

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

**ACTION MEMORANDUM ADDENDUM
March 29, 2002**

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

DCN: FWSD-RAC-02-0621

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

N00236.000425
ALAMEDA POINT
SSIC NO. 5090.3

FINAL ACTION MEMORANDUM
CERCLA TIME-CRITICAL REMOVAL ACTION
INSTALLATION RESTORATION SITE 25

DATED 18 JANUARY 2002

IS FILED AS ADMINISTRATIVE RECORD NO.
N00236.000317

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ABBREVIATIONS AND ACRONYMS

AMA	Action Memorandum Addendum
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DON	Department of the Navy
EBS	Environmental Baseline Survey
EPA	U.S. Environmental Protection Agency
FWENC	Foster Wheeler Environmental Corporation
IR	Installation Restoration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PAH	polynuclear aromatic hydrocarbon
PRP	potentially responsible party
RAWP	Removal Action Work Plan
RCRA	Resource Conservation and Recovery Act
TCRA	Time-Critical Removal Action
TEF	toxicity equivalency factor

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

March 29, 2002

**SUBJECT: ACTION MEMORANDUM ADDENDUM 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

This document is an addendum to the January 18, 2002, *Action Memorandum for CERCLA* (Comprehensive Environmental Response, Compensation, and Liability Act) *Time-Critical Removal Action* (TCRA) *at Installation Restoration (IR) Site 25, Alameda Point, Alameda, California* [Foster Wheeler Environmental Corporation (FWENC), 2002]. The purpose of this Action Memorandum Addendum (AMA) is to document, for the Administrative Records, the Department of the Navy's (DON's) decision to perform a TCRA for two additional parcels within IR Site 25. The TCRA pertains to soils containing elevated levels of polynuclear aromatic hydrocarbons (PAHs) within Operable Unit-5 (synonymous IR Site 25). IR Site 25 is comprised of approximately 42 acres and is divided into three Environmental Baseline Survey (EBS) parcels (Parcels 181, 182 and 183). IR Site 25 is located within the National Priorities List's listed portion of former Naval Air Station (NAS) Alameda.

The *Action Memorandum*, (FWENC, 2002) provides for a TCRA in the western portion of EBS Parcel 181 (referred to herein as 1st Phase TCRA area) that is currently being conducted in accordance with the *Final Removal Action Work Plan* (RAWP), *CERCLA TCRA at IR Site 25, Alameda Point, Alameda, California* (FWENC, 2001). This AMA establishes that a TCRA is also warranted for Estuary Park (EBS Parcel 182) and EBS Parcel 183. The two parcels (synonymous 2nd Phase TCRA area) encompass an additional 11.6 acres within IR Site 25.

The 2nd Phase TCRA includes the excavation and off-site disposal of soil with elevated levels of PAHs from DON-owned EBS Parcels 182 and 183. The land use for the 2nd Phase TCRA area

includes a recreational parkland, the Coast Guard Housing Office, and the Coast Guard Housing Maintenance Office. The goal of the 2nd Phase TCRA is to substantially eliminate the potential pathways of exposures to the public, U.S. Coast Guard facility personnel, construction workers, and possible ecological receptors that utilize the park and its recreational facilities. The DON is expediting the removal action at this time to mitigate potential risk. This AMA proposes to remove and replace 2 feet of surface soil within the 2nd Phase TCRA area. The lateral and vertical extent of the removal area is based on an action level of 1.8 milligrams per kilogram 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 [Environmental Protection Agency (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 AMA only addresses 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 Code of Federal Regulations), Part 300, and 2) California Health and Safety Code, 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.

The following sections of this AMA address the pertinent modifications to the *Action Memorandum* (FWENC, 2002). Only those sections that contain additional information specific to the 2nd Phase TCRA are included in this report. Figures presented in the *Action Memorandum* (FWENC, 2002) that have been revised to address the 2nd Phase TCRA are included in this report and are denoted with an (A) after the figure number [for example, Figure 1-1(A)].

Note that this AMA is considered a supplementary document to the *Action Memorandum* (FWENC, 2002). For completeness, one needs to refer back to the *Action Memorandum* (FWENC, 2002) and then expand on the discussions by considering the modifications in the work elements as described in the AMA.

2.0 SITE CONDITIONS AND BACKGROUND

This AMA addresses the additional areas to be remediated as part of the 2nd Phase TCRA. The 2nd Phase TCRA area consists of 11.6 acres that encompass EBS Parcels 182 and 183, located within IR Site 25 at Alameda Point, Alameda, California [Figures 2-1(A) and 2-2(A)].

