

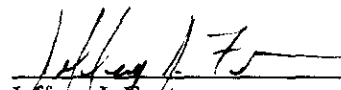
**Environmental Baseline Survey
California State University
Monterey Bay Parcel
Fort Ord, California**

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Prepared for

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DISTRIBUTION

SELECTED ACR NYMS

ACM	Asbestos-Containing Materials
ARAR	Applicable or Relevant and Appropriate Requirement
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BEC	Base Environmental Coordinator
BRAC	Base Realignment and Closure
BTC	Base Transition Coordinator
CEQA	California Environmental Quality Act
CERFA	Community Environmental Response Facilitation Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
COE	U.S. Army Corps of Engineers
DoD	Department of Defense
EBS/EBST	Environmental Baseline Survey/Environmental Baseline Survey for Transfer
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
ENRD	Directorate of Environment and Natural Resources Management
FORA	Fort Ord Reuse Authority
FORG	Fort Ord Reuse Group
FOST	Finding of Suitability to Transfer
FOSL	Finding of Suitability to Lease
IAROD	Interim Action Record of Decision
LBP	Lead-Based Paint
NEPA	National Environmental Policy Act
NPL	National Priorities List
NoAROD	No Action Record of Decision

OEW	Ordnance and Explosive Waste
OU	Operable Unit
PCB	Polychlorinated Biphenyl
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROC	Record of Concurrence
ROD	Record of Decision
SOC	Statement of Conditions
SWMU	Solid Waste Management Unit
USAEC	U.S. Army Environmental Center
UST/AST	Underground Storage Tank/Aboveground Storage Tank
UXO	Unexploded Ordnance

EXECUTIVE SUMMARY

This parcel-specific Environmental Baseline Survey (EBS) presents the results of an assessment of known, existing, environmental conditions for a portion of Fort Ord, Monterey County, California. The area encompassed as this EBS is known as the California State University Monterey Bay (CSUMB) parcel.

The purpose of the EBS is to support transfer of real property by deed or by lease by identifying available information about existing environmental conditions on a parcel and adjacent areas. A Finding of Suitability to Transfer (FOST), which documents the environmental suitability of a parcel for transfer on the basis of specified criteria, may be prepared on the basis of the information in the EBS. According to DoD guidance (*DoD, 1994*), the appropriate official of the respective military department will certify through a FOST that one of the conditions listed below is true:

- The requirements of CERCLA 120(h)(3) have been met (i.e., all remedial action necessary to protect human health and the environment has been taken), or
- The requirements of CERCLA 120(h)(4) have been met for the parcel because no CERCLA hazardous substances were stored for 1 year or more, known to have been released, or disposed on the parcel.

The EBS and FOST are coordinated and complementary documents that provide information regarding the environmental suitability of a parcel for transfer with respect to available information and specific criteria. These documents are reviewed by the appropriate federal and state agencies and the agency staff comments are incorporated as necessary into subsequent versions of the documents.

On the basis of available information, the CSUMB parcel EBS indicates that the requirements of CERCLA 120(h)(3) or (4) appear to have been met for areas outside of NPL sites that occur within the CSUMB parcel. On the

basis of FOST guidance criteria, those CSUMB parcel areas outside NPL sites may be considered by the Army as suitable for transfer by deed. Several health- or safety-related environmental conditions currently exist or are suspected to exist on the CSUMB parcel, including the suspected or known presence of friable asbestos in poor condition, lead-based paint, and unexploded ordnance, and those conditions could pose a health risk to workers or occupants of structures. Areas in which such conditions exist include areas otherwise suitable for transfer by deed according to FOST guidance criteria. In most cases, such environmental conditions are being further evaluated or investigated by the Army, but these further activities are not complete at this time.

1.0 INTRODUCTION

This parcel-specific Environmental Baseline Survey (EBS) presents the results of an assessment of existing environmental conditions for a portion of Fort Ord, Monterey County, California (Plate 1). The area examined in this EBS is the California State University Monterey Bay (CSUMB) parcel, as shown on Plates 2 and 3. Information presented in this EBS will be used to prepare a parcel-specific Finding of Suitability to Transfer (FOST) for a portion or portions of the CSUMB parcel (phases), should the Army determine that such a FOST is appropriate, as discussed below and in Section 2.0. This EBS, Version 2, incorporates updated environmental information for the CSUMB parcel as well as responses to comments received from regulatory agencies on the draft (Version 1) EBS issued February 18, 1994 (Appendix A). This Version 2 EBS for the CSUMB parcel was prepared, in part, as the result of an agreement between the Army and CSUMB officials.

Fort Ord became an active military installation in 1917 and was selected for closure pursuant to the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510; BRAC91). On July 11, 1991, the President approved the BRAC91 list of recommended closures and realignments, including the closure of Fort Ord and the realignment of troops from Fort Ord to Fort Lewis, Washington. On February 13, 1992, the Army filed a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) to examine the impacts of closing Fort Ord and realigning troops to Fort Lewis. The EIS was completed, and an EIS Record of Decision (ROD) was signed in December 1993.

In Fall 1993, the Army initiated several EBSs to support the transfer of excess real property at Fort Ord. The approach developed for Fort Ord includes consideration of a number of issues that affect real property transfer, including the nature and extent of contamination at the installation and other health and safety issues associated with the condition of buildings. To accommodate the reuse needs of the surrounding community, the Army has prioritized the

preparation of parcel-specific EBSs on the basis of requests received from the community. Table 1 shows the reuse parcels for which Fort Ord is currently preparing parcel-specific EBSs or FOSTs. These priority parcels were identified by Fort Ord and the community-based Fort Ord Reuse Group (FORG), which proposed an initial list of priority reuse sites (FORG, 1993). FORG has since been replaced by the Fort Ord Reuse Authority (FORA), which was established in mid-1994 pursuant to State Senate Bill No. 899 (SB 899).

This EBS was prepared for Fort Ord on behalf of the U.S. Army Corps of Engineers (COE), Sacramento District, which has been retained by the Army to conduct surveys to support real-property transfer at Fort Ord. This EBS was prepared by Harding Lawson Associates (HLA) in accordance with the COE Supplemental Scope of Work (SSOW) dated September 2, 1993, under Contract DACA05-86-C-241, Modifications P00091 and P00130.

1.1 Purpose and Objectives

Under current Department of Defense (DoD) procedures, the Army's determination on transferability of excess property associated with base closures includes the following steps: (1) review of currently available information on the environmental conditions on the property, (2) preparation of an EBS, (3) a determination by the Army in terms of specific criteria that the property is suitable for transfer, and (4) preparation of a FOST to document the property's suitability for transfer in terms of those specified criteria. DoD policy on the preparation of an EBS and subsequent FOST, including the specific criteria to be used by the Army in assessing the suitability of a parcel for transfer, is contained in the most recent DoD guidance on the EBS/FOST process which was released on June 1, 1994 (DoD, 1994). This Version 2 EBS was prepared based on the most recent DoD guidance.

The purpose of the EBS is to support transfer of real property by deed or lease by providing an assessment of the existing environmental conditions on a parcel and adjacent areas on the basis of pre-existing information. To the extent that information is available to the authors, the EBS discusses the following:

- Status of site investigations
- Nature and extent of known contamination, if any
- Solid and hazardous waste management practices
- Underground storage tank management practices
- Status of building surveys for asbestos, lead-based paint, or radon
- Other information pertaining to environmental conditions on the parcel.

The EBS is focused on identification and documentation of environmental site characterization activities and of the presence or likely presence of hazardous substances or hazardous wastes on a portion of real property considered for transfer. The EBS addresses hazardous substances or wastes, including certain substances not usually regulated under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act), such as petroleum products, asbestos, and lead-based paint in structures. The EBS includes consideration of soil or groundwater contamination and a description of potential public health and safety issues, such as those associated with the condition of buildings, that may affect the Army's ability or decision to transfer such property, to the extent that relevant information is available. The EBS may not constitute a complete site characterization because it is based on existing available information. An EBS may be updated to reflect more recently acquired information or to support transfer of additional areas.

The FOST is prepared on the basis of the EBS. The purpose of the FOST is to document the

environmental suitability of a parcel for transfer to non-federal agencies or the public, in terms of specified criteria. The FOST compares these criteria with known site characteristics documented in the EBS. As stated in the most recent EBS/FOST guidance (*DoD, 1994*), a FOST has the following objectives:

- Protection of human health and the environment
- Preparation of EBSs in a consistent manner to assess, determine, and document the environmental suitability of properties for transfer
- Ensuring transfer of property without interfering with cleanup actions
- Ensuring compliance with applicable environmental requirements, allowing DoD to demonstrate compliance with CERCLA Section 120(h) before property is transferred.
- Providing for adequate public and regulatory participation without unduly encumbering the DoD's authority and mandate to make property available for reuse in a timely manner
- Ensuring sufficient environmental review of the real property being considered for transfer is conducted to avoid unwarranted risks of future liability.

