appear to contradict the statement on Page 2-2 which indicates the action level is 1.8 mg/kg.

Response 3. The discussion in the second paragraph on Page 3-2 was expanded to include the following verbiage concerning PAHs and the TEF equivalency factor approach:

“The total cancer risk from the PAH compounds is based on the toxicity equivalency factor (TEF) approach. TEFs are estimates of the carcinogenic potency of each PAH compound relative to benzo(a)pyrene (the most potent carcinogenic PAH). For example, benzo(a)anthracene is considered only 1/10th as carcinogenic as benzo(a)pyrene, thus the TEF is 0.1; chrysene has a carcinogenic potency of 1/1000th benzo(a)pyrene and thus the TEF is 0.001. The concentration of the PAH compound is multiplied by its TEF, and the product is termed a Toxic Equivalent (TEQ) of benzo(a)pyrene. A TEQ is calculated for each carcinogenic PAH compound in the mixture and then the TEQs are summed to provide a total-TEQ concentration of benzo(a)pyrene. The total TEQ is used as the concentration term along with the cancer slope factor for benzo(a)pyrene to calculate total cancer risk for the PAH group.”

In addition, the phrase “selection of the action level for IR Site 25 focused on the PRG for benzo(a)pyrene which is 0.062 mg/kg” was deleted as requested.

**RESPONSE TO COMMENTS
ACTION MEMORANDUM (November 26, 2001)
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Comment 4. Page 3-2 indicates that exposure via plant uptake was not considered because currently vegetable gardens are prohibited. In terms of long-term protection, however, it would appear that this pathway should be considered. The Navy should indicate whether this pathway is being considered in the RI, and also whether the restrictions on gardening will continue after the removal.

Response 4. The consumption of produce from home gardens was anticipated to be a very small portion of annual food consumption based upon the small areas available for such gardens. The 7 percent portion of the annual diet assumed in produce uptake risk calculations cannot be supported by the limited area available. Restrictions on gardening or planting of vegetables and/or other site uses will be evaluated as part of the final remedial alternative for the site once the RI and risk assessment are finalized.

Comment 5. Page 5-4. ARARs. The first bullet indicates that to be a state ARAR, a state requirement must be a state law. This is not correct. A state regulation or other requirement can also be ARAR if it is a “promulgated standard, requirement, criteria, or limitation under a state environmental or facility siting law.”

Response 5. The words “or regulation” were added to the first bullet.

Comment 6. Sec. 5.1.4.2. Location specific ARARs. Did the Navy consider whether the Endangered Species Act or other resources requirements are ARARs?

Response 6. The Endangered Species Act and various other potential location-specific laws and regulations (for example, Historic Preservation Act, Migratory Bird Treaty Act, Wetlands Protection Act, and so forth) were evaluated; however, only the laws and regulations deemed to be applicable or relevant and appropriate to the Time-Critical Removal Action (TCRA) presented in the AM were included.

Comment 7. Action specific ARARs:
Sec. 5.1.4.3. Page 5-8 first bullet regarding 22 CCR Sec. 66262.34 (accumulation). We recommend adding that this section requires storage in containers or tanks.

Response 7.
Section 5.1.4.3 of the AM was revised as requested. Specifically, the first bullet, which discusses accumulation of hazardous waste, now specifies that hazardous waste accumulated for 90 days must be stored in tanks or containers.

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Sec. 5.1.4.3. Page 5-8 third bullet regarding 40 CFR Part 264.554 (staging piles). This section should not be considered an ARAR because it has not been adopted by California as part of its RCRA regulations; thus, California law on LDRs and MTRs is more stringent than federal.

Sec. 5.1.4.3. Page 5-8 sixth bullet regarding off-site landfills and LDRs. EPA notes that off-site requirements, although they must be complied with, are not generally considered to be ARARs. In this regard, EPA also notes that off-site disposal must comply with the EPA offsite rule, 58 Fed. Reg. 49200 (1993) (although EPA does not consider the offsite rule to be an ARAR).

Sec. 5.1.4.3. Page 5-8 through 5.9 under "State Waste Storage ARARs." It is not clear whether the Navy considers that these requirements apply, or whether alternative requirements apply. Also, it is not clear what action the Navy considers these requirements relate to (i.e., to the off-site disposal or to temporary storage prior to transportation off-site). As noted above, off-site requirements, while they must be complied with, are not considered to be ARARs.

Sec. 5.1.4.3. Page 5-10 final bullet. Text should state which specific BAAQMD regulations are ARARs regarding fugitive dust.

The DON agrees and the third bullet was deleted. The AM only refers to final ARARs specific for the TCRA. It is noted that, based on existing analytical data, soil to be removed and stockpiled from the proposed area of the TCRA is not RCRA nor California hazardous waste.

The DON agrees that off-site transportation and disposal requirements are not ARARs and the item has been removed. The AM only refers to final ARARs specific for the TCRA; however, the DON would comply with the provisions of the CERCLA Off-site Rule if hazardous material is identified. The Removal Action Work Plan prepared for this project includes potential ARARs for off-site disposal and LDRs.

The discussion of the waste pile requirements under both Title 23 and Title 27 of the California Code of Regulations was revised to refer only to the applicable exemptions pursuant to Title 23 CCR, Section 2511(d) and Title 27 CCR, Section 20090(d) for cleanup actions.

Regulation 2 of the BAAQMD Regulations specifically exempts sources of less than 5 tons per year from the permitting requirements. The text was revised accordingly.

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Comment 8. Page B-4 mentions that even after the removal has occurred, there may have to be deed restrictions to restrict future development or construction in excess of 2 feet bgs. EPA recommends that this be discussed in the main text as well as in the Attachment. As noted above, EPA also recommends a discussion of whether the restrictions on gardening will continue after the removal.

Response 8. The TCRA presented in this AM addresses only removal of soil as an interim protective measure for the area until such time as the RI and risk assessment are completed and a final remedial alternative, which may include institutional controls or other land use restrictions, is enacted. The DON has recommended to the Coast Guard housing authority that restrictions on growing vegetables in the area be included as interim protective measures until the final remedial alternatives are determined.