2.1 SITE DESCRIPTION

2.1.1 Removal Site Evaluation

In 1995, three surface soil samples, five subsurface soil samples, and four groundwater samples were collected in EBS Parcel 182. In 1998, approximately 49 multi-depth soil samples [0.5 feet to 10 feet below ground surface (bgs)] were collected on an approximate 150-foot by 150-foot grid system within the same area. Based on the results of these samples two trends were apparent in the historical review of benzo(a)pyrene-equivalent concentrations: 1) benzo(a)pyrene-equivalent concentrations are elevated in EBS Parcel 182 and decrease to the east and southeast and, 2) benzo(a)pyrene-equivalent concentrations are higher in soils between 4 to 8 feet bgs than 0 to 0.5 feet bgs in EBS Parcel 182.

2.1.2 Physical Location

This AMA adds two additional parcels, EBS Parcels 182 and 183, to be remediated as part of the 2nd Phase TCRA. These parcels comprise the northern and western portion of IR Site 25 [Figures 2-1(A) and 2-2(A)].

2.1.3 Site Characteristics

IR Site 25 previously consisted of tidal flats and marshland areas that were subsequently filled with dredged materials from the San Francisco Bay and Oakland Inner Harbor. The 2nd Phase TCRA area is located entirely within EBS Parcels 182 and 183 and occupies approximately 11.6 acres of IR Site 25. EBS Parcel 182 is used primarily as a recreational parkland and contains a baseball field, soccer field, sand volleyball courts, and a small playground, in addition to a physical fitness course. The Coast Guard Housing Office is also located within the same parcel. The EBS Parcel 183 consists of the Coast Guard Housing Maintenance Office. The 2nd Phase TCRA area is bordered by Todd Shipyard to the west, the Fleet and Industrial Supply Center, Oakland Alameda Annex Facility to the north and east, residential housing (1st Phase TCRA area) to the south and southeast, and EBS Parcel 178 to the south [Figure 2-2(A)]. Currently, support facilities associated with the 1st Phase TCRA activities occupy the northeast portion of EBS Parcel 182. These support facilities will also be utilized during the 2nd Phase TCRA.

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

The 2nd Phase TCRA area consists of recreational parkland, a support office, and maintenance facility. The immediate exposure media of concern at the 2nd Phase TCRA area is surface soil contaminated with PAHs, which is also the case at the 1st Phase TCRA area, EBS Parcel 181.

2.1.5 National Priorities List Status

The 2nd Phase TCRA area, located within IR Site 25, is within the National Priorities List-listed portion of former NAS Alameda.

2.2 OTHER ACTIONS TO DATE

Previous and current actions at the 2nd Phase TCRA area are discussed below.

2.2.1 Previous Actions

The EBS Parcel 182 has been fenced and access is restricted. The 1st Phase TCRA is currently being conducted in EBS Parcel 181 in accordance with the Final RAWP (FWENC, 2001). The northeast portion of 2nd Phase TCRA area is currently being utilized as a site support area for these activities. Figure 2-2(A) depicts current site conditions. No remedial action to date has been conducted within 2nd Phase TCRA.

2.2.2 Current Actions

No revisions.

2.3 STATE AND LOCAL AUTHORITIES' ROLE

2.3.1 State and Local Actions to Date

The *Action Memorandum* (FWENC, 2002) was submitted by the DON for public review.

2.3.2 Potential for Continued State and Local Response

No revisions.

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

No revisions.

3.1 THREATS TO PUBLIC HEALTH OR WELFARE

No revisions.

3.1.1 Development of Risk-Based Action Level

No revisions.

Medium of Concern, Exposure Pathways, and Exposure Scenario

No revisions.

EPA Region 9 Preliminary Remediation Goals

No revisions.

Site-Specific Action Level

No revisions.

3.2 THREATS TO THE ENVIRONMENT

No revisions.

4.0 ENDANGERMENT DETERMINATION

Assessment of threats, as summarized in Section 3.0 of the *Action Memorandum* (FWENC, 2002), 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 the 2nd Phase TCRA.

Potential release of PAHs from this site, if not addressed by implementing the 2nd Phase TCRA selected in this AMA, 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

No revisions.

5.1 PROPOSED ACTION

The proposed removal action consists of excavation and off-site disposal of surface soils from the 2nd Phase TCRA area. Soil beneath the existing buildings and select structures are excluded from excavation. However, structures associated with the recreational facilities (baseball diamond, soccer goal posts, playground equipment, and so forth) will be removed so excavation can occur in those areas. Structures associated with the recreational facilities, except for playground equipment, will be replaced upon completion of sod placement. The jogging pathway in the recreational parkland portion of EBS Parcel 182 will be repaved. An irrigation system will be installed to support the sod establishment. The primary objective of the proposed action is to eliminate potential inhalation, dermal contact, and ingestion pathways to those that utilize the recreational park (such as facility 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.

Survey

A land survey will be conducted to produce a topographic map for grade control and to demark the area of excavation. In addition, pre-construction sampling locations will be staked.