1.2 Procedures for Conducting an Environmental Baseline Survey (EBS)

Procedures for conducting an EBS are contained in DoD correspondence noted above (*DoD, 1994*). The EBS is similar to a CERCLA Preliminary Assessment (PA) and may include information from many sources, including ongoing programs, such as Fort Ord's CERCLA remedial investigation/feasibility study (RI/FS), building surveys for asbestos, lead-based paint, and radon, solid waste management activities, and other programs, as discussed in Section 3.0. Specific activities may include the following:

- Identification of parcel boundaries
 - Search and review of existing records regarding environmental conditions on the parcel
 - Description of known current or past activities on the parcel
 - Interviews with current and/or former employees involved in operations on the parcel
 - Description of known hazardous substance or hazardous waste management practices on the parcel or an adjacent property
 - Documentation of observations made during visual and physical inspections
 - Description of possible sources of contaminants on the parcel or on adjacent parcels, on the basis of available information
 - Documentation of ongoing response actions.
- The requirements of CERCLA 120(h)(4) have been met for the parcel because no CERCLA hazardous substances were stored for 1 year or more, known to have been released, or disposed on the parcel.

DoD guidance specifies the format for a FOST. A FOST should contain:

- Purpose
- Property Description
- Regulatory Coordination, describing state agencies and USEPA review of draft documents
- Findings of the EBS review, summarizing known current or historical environmental conditions in the parcel
- Discussion of environmentally sensitive areas, listing any such areas, including wetlands, cultural or historic resource areas, or areas containing endangered species
- Finding of suitability to transfer
- Signature, according to the signature authority discussed above.

1.3 Procedures for Preparing a Finding of Suitability to Transfer (FOST)

Procedures for conducting a FOST are also contained in DoD correspondence noted above (*DoD, 1994*). A FOST is expected to be a relatively brief document, only a few pages in length. A FOST is prepared by DoD to document its certification of the suitability of a parcel for transfer, based on information in the EBS and the specific certification criteria described in FOST guidance. According to DoD guidance (*DoD, 1994*), a senior-level environmental official, equivalent to at least a Deputy Assistant Secretary from the military department, will certify through the FOST that one of the conditions listed below is true:

- The requirements of CERCLA 120(h)(3) have been met for the parcel being transferred (i.e., all remedial action necessary to protect human health and the environment has been taken), or

1.4 Summary

The EBS and FOST are coordinated and complementary documents that provide information regarding the environmental suitability of a parcel for transfer with respect to available information and specific criteria. The EBS summarizes existing environmental information and provides a technical basis for the FOST. The EBS also provides a mechanism for documenting both known CERCLA and non-CERCLA information (e.g., possible health-related conditions associated with the presence of non-CERCLA asbestos-containing materials). The FOST provides a brief overview of the contents of the EBS and presents conclusions about the parcel's suitability for transfer.

1.5 Report rganization

The remaining sections of this EBS describe environmental conditions relevant to transfer of the CSUMB parcel. Section 2.0 describes the Fort Ord setting and general characteristics of the CSUMB parcel, including parcel location and boundaries, current and historical land use, anticipated land use following transfer, and land use adjacent to the CSUMB parcel. Section 3.0 describes the specific activities conducted for the CSUMB parcel EBS and FOST. Section 4.0 presents the results of the EBS, describing available information about existing environmental conditions on the CSUMB parcel. Section 5.0 summarizes the findings and conclusions of the EBS and describes the status of FOST preparation for the CSUMB parcel.

extent that cited reports and agency information are complete and correct, and that all relevant information has been provided to HLA. The purpose of the EBS is to identify and describe available information. In the EBS, HLA has not attempted to independently verify the completeness or accuracy of the presented information, or to independently assess the environmental condition of the area described.

1.6 Limitations

This document was prepared for the sole use of HLA's client, the Department of the Army, Corps of Engineers, Sacramento District, the only intended beneficiary of our work. No other party should rely on the information contained herein without the prior written consent of HLA. Distribution of this document to other parties does not constitute HLA's consent for those or other parties to rely on the information contained herein. This document may not contain sufficient information for the purposes of other parties.

HLA's professional services in this EBS, including the preparation of this document, were conducted in accordance with practices and procedures generally accepted in the environmental consulting field in northern California at this time; no other warranty is given or implied by this report.

Information about the presence or absence of hazardous substances in the area discussed in this report is based on limited data and observations. Environmental conditions may change over time and may be different away from locations where data or samples were collected or observations made. HLA does not and cannot have complete knowledge of environmental conditions in the area discussed. Furthermore, this report is complete and accurate only to the

2.0 PAR EL DES RIPTI N

This section presents relevant parcel descriptive information, including an overview of Fort Ord's physical setting, proposed parcel reuse, previous and current activities on the parcel, and historical uses of adjacent parcels.

2.1 Fort Ord Physical Setting

Fort Ord is adjacent to Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco (Plate 1). The base comprises approximately 28,000 acres adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. The Southern Pacific Railroad and Highway 1 pass through the western part of Fort Ord, separating the beach-front portions from the rest of the base. Laguna Seca Recreation Area and Toro Regional Park border Fort Ord to the south and southeast, respectively. Land use east of Fort Ord is primarily agricultural, as was land use at Fort Ord before the Army acquired the property.

After it opened in 1917, Fort Ord primarily served as a training and staging facility for infantry troops. No permanent improvements were made until the late 1930s, when administrative buildings, barracks, mess halls, tent pads, and a sewage treatment plant were constructed. From 1947 to 1975, Fort Ord was a basic training center. After 1975, the 7th Infantry Division (Light) occupied Fort Ord. Light infantry troops are those that perform their duties without heavy tanks, armor, or artillery. Fort Ord was selected for decommissioning in 1991 and placed on the BRAC91 list, but troop reallocation was not completed until 1993. Fort Ord officially closed September 30, 1994.

The three major developed areas within Fort Ord are the Main Garrison, Fritzsche Army Airfield (FAAF), and the East Garrison. The remaining approximately 20,000 acres of undeveloped property was used for training activities.

The Main Garrison contains commercial, residential, and light industrial facilities.

Construction began in 1940 and ended in the 1960s, starting in the northwest corner of the base and expanding southward and eastward. During the 1940s and 1950s, a small airfield was in the central portion of the Main Garrison. This airfield was decommissioned when FAAF was completed, and the earlier airfield facilities were redeveloped as motor pools or for other operations.

FAAF, which served as the general airfield for Fort Ord, is in the northern portion of the base, adjacent to the City of Marina. FAAF was originally outside the formal boundaries of Fort Ord but was incorporated into Fort Ord in 1960 and expanded in 1961.

The East Garrison occupies 350 acres on the northeastern edge of the base and consists of military and industrial support areas, recreational facilities, and recreational open space.

2.2 Geology/Hydrogeology at Fort Ord

This section briefly summarizes information on geology and hydrogeology in the Fort Ord area; a detailed discussion is presented in the *Draft Basewide Hydrogeologic Investigation (HLA, 1993a)*.

Fort Ord is within a geologically complex area in the central California Coast Ranges. The region is underlain, starting with the deepest known formations and moving up to the ground surface, by one or more of the following units: Mesozoic granodiorite; Miocene marine siltstone and shale of the Monterey Formation; upper Miocene to lower Pliocene sandstone of the Santa Margarita Formation; Pliocene marine sediments possibly the Purisima Formation; upper Pliocene to Pleistocene alluvial fan, lake, and flood deposits of the Paso Robles Formation; and the Aromas Sand, a Pleistocene sand and gravel unit. Above these units, unconsolidated gravel, sand, silt, and clay of the Pleistocene age Valley Fill deposits (including the Salinas Valley Aquiclude, FO-SVA) are present. Over much of the base

these geologic units are overlain by dune sand deposits. Surface soils, developed from the dune sands, Aromas Sand, and Paso Robles Formation which cover the majority of the base, are typically sandy.