Pre-construction Sampling

To provide adequate waste profiling data to the disposal facility, soil samples will be collected for every 250 cubic yards of excavated soil. The site is 11.6 acres and a two foot excavation depth will yield approximately 37,500 cubic yards of soil. Dividing the area into 58-foot by 58-foot grids (250 cubic yards per grid) will yield approximately 150 sampling grids. As stated above, the site has been partially characterized in earlier investigations and applicable analytical data will be utilized to minimize the additional sampling. Figure 5-1(A) depicts the proposed sampling grids for the 2nd Phase TCRA area and also identifies locations where historical sampling was performed. Based on the distribution of historical data, new sample locations were identified. Soil samples collected for waste characterization will be analyzed for volatile organic compounds, pesticides, polychlorinated biphenyls, 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 procedures for evaluating the California hazardous waste toxicity characteristic.

Site Clearing

Site features, including selective trees, fences, and structures associated with the recreational facilities, will be removed prior to excavation and not replaced. The recreational parkland also

includes a baseball field, sand volleyball court, a small playground, and soccer field that will be removed for the work activity. These specific facilities, except for playground equipment, will be replaced upon completion of the excavation. Utility or utility pole removal is not anticipated. Large trees selected for preservation will be marked and protected during removal activities.

Removal Activities

Excavation will be performed in unpaved and paved areas [except as identified on Figure 2-2(A)], to a maximum depth of 2 feet bgs in an area encompassing approximately 11.6 acres of the 2nd Phase TCRA area. These excavation dimensions will yield approximately 37,500 cubic yards of soil. The work will be performed on sections of soil within the boundary area that are appropriately sized so that excavation and backfilling of clean soil, excluding topsoil, can be completed by the end of every second workday except for excavations immediately around Building 545 and Facility 591 that will be excavated in phases that do not exceed an area that cannot be backfilled within the same day. Top soil and sod placement will be scheduled as not to interfere with excavation activities.

5.1.1 Contribution to Remedial Performance

No revisions.

5.1.2 Descriptions of Alternative Technologies

No revisions.

5.1.3 Engineering Evaluation/Cost Analysis

No revisions.

5.1.4 Applicable or Relevant and Appropriate Requirements (ARARs)

No revisions.

5.1.4.1 Chemical-Specific ARARs

Resource Conservation and Recovery Act (RCRA) Hazardous Waste Standards

No revisions.

5.1.4.2 Location-Specific ARARs

Coastal Resource ARARs

The 2nd Phase TCRA area is approximately 200 feet south of the Oakland Inner Harbor. This has no impact on the existing requirements for the Coastal Resource ARARs and no further action is required.

5.1.4.3 Action-Specific ARARs

Federal Hazardous Waste Storage ARARs

No revisions.

State Waste Storage ARARs

No revisions.

State Stormwater ARARs

No revisions.

5.1.5 Project Schedule

The 2nd Phase TCRA area pre-construction sampling is scheduled to begin in March 2002. The 2nd Phase TCRA is scheduled to begin in April 2002 and to be completed in by the end of September 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(A) through 5-6(A). 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 56,200 tons. The work will be performed in a period of time not to exceed 180 calendar days. The estimated cost is approximately \$6,831,322. 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**

No revisions.

7.0 PUBLIC INVOLVEMENT

No revisions.

8.0 OUTSTANDING POLICY ISSUES

No revisions.

9.0 RECOMMENDATIONS AND SIGNATURES

To date, the DON has not acquired evidence identifying other potentially responsible parties (PRPs) at the 2nd Phase TCRA area. 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 AMA was prepared in accordance with current EPA and DON guidance documents for TCRAs under CERCLA. The purpose of this AMA was to identify and analyze removal actions to address contaminated soil at the 2nd Phase TCRA area within IR Site 25, 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 EBS Parcels 182 and 183 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 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

- Foster Wheeler Environmental Corporation (FWENC). 2001. *Final Removal Action Work Plan, CERCLA Time-Critical Removal Action at Installation Restoration Site 25, Alameda Point, Alameda, California*. November.
- FWENC. 2002. *Action Memorandum for CERCLA Time-Critical Removal Action (TCRA) at Installation Restoration (IR) Site 25, Alameda Point, Alameda California*. January.
- U.S. Environmental Protection Agency (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(A)

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	\$ 94,000
Subtotal Direct Costs	\$ 246,480
Contingency (20%)	\$ 49,296
Fee (10%)	\$ 24,648
ESTIMATED TOTAL COSTS	\$ 320,424

(1) Costs include indirect costs where applicable

(2) Accuracy approximately plus or minus 25%

TABLE 5-2(A)

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

Item	Cost
Project and construction management and procurement	\$ 1,450,720
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 356,113
Clear, grub, and tree removal	\$ 109,800
Excavation and capping	\$ 8,575,996
Contaminated soils and liquids transportation treatment and off-site disposal	\$ 256,645
Soil, liquid, and air samples analyses	\$ 163,932
Site restoration	\$ 94,000
Subtotal Direct Costs	\$11,148,006
Contingency (20%)	\$ 2,229,601
Fee (10%)	\$ 1,114,801
ESTIMATED TOTAL COSTS	\$14,492,408

(1) Costs include indirect costs where applicable

(2) 9,360 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(A)

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

Item	Cost
Project and construction management and procurement	\$ 1,450,720
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 356,113
Clear, grub, and tree removal	\$ 154,800
In situ stabilization	\$ 2,620,053
Contaminated liquids transportation treatment and off-site disposal	\$ 22,711
Soil, liquid, and air sample analyses	\$ 332,760
Site restoration	\$ 423,578
Subtotal Direct Costs	\$ 5,501,535
Contingency (20%)	\$ 1,100,307
Fee (10%)	\$ 550,153
ESTIMATED TOTAL COSTS	\$ 7,151,995

(1) Costs include indirect costs where applicable

(2) Accuracy approximately plus or minus 25%

TABLE 5-4(A)

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

Item	Cost
Project and construction management and procurement	\$ 1,169,440
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 356,113
Clear, grub, and tree removal/replacement	\$ 154,800
Excavation, ex situ stabilization, backfilling, and compaction	\$ 5,614,400
Contaminated liquids transportation treatment and off-site disposal	\$ 22,711
Soil, liquid, and air samples analyses	\$ 324,115
Site restoration	\$ 423,578
Subtotal Direct Costs	\$ 8,205,957
Contingency (20%)	\$ 1,641,191
Fee (10%)	\$ 820,596
ESTIMATED TOTAL COSTS	\$10,667,744

(1) Costs include indirect costs where applicable

(2) Approximately 56,200 tons of soil is assumed to be excavated, treated on site, and used as backfill material

(3) Accuracy approximately plus or minus 25%

TABLE 5-5(A)**COST ESTIMATE FOR ALTERNATIVE 6 – EXCAVATION/THERMAL
DESORPTION/BACKFILL^{1,2,3}**

Item	Cost
Project and construction management and procurement	\$ 1,169,440
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 356,113
Clear, grub, and tree removal/replacement	\$ 154,800
Excavation, on-site thermal desorption, backfilling, and compaction	\$ 5,240,107
Contaminated liquids transportation treatment and off-site disposal	\$ 22,711
Soil, liquid, and air samples analyses	\$ 222,572
Site restoration	\$ 423,578
Subtotal Direct Costs	\$ 7,730,121
Contingency (20%)	\$ 1,546,024
Fee (10%)	\$ 773,012
ESTIMATED TOTAL COSTS	\$10,049,157

(1) Costs include indirect costs where applicable

(2) Approximately 56,200 tons of soil is assumed to be excavated, treated on site, and used as backfill material

(3) Accuracy approximately plus or minus 25%

TABLE 5-6(A)

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

Item	Cost
Project and construction management and procurement	\$ 888,160
Action Memorandum, Remedial Action Work Plan, and Post-Excavation Closure Report	\$ 140,800
Pre-construction surveys and project infrastructure	\$ 356,113
Clear, grub, and tree removal	\$ 154,800
Excavation, backfilling, and compaction	\$ 1,399,857
Contaminated soils and liquids transportation treatment and off-site disposal	\$ 1,426,311
Soil, liquid, and air samples analyses	\$ 465,244
Site restoration	\$ 423,578
Subtotal Direct Costs	\$ 5,254,863
Contingency (20%)	\$ 1,050,973
Fee (10%)	\$ 525,486
ESTIMATED TOTAL COSTS	\$ 6,831,322

(1) Costs include indirect costs where applicable

(2) Approximately 56,200 tons of soil is 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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DCN: FWS-D-RAC 02-0621
CTO: #0040