The Salinas Basin and the Seaside Basin are the two main groundwater basins underlying Fort Ord. The Salinas Basin underlies approximately the northern one-third of Fort Ord where groundwater typically occurs at depths in excess of 100 feet and is separated from deeper aquifers by an extensive clay (FO-SVA); the Seaside Basin underlies approximately the southern two-thirds of the base. The location and characteristics of the boundary between these two basins are uncertain.

2.2.1 Salinas Basin

In the area of Fort Ord, four relatively well-defined aquifers are within the Salinas Basin: the unconfined A-aquifer and the confined 180-, 400-, and 900-foot aquifers. The latter three aquifers were originally named to reflect their average depths in the Salinas Valley proper; however, these aquifers are generally deeper at Fort Ord than in the Salinas Valley.

The A-aquifer is separated from the 180-foot aquifer throughout much of Fort Ord by the Salinas Valley Aquiclude (FO-SVA). This aquiclude becomes thinner and apparently disappears ("pinches out") in some areas west of the Main Garrison and near the southern Salinas Basin boundary, resulting in pathways for water movement between the A- and 180-foot aquifers. Groundwater flow in the A-aquifer is significantly influenced by the configuration of the top of the FO-SVA. Where the FO-SVA pinches out beneath the Main Garrison area, groundwater appears to flow from the A-aquifer into the 180-foot aquifer.

Groundwater flow directions in the 180- and 400-foot aquifers vary across the base. Historical data suggest that flow was originally to the northwest in both aquifers. However, recent data indicate that groundwater flow in these aquifers is generally eastward as a result of pumping from Salinas Valley and Fort Ord supply wells. Current and historical pumping has resulted in

saltwater intrusion into the 180- and 400-foot aquifers in the vicinity of the City of Marina and the Fort Ord Main Garrison.

2.2.2 Seaside Basin

The limited data available for the Seaside Basin indicate that its water-bearing zones do not correlate with those of the Salinas Basin. The Seaside Basin reportedly consists of the following three aquifers, from deepest to shallowest: the confined Santa Margarita Formation aquifer, the confined Paso Robles Formation aquifer, and an unconfined uppermost aquifer in the dune sands and Aromas Sand.

Unlike the Salinas Basin, the Seaside Basin is structurally complex and contains several northwest-trending faults and folds. The basin is bounded on the south by the Chupines fault and on the north by a subsurface bedrock high. Faults that have displaced the Santa Margarita and lower portions of the Paso Robles aquifer are believed to divide the Seaside Basin into several subbasins, including the Seaside Coastal southern, northern, and Fort Ord subbasins and the Seaside and Laguna Seca subbasins.

Water-supply wells in the city of Seaside produce water primarily from the Santa Margarita and Paso Robles aquifers of the Seaside Basin.

2.3 Proposed CSUMB Parcel Reuse

The CSUMB parcel is proposed for use as a higher education facility as part of the California State University system. The proposed facility will be a full-service campus eventually supporting approximately 25,000 students and employing approximately 3,000 people. Existing residential units will be used for students and staff, with modification of numerous existing structures to provide housing for additional students. The undeveloped land will eventually be developed for agricultural and science centers and additional housing and classrooms, as needed (COE, 1993).

2.4 SUMB Parcel Description

The CSUMB parcel encompasses approximately 1,250 acres along the north-central portion of the Main Garrison of Fort Ord (Plate 3). The parcel is irregularly shaped and, in general, is bordered to the north by Eighth Street, the Fort Ord Landfills, and Old County Road; to the west by North-South Road and the 1940 barracks; to the south by Troop Housing, open space/training grounds, and Inter-Garrison Road; and to the east by open space/training grounds and East Garrison.

Land uses within the CSUMB parcel consisted of the following:

- Residential areas, including troop barracks and family housing (Schoonover Park, Fredericks Park, and the portion of Abrams Park east of Imjin Road)
- Local services/commercial areas providing retail or commercial services, including dry cleaners, theaters, dental clinics, and churches
- Military support/industrial areas, including motor pools, machine shops, and maintenance facilities
- Training areas, including a track and field and obstacle and confidence courses
- Recreational areas, including picnic grounds, ball fields, tennis and racquetball courts, and a recreation center
- Open space/training areas, including areas left in their natural state, without the development of facilities.

All or portions of 11 National Priorities List (NPL) sites being investigated under CERCLA as part of the RI/FS program at Fort Ord are included in the CSUMB parcel. These NPL sites are:

- Site 14: 707th Maintenance Facility
- Site 15: DEH Yard

- Site 16: Pete's Pond
- Site 17: 1400 Block Motor Pool
- Site 18: 1600 Block Motor Pool
- Site 20: South Parade Ground, 3800 and 319th Motor Pools
- Site 21: 4400/4500 Block Motor Pool, East
- Site 22: 4400/4500 Block Motor Pool, West
- Site 23: 3700 Block Motor Pool
- Site 24: Old DEH Yard
- Site 38: AAFES Dry Cleaners.

A more complete description of each of these sites is included in Section 4.9.2.

The boundaries of the CSUMB parcel shown on Plate 3 encompass the entire area that will eventually comprise the CSUMB campus according to current information. This EBS addresses that entire area. However, because of known environmental conditions on the parcel, including several NPL sites, there will be planned phasing of development of the campus. Portions of the CSUMB parcel (Phase I) have already been transferred based on information available at the time of that transfer, including the draft EBS (Version 1). The outline of the Phase I parcel is shown on Plate 3. The CSUMB Phase I parcel included those areas requested by CSUMB officials and transferable under CERCLA 120(h)(3) or (4). Some areas that could be transferred now under CERCLA were not included in Phase I. Subsequent transfers scheduled as Phases II and III will include the NPL sites when remedial activities progress to the point where the parcel becomes suitable for transfer under CERCLA 120(h)(3).

2.5 Previous and Current Activities on CSUMB Parcel

Construction of the present-day Main Garrison, including structures within the CSUMB parcel, began in 1940 and ended in the 1960s, starting in the northwest corner of the base and expanding

southward and eastward. The housing areas in the eastern portion of the CSUMB parcel were constructed on open land during the 1980s and 1990. Most of the structures are still present as built but are in various stages of decommissioning due to base closure. The motor pools and maintenance facilities were used for fueling and maintenance of military vehicles and generally maintained storage areas for motor-vehicle-related products and solvents. Many of the maintenance facilities and motor pools contained grease racks used for oil change and motor vehicle lubrication and underground storage tanks (USTs) used for gasoline, diesel, waste oil, fuel oil, "mogas," and solvent storage. Many of the USTs have been removed, and the majority of those that remain are slated for removal.

The old Directorate of Engineering and Housing (DEH) Yard, located in the southwestern corner of the CSUMB parcel, was used from 1942 to 1980 for maintenance, pest control, plumbing, and electrical work. The area also housed a paint shop, vehicle fueling area, and auto maintenance shop with USTs. Most of the buildings and USTs have been demolished or removed, and only an open field and home improvement center remain. Barracks and housing areas, recreation facilities, training areas, and open space are also present.

2.6 Historical Uses on Property Adjacent to Parcel

The area surrounding the CSUMB parcel consists of both developed and undeveloped property. The developed properties within approximately 1 mile of the CSUMB parcel boundaries include the following:

- Housing Areas: Abrams and Patton parks to the north and Marshall, Stilwell, and Fitch parks to the south
- Local services and commercial areas, including banks, theaters, clothing store and commissary, Hayes Hospital, and a fire station to the south
- Military support/industrial areas, including motor pools, machine shops, and

maintenance facilities to the north, south, and west

- Fritzsche Army Airfield to the north
- Main Garrison Sewage Treatment Plant to the northwest and East Garrison Sewage Treatment Plant to the east.

The undeveloped properties surrounding the CSUMB parcel include:

- Operable Unit 2, including the Fort Ord Landfills and the associated groundwater plume
- Open space and training grounds to the south
- Beach Trainfire Area to the west.

Several sites in the vicinity of the CSUMB parcel are actively being investigated as part of a RI/FS program at Fort Ord, including:

- Site 2: Main Garrison Sewage Treatment Plant 0.5 mile northwest
- Site 3: Beach Trainfire Area 0.6 mile west
- Site 4: Beach Stormwater Outfalls 0.75 mile west
- Site 10: Burn Pit 0.25 mile southwest
- Site 11: Army and Air Force Exchange Service 0.25 mile southwest (AAFES) Fueling Station
- Site 12: Directorate of Logistics (DOL) 0.25 mile west Automotive & Cannibalization Yard
- Site 16: DOL Maintenance Yard and Pete's Pond North/east boundaries
- Site 19: 2200 Block Facility North boundary
- Site 20: South Parade Ground, 3800 & 519th Motor Pools West boundary
- Site 21: 4400/5500 Block Motor Pool, East 0.3 mile east

- Site 22: 4400/5500 Block Motor Pool, West South boundary
- Site 24: Old DEH Yard Southwest boundary
- Site 34: FAAF Fueling Facility 0.8 mile north
- Site 40: FAAF Defueling Area 1.0 mile north
- Operable Unit 10.75 mile north
- Operable Unit 2, including the Fort Ord Landfills North boundary.