APPROVED BY: AE

CHECKED BY: VR
REVISION: 0

DRAWN BY: MD
DATE: 02/26/02

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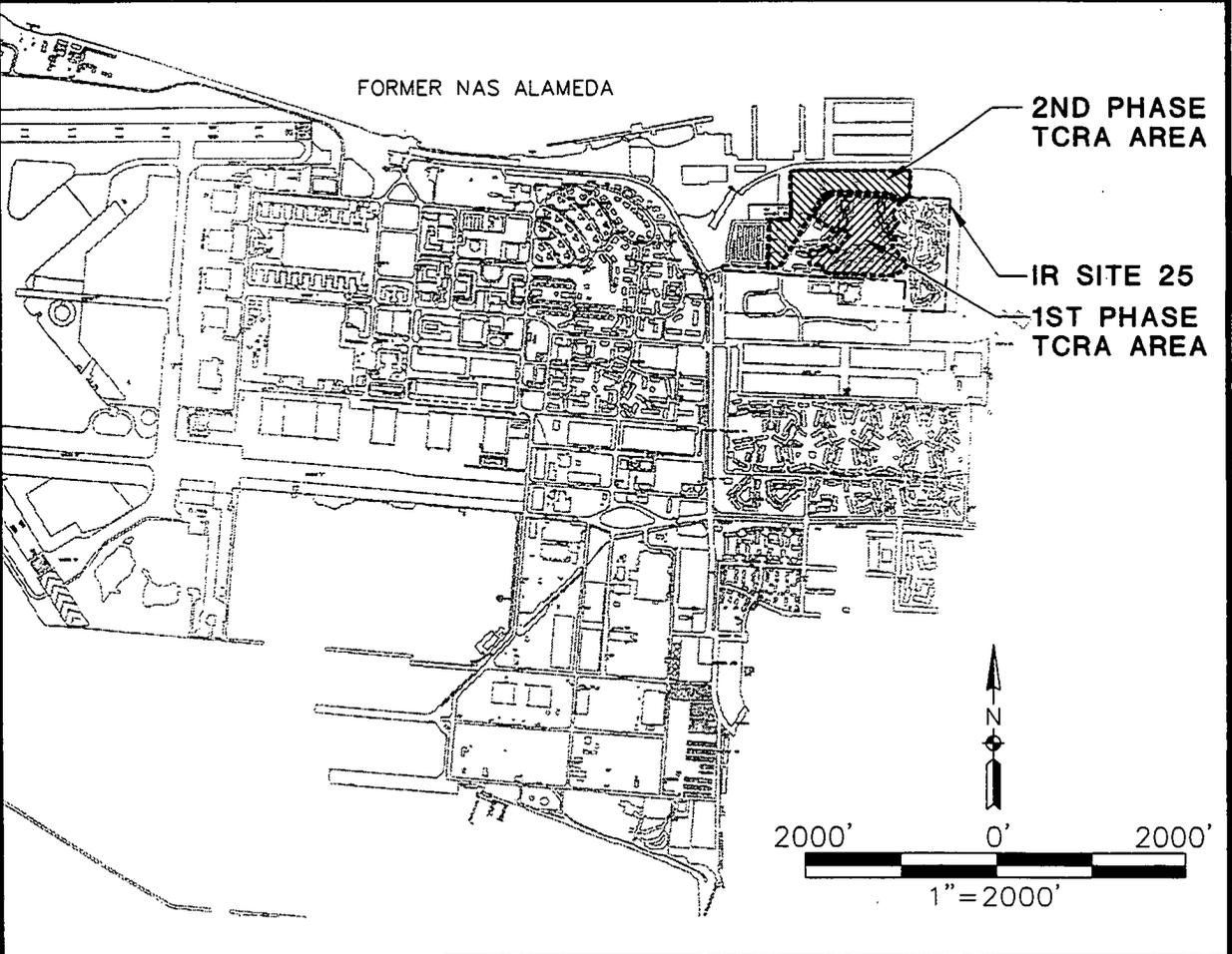
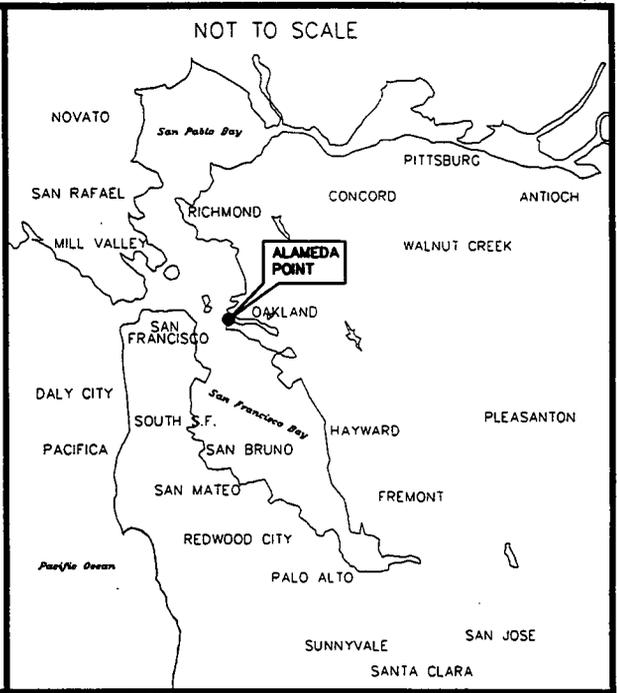
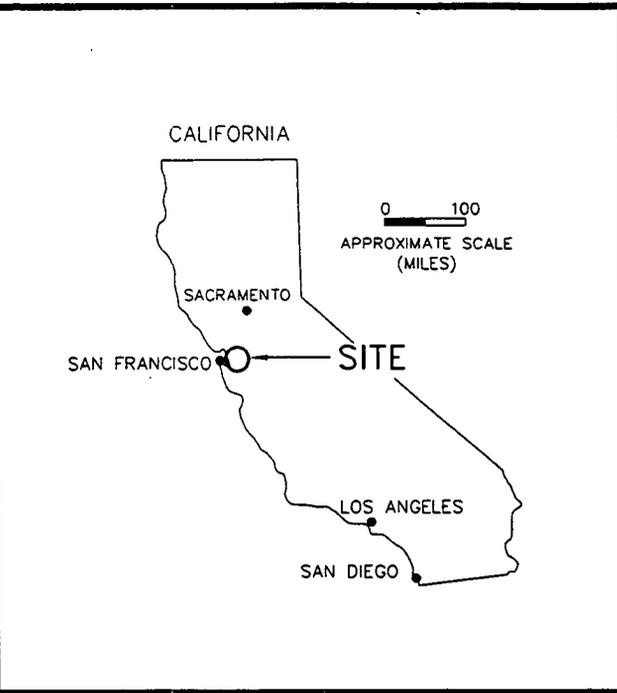


Figure 2-1(A)
SITE VICINITY MAP

ALAMEDA POINT - IR SITE 25

FOSTER  WHEELER
ENVIRONMENTAL CORPORATION

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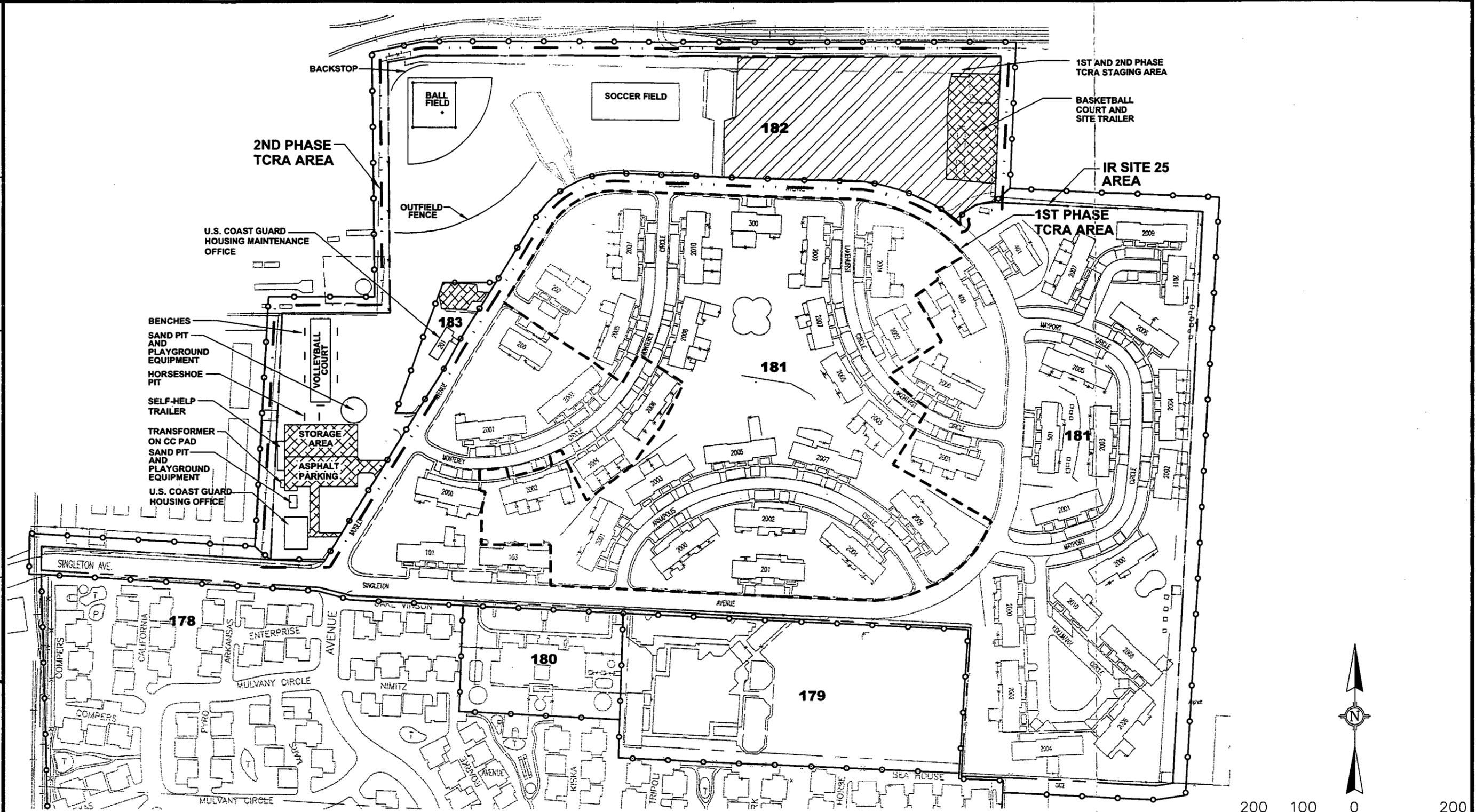
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LEGEND:

- 1ST PHASE TIME-CRITICAL REMOVAL ACTION (TCRA) BOUNDARY
- 2ND PHASE (TCRA)
- - - IR 25 SITE BOUNDARY
- - - ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY
- 181 EBS PARCEL NUMBER
- [Cross-hatched box] PAVED AREA EXCLUDED FROM EXCAVATION
- [Diagonal hatched box] 1ST AND 2ND PHASE TCRA STAGING AREA

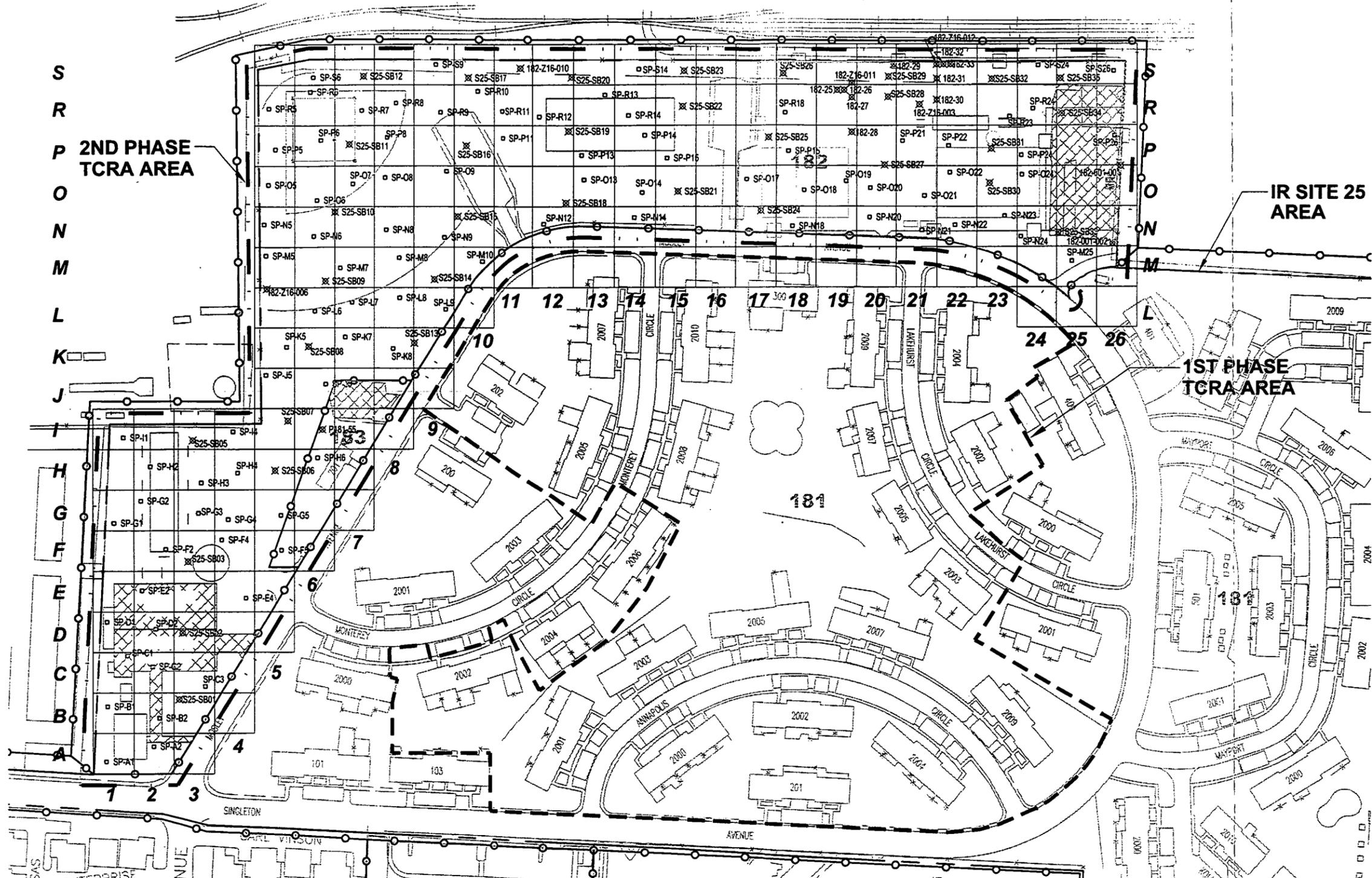
Figure 2-2(A)
SITE LOCATION MAP

ALAMEDA POINT - IR SITE 25

FOSTER W WHEELER
ENVIRONMENTAL CORPORATION

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2ND PHASE
TCRA AREA

IR SITE 25
AREA

1ST PHASE
TCRA AREA

LEGEND:

- 1ST PHASE TIME-CRITICAL REMOVAL ACTION (TCRA) BOUNDARY
- 2ND PHASE TIME-CRITICAL REMOVAL ACTION (TCRA) BOUNDARY
- - - IR 25 SITE BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY
- 181 EBS PARCEL NUMBER
- PRE-CONSTRUCTION SAMPLE LOCATION
- × HISTORIC SAMPLE LOCATION
- A 58'X58' SAMPLE GRID

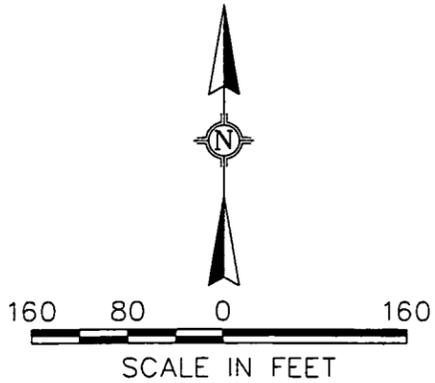


Figure 5-1(A)
 EXCAVATION BOUNDARY AND
 PRE-CONSTRUCTION SAMPLE LOCATIONS
 ALAMEDA POINT - IR SITE 25
 FOSTER WHEELER
 ENVIRONMENTAL CORPORATION

APPENDIX A
INDEX OF ADMINISTRATIVE RECORDS
FOR ALAMEDA POINT, IR SITE 25
(will be updated)

APPENDIX B
EVALUATION OF REMOVAL ALTERNATIVES

APPENDIX B

EVALUATION OF REMOVAL ALTERNATIVES

This attachment lists several removal alternatives considered to mitigate the 2nd Phase Time-Critical Removal Action (TCRA) area 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 2 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).
- 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 Resource Conservation and Recovery Act (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

- Since upper 0.5 feet would be excavated prior to cap placement, 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.
- 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 would be slightly difficult since in situ mixing of stabilizing agents would be required around existing buildings.
- Source is not removed, and the stabilized material will remain in place and will still contain polynuclear aromatic hydrocarbons (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.
- Costs are relatively high.

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 since 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 a potential short-term exposure risk via airborne contaminants.
- It may require institutional controls (for example, deed restrictions) to restrict future development or construction in excess of 2 feet bgs.

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.

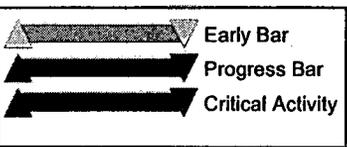
Limitations

- 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

Activity Description	Orig Dur.	Early Start	Early Finish	2002												
				F	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	2003	
Estuary Park																
Pre-Construction Submittals																
NOPI 1 Award	0	06MAR02A		◆												
Action Memo Draft Addendum	15	11MAR02	29MAR02	▬												
FSP/QAPP Draft Addendum	15	11MAR02	29MAR02	▬												
SHSP Draft Addendum	15	11MAR02	29MAR02	▬												
Removal Work Plan Draft Addendum	15	11MAR02	29MAR02	▬												
Navy Review Action Memo Draft Addendum	10	01APR02	12APR02	▬												
Navy Review Draft FSP/QAPP Draft Addendum	10	01APR02	12APR02	▬												
Navy Review SHSP Draft Addendum	10	01APR02	12APR02	▬												
Navy Review Draft Removal WP Addendum	10	01APR02	12APR02	▬												
Final Action Memo Addendum	10	15APR02	26APR02	▬												
Final FSP/QAPP Addendum	10	15APR02	26APR02	▬												
Final SHSP Addendum	10	15APR02	26APR02	▬												
Final Removal Work Plan Addendum	10	15APR02	26APR02	▬												
Submit Final Action Memo Addendum	0		26APR02	◆												
Submit Final FSP/QAPP Addendum	0		26APR02	◆												
Submit Final SHSP Addendum	0		26APR02	◆												
Submit Final Removal Work Plan Addendum	0		26APR02	◆												
Construction																
Setup Estuary Park Staging Area	5	29APR02	03MAY02	▬												
Estuary Park Soil Removal Action	95	06MAY02	18SEP02	▬												
Demob	5	19SEP02	25SEP02	▬												
Post Construction Submittals																
Draft Post Construction Report	17	26SEP02	18OCT02	▬												
Navy Review Post Construction Report	10	21OCT02	01NOV02	▬												
Final Construction Report	15	04NOV02	22NOV02	▬												
Submit Final Post Construction Report	0		22NOV02	◆												
Technical Completion	0		22NOV02	◆												
Job Closeout																
Project Closeout	40	25NOV02	23JAN03	▬												
CTO Closeout	0		23JAN03	◆												

Start Date 10JUL01
 Finish Date 23JAN03
 Data Date 11MAR02
 Run Date 18MAR02 15:22
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Foster Wheeler Environmental Corp.
 Southwest Division RAC III
 CTO 0040 - Alameda Point Soil Removal,
 Proposed Schedule for Estuary Park



APPENDIX D
RESPONSE TO U.S. EPA COMMENTS
(Placeholder for comments on Draft)