As discussed in Section 2.5, many Fort Ord maintenance facilities and motor pools contained grease racks, hazardous waste temporary storage areas, and USTs. Many USTs in adjacent properties have either been removed or are slated for removal in the future.

3.0 APPR A H T NDU TING ENVIRONMENTAL BASELINE SURVEYS

This section describes the activities performed for the CSUMB EBS. The procedures followed are described in EBS guidance (*DoD, 1994*), which outlines the process for preparing an EBS and subsequent FOST. This EBS for the CSUMB parcel considers currently available information from various sources, including interviews with Fort Ord personnel and results of investigations conducted under the RI/FS or other programs. These include UST investigations, results of building inspections, and evaluation of the potential for adverse impacts from other parcels in the vicinity of the CSUMB parcel. The information obtained in conducting this EBS is presented in Section 4.0.

A number of environmental programs are currently ongoing at Fort Ord, including the Basewide RI/FS, the UST program, building surveys for asbestos and lead-based paint, resampling for radon levels beneath a few buildings, radiological surveys, management of PCB-containing transformers, evaluation of potential releases from onpost SWMUs, and an assessment for the presence of ordnance and explosive waste (OEW). New information will likely be available in the future because the programs are ongoing. The availability of new information could change the assessment of suitability or the Army's decision to transfer portions of the CSUMB parcel.

3.1 Records Search

Existing reports and other available records, including federal government and state and local agency records, have been reviewed to identify past or current activities relating to environmental conditions within the CSUMB parcel. Documents and information that were reviewed for this EBS included the following types of reports or investigative or management plans developed by Fort Ord as part of the Installation Restoration Program (IRP) and BRAC programs:

- RI/FS literature surveys and base inventory reports

- Preliminary assessment/site inspections
- Enhanced preliminary assessments
- Work plans
- Sampling and analysis plans
- Construction information for buildings within the CSUMB parcel
- Results of building surveys for asbestos, lead-based paint, radon, and radiological programs
- Inventories and management programs for USTs and SWMUs
- Hazardous waste management surveys, including surveys for management of transformers containing polychlorinated biphenyls (PCBs) and oils and Fort Ord's Defense Environmental Restoration Program - Management Inventory System (DERP-MIS) records
- Air monitoring reports
- Documents developed during the Community Environmental Response Facilitation Act (CERFA) assessment
- Records of an archive records search for UXO and OEW
- Documentation of searches of federal and state environmental databases, including the EPA's National Priorities List (NPL) and Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) databases and the list of California state Superfund sites, which was obtained from the CERFA report (*ADL, 1994*). Information from federal and state environmental databases is in Appendix B.

3.2 Interviews

Interviews of Fort Ord or COE personnel have been conducted as necessary to support the EBS. For each of the various environmental programs being conducted at Fort Ord, a specific point of contact was identified by the Army. The points of contact for this EBS are listed in Table 2. As specifically noted in Section 4.0, these personnel were contacted at various times to obtain updates of schedules and the status of assessment and abatement or remedial actions that were underway. In addition to the point-of-contact personnel identified in Table 2, other current or former employees of Fort Ord were contacted to gather information about past or current activities. In some cases, interviews documented in this EBS were conducted as part of previous assessments. The sources of information obtained from interviews are documented in appropriate sections of Section 4.0.

3.3 Visual Inspections

Visual inspections were conducted as necessary either to confirm information generated in the EBS or to identify additional potential problems. Because of the extensive previous investigations and assessments conducted to date, only a limited number of visual inspections for the CSUMB parcel were conducted during the EBS. Previous visual inspections of the CSUMB parcel were performed routinely during other investigations, such as site investigations at NPL sites within or adjacent to the CSUMB parcel. Additionally, specific inspections have been conducted previously by other contractors in support of building surveys for asbestos and lead-based paint. The results of the visual inspections are noted in appropriate portions of Section 4.0.

3.4 Sampling

The EBS and FOST are typically based on available data. However, according to DoD guidance, sampling of various environmental media, including soil, groundwater, or building materials, is appropriate in the EBS to support decision-making and the preparation of a FOST. For the CSUMB parcel, investigations are being conducted or are planned for areas identified as

RI/FS sites, as noted above. Over 200 soil and water samples have been collected at RI/FS sites within the CSUMB parcel, as discussed in more detail in Section 4.9. Additionally, samples are being collected in support of the UST removals being conducted under the UST Management Program, as discussed in Section 4.7. Asbestos, lead-based paint, radon, and radiological surveys have been completed for a number of structures within the CSUMB parcel. The respective scopes of these investigations are described briefly in Sections 4.1 through 4.4. Some of these programs are not complete, but on the basis of the reported scopes and objectives of the individual programs and selected other assessment activities, additional sampling in the EBS did not appear necessary to support decision-making and possible preparation of a FOST for portions of the CSUMB parcel.

3.5 Identification of Hazardous Substance/Waste Management Practices

Procedures for management of hazardous materials and waste at Fort Ord were reviewed on the basis of documents identified by Fort Ord and from interviews with Fort Ord personnel. Relevant documents identified by Fort Ord and reviewed for this EBS include the following:

- Evaluation of Solid Waste Management Units (AEHA, 1988)
- Fort Ord Regulation 200-1 of the Fort Ord Hazardous Waste Management Plan (HWMP), September 4, 1990
- Fort Ord Underground Storage Tank Management Plan (HLA, 1991a)
- Verification of Solid Waste Management Units, Fort Ord, California (HLA, 1993c)
- Fort Ord Spill Prevention, Control, and Countermeasures Plan, Table 1 and Section VI, Detailed Spill History (SPCC; *Dynamac Corporation, 1993*)
- Pest Management, Army Regulation 420-76 (June 3, 1986).

Additionally, a database list of hazardous waste generators, dated April 19, 1990, was reviewed. Other potentially relevant documents, including the HWMP, Hazardous Waste Facility Inventory Report, Spill Plan, and site-specific spill reports were not available for review.

Interviews of selected Fort Ord personnel, including Ms. Claire Murdo and Mr. Rick Schmitt, regarding management practices were also conducted. Ms. Murdo was interviewed in December 1993 and in February 1994. She provided information about the status of revisions to various management documents and provided some background to development of these documents. Mr. Schmitt provided the database list of hazardous waste generators and summarized the development and evolution of hazardous waste management activities at Fort Ord.

Information from these documents and interviews is summarized in Section 4.8.

3.6 Identification of Potential Impacts from Adjoining Properties

Identification of potential impacts from adjoining properties is based on available information for land uses associated with properties that are within approximately 1 mile of the CSUMB parcel boundary. The 1-mile search distance is consistent with the American Society for Testing and Materials (ASTM) standard for property transfer investigations. Several activities were conducted to evaluate potential impacts from adjoining properties within the 1-mile search distance boundary. The boundaries of the CSUMB parcel were first located on a Fort Ord site map, which was prepared using a computer-aided design/drafting (CADD) program. The areas surrounding the CSUMB parcel then were searched for known or suspected locations of Fort Ord NPL sites, SWMUs, USTs, and other previously identified areas where potentially hazardous materials may have been stored, released, or disposed onpost. The process also considered the nature of the potentially contaminated medium and the likelihood for contamination in that medium to effect the CSUMB parcel. Groundwater flow directions

were considered in identifying potential effects of groundwater contamination on the CSUMB parcel. Details of the potential impacts from adjoining properties are discussed in Section 4.10.

Additionally, the results of known building surveys for asbestos, lead-based paint, and radon were considered in identifying possible sources of potentially hazardous materials. For sites near the Fort Ord installation boundary, potential impacts from areas immediately offpost were also identified by reviewing the results of a search of environmental databases maintained by federal, state, and local agencies, as noted above.

Information from this process is presented in Section 4.10. For the CSUMB parcel, most of the areas considered fall within the installation boundary. An area north of Fort Ord was also considered, because the northern boundary of the CSUMB parcel is within 1 mile of the northern Fort Ord boundary. It is the only offpost area searched for the CSUMB parcel EBS.

3.7 Installation Restoration Program

Fort Ord was placed on the NPL on February 21, 1990. Since then, the Army has conducted site investigations at 41 identified sites assessing the nature and extent of contamination at Fort Ord. Thousands of soil, groundwater, air, and biota samples have been collected at Fort Ord. The investigations are described in numerous basewide or site-specific reports, including the RI/FS Work Plan (HLA, 1991c), Sampling and Analysis Plan (HLA, 1991b), and 41 site investigation reports that are either completed or in preparation (see Section 6.0, References), which themselves contain site-specific work plans for subsequent site characterization activities. The scopes of the investigations documented in these reports were developed in coordination with relevant regulatory agencies.

Approximately 16 NPL sites are located within or near the boundaries of the CSUMB parcel, as discussed in Section 4.9. These sites are being investigated under the installation's RI/FS program. Information from investigations of these NPL sites was included in development of

the CSUMB parcel EBS. Information from other site investigation activities, including evaluation of potential soil contamination associated with USTs, was also included in the CSUMB parcel EBS.

4.0 RESULTS OF ENVIRONMENTAL BASELINE SURVEY FOR CSUMB PARCEL

4.1 Asbestos Management Program

The descriptions of the asbestos management program and its status are based on information that the Army made available to HLA (current through October 1994). Asbestos surveys, testing, sampling, or analyses, or assessment or evaluations of the precision, accuracy, or applicability of the methods or data presented herein were not performed by HLA as part of the EBS.

The purpose of the asbestos management program at Fort Ord is to identify asbestos-containing materials (ACM) in Army-controlled buildings, evaluate the ACM's friability, condition, and potential for damage, and implement response actions appropriate to the findings. According to Mark Reese, Environmental Protection, HQ 7th ID AFZW-DE-ERND, asbestos-related work at Fort Ord is performed in accordance with the following documents/guidelines:

- Department of the Army Regulation (AR) 200-1, *Environmental Protection and Enhancement* Chapter 10, "Asbestos Management Program" May 23, 1990

To control asbestos and minimize environmental release and subsequent occupational and incidental exposure, Chapter 10 of AR 200-1 requires that the following objectives be met:

- Exclude ACM from procurements and uses where possible
- Handle, store, transport, and dispose of asbestos and perform asbestos-related work in accordance with applicable regulations
- Perform building surveys to maintain an inventory of ACM, assess the potential for exposure to asbestos, and implement

operations and maintenance programs and management plans to minimize exposure until removal is accomplished

- Maintain a nonoccupational environment safe from asbestos exposure.
- Department of the Army Memorandum, "Policy Guidance - Lead-Based Paint and Asbestos in Army Properties Affected by Base Realignment and Closure" November 15, 1993

The purpose of this memorandum is to provide Army policy guidance on identifying and eliminating lead-based paint and asbestos hazards for properties affected by Base Realignment and Closure (BRAC). The guidance requires the following:

- Compliance with all applicable regulations and coordination with regulators to ensure compliance
- Maintenance of minimum essential operations, maintenance, and repair standards to prevent deterioration of BRAC properties and to assure sufficient protection of human health and the environment
- Verification that asbestos surveys and assessments have been or will be performed for BRAC properties prior to disposal
- ACM will be removed from BRAC properties if:
 - Protection of human health requires removal, such as for damaged friable ACM
 - A property is intended to be used as a school (K-12) or child care facility

- A property is unsalable without removal or its removal prior to sale is cost-effective
- The Army intends to demolish the building prior to property disposal
- Friable or potentially friable asbestos that presents a health hazard and that has been stored or disposed underground or elsewhere on the property that presents a health hazard will be properly disposed
- Final BRAC actions taken regarding asbestos will be dependent on the overall disposal plan and any reuse of the building
- If the Army is pressed for early release of vacant property, where it is known that the buyer intends to demolish the property or remove the asbestos before reoccupancy in accordance with applicable regulations, removal of threatening asbestos may not be required. Negotiations are necessary to ensure that the Army's liability is minimized and notice and disclosure of any restrictions are required in the transfer language.

4.1.1 Summary of Program

An asbestos survey of approximately 350 nonhousing buildings (i.e., retail stores, office buildings, lavatories, dining halls, barracks, general purpose buildings, vehicle maintenance and storage, oil storage, bus/taxi stations, and ammunition bunkers) performed in 1989 and 1990 found both friable and nonfriable ACM. ACM was found in tank and pipe insulation, HVAC vibration joint cloths, exhaust flues, acoustic ceiling treatment, floor tile, linoleum and associated mastics, and debris in the buildings (*Weston, 1990, DEI, 1993*).

From October 1991 to April 1993, a basewide asbestos survey of an additional 2,689 nonhousing and barracks structures was performed and found both friable and nonfriable ACM such as tank and pipe insulation, HVAC vibration joint cloths, exhaust flues, acoustic ceiling treatment, floor tile, linoleum and

associated mastics, and debris in the buildings (*DEI, 1993*).

Surveys of housing units that are scheduled for disposal began in October 1993 and are expected to be completed in 1994. The final summary report for the housing surveys will be made available to the recipients of the property (*Reese, 1994*).

4.1.2 Program Status and EBS Results

Approximately 271 nonhousing and 128 housing buildings within the CSUMB parcel have been surveyed for ACM. Available results are summarized in Appendix C, which lists buildings within the CSUMB parcel by building number, the building construction dates, whether the building has been surveyed for asbestos, whether friable and/or nonfriable ACM were identified, and, if ACM was found, whether a rating of 1 to 5 was assigned to any of the ACM indicating that it is of immediate concern. In those ACM surveys, which were conducted by another subcontractor, ratings range from 0 to 13, with a rating of 1 indicating the highest concern. According to ACM survey results, approximately 46 buildings within the CSUMB parcel contain ACM that has been rated 1 to 5; no ACM was found in 58 buildings. Plate 4 indicates buildings in which (1) no ACM was found, (2) ACM with ratings of 1 to 5 was identified, (3) ACM with ratings of 0 or 6 to 13 was found, and (4) buildings for which no asbestos survey information is available. Information in Appendix C was prepared by ATC/DEI from its Fort Ord asbestos database.

Asbestos abatement (removal, encapsulation, enclosure, and operations and maintenance) is planned for areas within Army buildings in the CSUMB parcel where ACM has been identified and meets abatement criteria specified in the Policy Guidance (*Army, 1993c*). According to the Army, asbestos abatement projects for buildings in the CSUMB parcel have not been initiated as of October 1994, pending receipt of the CSUMB Renovation Plan.

4.2 Lead-Based Paint Management Program

The descriptions of the lead-based paint management program and status are based on information that the Army made available to HLA (current through October 1994). Lead-based paint surveys, testing, sampling, or analyses, and evaluations of the precision, accuracy, or applicability of the methods or data presented herein were not performed by HLA as part of the EBS.

The purpose of the lead-based paint (LBP) management program at Fort Ord is to identify and control LBP and lead-contaminated dust in target facilities and eliminate LBP hazards in BRAC properties constructed prior to 1978, planned for disposal prior to January 1995, and intended to be used for residential habitation. Target facilities are Army-owned or leased facilities constructed prior to 1978 and used regularly by children 6 years or younger or by pregnant women as family housing, child development centers, family child care homes, schools, playgrounds, and similar facilities.

In 1978, the Consumer Products Safety Commission reduced the allowable lead concentration in residential paint to 0.06 percent. Based on that revised allowable lead concentration, painted residential structures built prior to 1978 which have not been surveyed as of the date of this report are suspected of containing LBP.

According to Mr. Mark Reese, the LBP Management Program at Fort Ord is performed in accordance with the following Army documents/guidelines:

- Department of the Army Memorandum, "Policy Guidance - Lead-Based Paint and Asbestos in Army Properties Affected by Base Realignment and Closure" November 15, 1993

The purpose of the memorandum is to provide Army policy guidance on identifying and eliminating lead-based paint and asbestos hazards for properties affected by BRAC. The guidance requires the following:

- Compliance with all applicable regulations and coordination with regulators to ensure compliance
- Maintenance of minimum essential operations, maintenance, and repair standards to prevent deterioration of BRAC properties and to assure sufficient protection of human health and the environment
- Performance of LBP surveys and assessments of BRAC properties, in accordance with 24 CFR Part 35, to identify and treat (remove, cover, or scrape/repaint [for small areas only] immediate LBP hazards (paint that is cracking, scaling, chipping, peeling, or loose)
- In accordance with Title X of P.L. 102-550, inspection of housing constructed before 1978 in which any child younger than 6 years of age may reside or be expected to reside and abatement of LBP in housing constructed prior to 1960
- Taking steps to ensure that properties sold for residential habitation are free of immediate LBP hazards prior to residential habitation or, if a property is transferred before the Army can perform the LBP investigation, that conditions of sale will prevent use of the property for residential habitation until hazards existing at the time of transfer have been eliminated by the Army or the recipient
- Management of nondefective surfaces in place to prevent them from becoming hazards
- Notification of potential transferee if evidence suggests that LBP may be present.

- Department of the Army
Memorandum, "Lead-Based Paint Policy
Guidance"
April 28, 1993

The purpose of this memorandum is to provide Army guidance for lead-based paint inspection, risk assessment, management, removal, and disposal in pre-1978 buildings where any child younger than 6 years of age or a pregnant woman may or does reside. The memorandum requires the following:

- Grouping of buildings by type and year of construction and maintenance history and prioritization of inspections on a worst-first basis
- Performing inspections in accordance with Housing and Urban Development guidance for sampling and assessment
- Depending on results of investigation, either managing LBP in place or removing it.

4.2.1 Summary of Program

LBP surveys of pre-1978 housing areas were conducted by U.S. Army Environmental Hygiene Agency (AEHA) in accordance with modified HUD Guidelines and as described in the AEHA lead-based paint inspection report (AEHA, 1994a). The scope of the AEHA lead survey for the CSUMB parcel was limited to the Korean Barracks. Because the Fredericks Park and Schoonover Park housing areas were constructed after 1978, lead-based paint surveys were not conducted in those structures.

From each homogeneous housing area, a representative number of structures were randomly surveyed according to DOA policies and modified HUD guidelines. Building components were assumed to contain LBP throughout the homogeneous housing area if 11 percent or more of the tests for that component were positive for lead. Building components that consistently tested negatively for lead were only considered to be negative when all components in a designated sample group tested negatively.

No hazard assessment was conducted as part of the AEHA survey or this EBS. No other LBP surveys or LBP abatement activities for structures within the CSUMB parcel had been scheduled as of the date of this report.

4.2.2 Program Status and EBS Results

The LBP surveys for the CSUMB parcel began in November 1993 and were completed by March 1994. LBP survey results are available for one homogeneous housing area within the CSUMB parcel, the 21 Korean Barracks. Of these, six structures were surveyed, and all six were found to contain LBP. As a result, all 21 structures were assumed to contain LBP. Building components assumed to contain LBP and the buildings in the Korean Barracks housing area are listed in Appendix D.

Plate 5 shows the following information for buildings within the CSUMB parcel:
(1) structures surveyed and found to contain LBP, (2) structures that were not within the scope of the survey but are suspected of containing LBP due to their pre-1978 construction date, and (3) structures that were built after 1978 and are not suspected of containing LBP. Construction dates were obtained from the list of buildings that have been surveyed for asbestos (Appendix C).

4.3 Radon Reduction Program

The descriptions of the radon reduction program and status are based on information that the Army made available to HLA (current through October 1994). Radon testing or evaluations of the precision, accuracy, or applicability of the methodologies or data presented herein were not performed by HLA as part of the EBS.

The purpose of the radon reduction program at Fort Ord is to assess indoor levels of radon and mitigate elevated levels of radon. According to Mr. Mark Reese, previous radon testing was performed in accordance with the following Army documents/guidelines:

- Department of the Army
Regulation (AR) 200-1, *Environmental Protection and Enhancement*
Chapter 11, "Radon Reduction Program"
May 23, 1990

To identify indoor levels of radon and mitigate elevated levels of radon, Chapter 11 of AR 200-1 requires that the following objectives be achieved:

- Identify structures owned or leased by the Army that have indoor radon levels greater than 4 picocuries per liter of air (pCi/l), which is the EPA's occupancy standard
- Modify all structures found to have levels greater than 4 pCi/l to reduce levels to less than 4 pCi/l.

- Department of the Army
Army Radon Reduction Program (ARRP)
Instructions Manual for Field Personnel
Prepared by Keller & Gannon
August 1991

The purpose of this document is to provide step-by-step procedures to ensure proper deployment, retrieval, and storage of radon detectors. The manual requires the following:

- Alpha track monitors (ATMs) are placed in the lowest living area and left undisturbed for a period of 90 days
- Charcoal canister monitors (CCMs) are placed in the lowest living area and left undisturbed for a period of 72 hours and analyzed within 24 hours.

- Department of the Army
Memorandum, "Army Radon Reduction Program Completion and Installation Status Update"
September 24, 1993

The purpose of this memorandum is to request that (1) radon testing and mitigation programs be completed as soon as possible

and (2) the annual installation ARRP Status Report be updated.

4.3.1 Summary of Program

Radon testing using ASTM procedures was originally performed in the 1989-1990 fiscal year. Those surveys included approximately 2,900 housing and office buildings basewide. Army policy dictates that buildings with radon levels above 4 pCi/l be retested for 12 months. Those buildings with levels above 8 pCi/l must undergo complete remediation within 1 to 4 years.

4.3.2 Program Status and EBS Results

Two buildings within the CSUMB parcel, Buildings 4792 and 5604G, had anomalous results above 4 pCi/l (Table 3; Plate 5). Retesting of radon levels within those buildings was completed between December 1993 and March 1994. Results of the retesting for these buildings showed radon levels below 4 pCi/l. No further testing is planned for these buildings.

4.4 Radiological Survey Program

The radiological survey program being performed at Fort Ord is outlined in a memorandum titled "Base Closure Actions - Radiological Surveys; Trip Report of Mr. John Manfre to Fort Ord, CA, 14 - 16 Sep 93," dated September 20, 1993 (*Rankin, 1993*). The major points included in the memorandum are:

- Closeout radiological surveys will be required at Fort Ord due to Nuclear Regulatory Commission (NRC) and state interest
- The survey procedures will follow the requirements set forth in NRC Regulatory Guide CR 5489
- U.S. Army Environmental Hygiene Agency (AEHA) was retained by the Corps of Engineers (COE) to serve as one of its radiological base closure consultants. AEHA is considered the project manager for the radiological surveys

- The schedule for conducting radiological surveys must consider the need to initiate transferring certain parcels in April 1994
- If any contamination is found, remediation will be required. Minor remediation/decontamination will be performed by the survey teams. Major remediation/decontamination will be handled through the Army Material Command (AMCCOM), Low-Level Radioactive Waste (LLRW) Office.

4.4.1 Summary of Program

Buildings and areas at Fort Ord identified as potential storage and maintenance areas for licensed radioactive materials or equipment were identified in a memorandum titled "Revised List of Buildings at Fort Ord Recommended for Radiological Decommissioning," dated December 8, 1993 (*Chmar, 1993*).

4.4.2 Program Status and EBS Results

According to Mr. Joe R. Daniels, the former Installation Radiological Protection Officer, Directorate of Logistics, radiological survey activities began in January 1994 and were completed in April 1994 (*Daniels, 1994*). A 13-member survey team from Seneca Army Depot performed the radiological surveys. A three-person mobile radiological laboratory from the U.S. Army Communications-Electronics Command (CECOM) analyzed the samples. The survey team was briefed on the procedures for the radiological surveys by personnel from AEHA.

Forty-seven buildings within the CSUMB parcel were identified by Fort Ord for radiological surveys. The buildings are listed in Table 4; their locations are shown on Plate 6. The radiological surveys for the CSUMB parcel were completed in April 1994. According to the AEHA survey documents (*AEHA, 1994b and c*), the 47 buildings were surveyed and sampled and no radiological health hazards were identified.

4.5 EW Assessment Programs

This section describes the investigations regarding the potential presence of ordnance and explosive waste (OEW) resulting from past training activities at Fort Ord. Ordnance-related training at Fort Ord has occurred primarily at the Beach Trainfire Ranges along the western boundary of Fort Ord, and within the Inland Ranges which comprise approximately 8000 acres in the southwest portion of Fort Ord. In addition, several areas outside the Beach Trainfire and Inland Ranges have been identified as potential ordnance-related training areas. As a result of past training activities, OEW may be present in these areas.

OEW is defined as the following materials: bombs and warheads; guided and unguided ballistic missiles; artillery, mortar, and rocket ammunition; small arms ammunition; antipersonnel and antitank mines; demolition charges; pyrotechnics; grenades; torpedoes and depth charges; containerized or uncontainerized high explosives and propellants; and all similar or related items designed to cause damage to personnel or material. Unexploded ordnance (UXO), a subset of OEW, consists of unexploded bombs, warheads, artillery shells, mortar rounds, and chemical weapons. The investigations regarding the potential physical hazards and potential contamination from OEW at Fort Ord are discussed below.

4.5.1 Summary of Programs

Two programs comprise Fort Ord's OEW assessment activities. The first program, which includes the investigation and removal of OEW, is being managed by the U.S. Army Engineer Division, Huntsville (USAEDH), Mandatory Center of Expertise (MCX) for OEW at Army installations. The main objective of this program is to evaluate and address the potential physical hazards that may exist from OEW at Fort Ord. USAEDH's program includes (1) an archive search to identify the types of ordnance and locations of ordnance training areas at Fort Ord, (2) a sampling program to verify information collected during the archive search, and (3) a clearance program to remove and dispose of OEW.

The second program is an evaluation of the presence of potential soil and/or groundwater contamination from ordnance-related chemical residues at ordnance training areas. This investigation was performed by HLA and was managed by the Sacramento District COE as part of Fort Ord's RI/FS. The investigation consisted of: (1) a research task to identify potential ordnance-related training areas and to develop a list of potential ordnance-related contaminants; (2) a sampling and analysis program to evaluate the nature and extent of explosive compounds and metals in selected areas of ordnance use at Fort Ord, and (3) a risk assessment and feasibility study using data collected during the sampling and analysis program.

Information obtained during these two investigations was used to identify sites containing potential OEW. Areas in the vicinity of the CSUMB parcel identified during these investigations as potential ordnance training areas (i.e., areas containing potential OEW) are shown on Plate 7. Eleven potential ordnance training areas were identified within or immediately adjacent to the CSUMB parcel:

- Pete's Pond (adjacent)
- Machine Gun Proficiency Training Area (adjacent)
- 100-Pound Bomb Site
- Mine and Booby Trap Area 2
- Mine and Bobby Trap Area 3
- Chemical, Biological, and Radioactive (CBR) Training Area 2
- Machine Gun Square 3
- Machine Gun Square 4
- Mortar Square 4
- Firing Point 1
- Training Site TS-25.

The OEW assessment program and investigations of these areas are discussed below.

4.5.2 Program Status and EBS Results

The results of the archive search conducted by USAEDH are presented in the Archives Search Report (USAEDH, 1993) and the Archives Search Report (Supplement No. 1) (USAEDH, 1994). The Archives Search Report identifies the types of ordnance used at Fort Ord and describes areas both inside and outside of the Inland Ranges where potential ordnance-related training occurred. A Phase I work plan (HFAI, 1993) was prepared at the direction of USAEDH. It describes the proposed OEW sampling program to address the areas within and near high-priority reuse parcels, as they were identified at that time. OEW removal in the CSUMB parcel began in February 1994 and was approximately 77 percent complete by the end of June 1994 (HFAI, 1994). During USAEDH's clearance activities within the CSUMB parcel, the acreage of several of the potential OEW sites was increased based on field observations. Because of the increasing size of the potential OEW sites and overlap of their boundaries, Fort Ord identified the central portion of the CSUMB parcel (primarily the central portion south of Inter-Garrison Road) as a discrete site for clearance. Sites at which OEW is found and that USAEDH considers to be contaminated require the preparation of a Land Disposal Site Plan (LDSP). An LDSP addressing several parcels, including the CSUMB parcel was produced by Fort Ord in February 1994.

The following paragraphs discuss the status and results of investigations for each of the eleven potential OEW sites within or adjacent to the CSUMB parcel.

- Pete's Pond

Pete's Pond is not located on the CSUMB Parcel but is immediately adjacent to it at the intersection of Imjin Road and Eighth Street (Plate 7). The area is identified as a former uncontrolled landfill and is part of the Fort Ord NPL Site 16/17 investigation. Five bazooka (2.36-inch rocket) rounds and a

buried empty drum with markings indicating a mustard-type chemical agent were found by HLA during the 1993 site investigation. The 87th Explosive Ordnance Disposal (EOD) unit from Presidio of San Francisco removed the bazooka rounds. Tests performed on the drum and surrounding soil by the EOD personnel did not detect chemical agent. Potential soil and/or groundwater contamination at Pete's Pond resulting from past activities and potential impact on adjacent properties is addressed as part of the Site 16/17 RI/FS investigation.

The USAEDH sampling program detected magnetic anomalies (potential subsurface OEW) at the Pete's Pond site. However, sampling excavations indicated no OEW was present at the site (*Temple, 1994d*).

- Machine Gun Proficiency Training Area

The Machine Gun Proficiency Training Area is not within the CSUMB Parcel but is adjacent to the northern boundary along Inter-Garrison Road (Plate 7). The site was described and sketched in a Fort Ord memorandum dated August 8, 1956, which was provided by Fort Ord ENRD (formerly the Directorate of Engineering and Housing [DEH]). Discussions with Fort Ord Range Control personnel indicate that this area was most likely used for dry-fire training (non-firing practice) and possible firing of blank rounds. Based on available site history information, investigation of potential ordnance-related chemical residues as part of the Fort Ord RI/FS was not warranted in this area. USAEDH did not include the Machine Gun Proficiency Training Area in the ASR as a site that warranted investigation.

- 100-Pound Bomb Site

In a discussion with Sergeant First Class Beardsley of the Fort Ord EOD Unit on July 7, 1993, HLA was informed that a 100-pound bomb was found near the Confidence Course located near Eighth Avenue and Inter-Garrison Road (Plate 7). The EOD Explosive Ordnance Incident Report indicated that the bomb was

an unfused, concrete-filled training device. Found with the bomb were two inert antitank practice mines, one inert antipersonnel practice mine, and one parachute flare. According to Mr. Roy Durham of Fort Ord Range Control, this area was used in the past for emergency and EOD training. Based on the information from Mr. Durham and the EOD report, this area did not appear to be a live ordnance training area and it was unlikely that ordnance-related chemical residues would be present. Therefore, this area was not included in the Fort Ord RI/FS for investigation of potential ordnance-related chemical residues. However, because OEW was present at the 100-Pound Bomb Site, this area was included in USAEDH's investigation of potential ordnance-related training areas.

According to Fort Ord personnel, OEW items have been discovered and removed from the 100-Pound Bomb Site during the USAEDH sampling program (*Temple, 1994a*). The OEW included assorted practice mines, assorted booby trap devices, mine fuses, and one M18 smoke grenade. Based on these results, the 100-Pound Bomb Site is considered contaminated relative to potential OEW hazards (*Temple, 1994a*). OEW clearance is currently in progress at the 100-Pound Bomb Site. No adverse environmental conditions within the 100-pound Bomb Site are known to affect the CSUMB Phase I area.

- Mine and Booby Trap Areas 2 and 3

Mine and Booby Trap Areas 2 and 3 were identified on training facility maps from the mid-to-late 1950s. The locations of these training areas are shown on Plate 7. It was believed that only inert ordnance and practice ordnance such as smoke grenades were used in these areas. However, the USAEDH sampling program detected magnetic anomalies (potential subsurface OEW) at both of these areas. Later during the sampling program, numerous practice landmines, mine activators, and flares were discovered and removed. Based on these site data, USAEDH has categorized Mine and Booby Trap Areas 2 and 3 as contaminated

(Temple, 1994d). OEW clearance is currently in progress at both areas. No adverse environmental conditions within these sites are known to affect the CSUMB Phase I area.

- CBR Training Area 3

Four areas for training troops in chemical, biological, and radioactive (CBR) warfare maneuvers were identified at Fort Ord during the review of historical training facilities maps. One of these areas, CBR Training Area 3, is located within the CSUMB Parcel (Plate 7). According to USAEDH's research, classroom training with chemical agents similar to tear gas took place in these areas. Minute amounts of dilute mustard gas, probably part of Chemical Agent Identification Sets (CAIS), were possibly used to familiarize troops with this substance (USAEDH, 1993). USAEDH located the CBR areas and found evidence of pyrotechnic use (e.g., flares, etc.) and a suspected washout area at one of the CBR training areas. Fort Ord Range Control suggested to HLA that the suspected washout area was most likely used by troops practicing vehicle decontamination. Based on available information, it does not appear that chemical agents were released to the environment as a result of activities at the CBR training area. Available site history information indicated that this area did not warrant investigation for potential ordnance-related residues as part of the Fort Ord RI/FS. However, ordnance was found at CBR Training Area 3 and clearance of that area under the USAEDH program is currently in progress (Temple, 1994d).

- Machine Gun Squares 3 and 4

Seven machine gun (MG) squares at Fort Ord were identified. Machine Gun Squares 3 and 4 are located within the CSUMB Parcel east of the Fort Ord main entrance (Plate 7). The locations were indicated on a 1957 training facilities map and on undated maps supplied by the Fort Ord Fire Department. According to Fort Ord Range Control, machine gun squares are practice areas where non-live firing exercises take place. Based on

available information, training at these areas does not appear to have included use of live rounds. Therefore, Machine Gun Squares 3 and 4 were not included in the Fort Ord RI/FS, nor the USAEDH sampling program.

- Mortar Square 4

A portion of Mortar Square 4 is within the CSUMB parcel along the south central boundary (Plate 7). Its location was identified on a 1957 Fort Ord training facilities map. Mortar squares are similar to machine gun squares in that they were used for non-live fire training. Based on this information, Mortar Square 4 was not included in the Fort Ord RI/FS. Mortar Square 4 will be included in USAEDH's clearance program.

- Firing Point 1

Firing Point 1 is located in the southeast corner of the CSUMB parcel (Plate 7). The location of Firing Point 1 was identified on various training facility map and in drawings in the files at Fort Ord Range Control. The flagpole that was used to signal live fire training in progress still remains. According to Fort Ord Range Control, this area experienced light use from about 1978 through 1982. Spent casings and misfired ordnance were cleared after each event. Based on this information, the presence of ordnance-related chemical residues at this location were unlikely; therefore, Firing Point 1 was not included in the Fort Ord RI/FS. Firing Point 1 will be addressed in USAEDH's clearance program for the CSUMB parcel.

- Training Site 25

Part of Training Site 25 (TS-25) is located within the easternmost portion of the CSUMB parcel (Plate 7). The type of training that took place in this area is not known. During an evaluation of training sites at Fort Ord (a total of 25), USAEDH randomly selected TS-17 for sampling and found spent small arms ammunition and some grenade parts at the site (USAEDH, 1994). Based on

the results of that sampling activity, USAEDH has recommended further investigation of TS-17 and all the other training sites, including TS-25. Because the presence of ordnance-related chemicals does not appear likely at these training sites, they were not included in the Fort Ord RI/FS.

4.6 Polychlorinated Biphenyls Management Program

The description of the PCB management program and status are based on information that the Army made available to HLA (current through October 1994). The purpose of the PCB management program at Fort Ord is to identify transformers and other potential PCB-containing materials and evaluate their potential to contain PCBs. As part of this program, HLA also examined transformer storage locations and areas where transformers were reportedly buried.

According to an Army memorandum dated August 25, 1982, all PCB transformers and PCB-filled electromagnets at Fort Ord are to be inspected on a weekly, quarterly, or annual basis as required by EPA Rule on PCBs, 40 CFR Parts 761, 761.120, and 268 and any other applicable environmental regulations. These guidelines are also to apply to the handling, use, storage, and disposal of PCBs and PCB-contaminated material.

4.6.1 Summary of Program

Several sampling episodes for PCBs in transformer oils have been conducted at Fort Ord. According to the Fort Ord Enhanced Preliminary Assessment (*Weston, 1990*), all transformers at Fort Ord were tested for PCBs in 1987. Information from Fort Ord personnel (*Temple, 1994b*), indicates that additional sampling was conducted between 1985 and 1987. The sampling programs encompassed approximately 1,000 transformers throughout Fort Ord, ranging in size from 1.5 KVA to 750 KVA. Most of the sampled transformers were pole-mounted, although pad- or ground-mounted transformers were also included in the sampling program. PCB test results indicated that dielectric fluids from three transformers in Building 3702 in the CSUMB

Parcel had PCB concentrations ranging from 360,000 to 860,000 ppm. In addition, oil from a transformer located near Building 2066 (Main Garrison Sewage Treatment Plant) had a PCB concentration of 100 ppm. No other transformer oils showed PCB levels exceeding the Toxic Substances Control Act (TSCA) limit of 50 ppm. Approximately 168 transformers had PCB levels between 5 and 50 ppm and were considered PCB contaminated based on State of California guidelines at that time. The remaining transformers at Fort Ord had PCB levels under 5 ppm (*Weston, 1990*).

4.6.2 Program Status and EBS Results

According to a Facilities Engineering Work Request dated June 6, 1990, the dielectric fluid from the three transformers at Building 3702 was removed and disposed, and the transformer oil was replaced with non-PCB-containing dielectric fluid. All transformers with PCB levels between 50 and 500 ppm have been replaced (*Weston, 1990*). The last transformers containing PCBs greater than 500 ppm were removed and replaced with non-PCB transformers in 1992 (*Temple, 1994b*). There was no basewide program to replace transformers with PCB levels between 5 and 50 ppm; these are replaced with non-PCB transformers on an as-needed basis (*Weston, 1990*). HLA's review of Army documents indicates that many transformers have been removed and disposed and that dielectric fluid from the transformers has been tested for PCBs, changed out, and disposed as necessary. Little supporting documentation is available to match test results and disposal manifests to specific transformers and their current or former locations.

The only documented release of transformer oil occurred in the late 1970s on Seventh Avenue. The contaminated soil was removed by roads and grounds personnel and taken offpost. No information was available as to the exact location of the release and whether any soil sampling was performed (*Weston, 1990*).

According to a Department of Health Services (DHS) document dated January 14, 1983, 25 transformers containing dielectric fluid with

less than 7 ppm PCBs were buried in the Fort Ord landfill adjacent to the CSUMB parcel (*Knoblock, 1983*). In the document, the DHS requested that the transformers be uncovered and the fluid pumped out and disposed. According to an Army memorandum dated January 14, 1983, compliance with the DHS request was completed on that date (*Cochran, 1983*).

According to Army documents and a U.S. Army Environmental Hygiene Agency (AEHA) Interim Final Report (IFR), dielectric fluid removed from transformers at Fort Ord was stored temporarily in drums at the East Garrison DRMO (Site 29, SWMU FTO-015). Reportedly, transformers were also stored at this location and leaked PCB-containing dielectric fluid to the soil. HLA completed an extensive investigation at this location; however, no PCBs were found in soil and no further action was required (*HLA, 1992c*).

4.7 Petroleum Storage Tanks

This section provides a summary of the underground storage tank (UST) management program and additional information regarding the status of aboveground storage tanks (ASTs) at Fort Ord. The current status of the program and the status of USTs and ASTs within the CSUMB parcel are based on data available through October 1994.

4.7.1 Summary of Program

This summary section describes the Army's UST program, regulatory compliance objectives, and the goals of the Fort Ord UST Management Plan (*HLA, 1991a*). The Army UST program requires compliance with federal, state, and local requirements as outlined in AR 200-1 and the Fort Ord Hazardous Waste Management Plan (HWMP; *Fort Ord, 1990*). Army UST standards state that USTs permanently taken out of service will be removed from the ground. An UST determined to be leaking is emptied immediately and taken out of service. The UST is then either repaired and retested, or removed from the ground. Monterey County Department of Health (MCDOH) permits are obtained for all UST repairs and removals. According to Chapter 5-7 of AR 200-1, abandoned tanks were to be removed by 1992. Fort Ord's UST Management

Plan, completed in draft form during 1990, located and mapped all known existing and former USTs at Fort Ord. Using this information, USTs that were no longer in service (those on the "removal list" in the UST Management Plan) were removed during 1991. MCDOH permits were obtained for all of the UST removals.

The Fort Ord UST Management Plan (*HLA, 1991a*) reported the number and regulatory status of existing USTs at Fort Ord so that recommendations for compliance with UST regulations could be developed. During development of the UST Management Plan, UST information and location data were compiled, and a basewide listing of existing USTs was prepared. This list, the Management Plan List, documented various elements of the status of the identified USTs, including location, age, materials stored in the tanks, tank size, and whether the tank was in use. Based on information available at the time, some of the identified USTs were also placed on one of the three following lists:

- Removal List - USTs designated for removal
- Phase II Vapor Recovery List - USTs designated for piping system upgrades with Phase II vapor recovery systems to reduce emissions into the atmosphere from gasoline-dispensing facilities
- Environmental Assessment List - USTs for which additional documentation or environmental assessments are necessary to properly close the UST locations.

The results of the field work, site plan development, and a regulatory review were evaluated to formulate recommendations to abandon, replace, or upgrade each UST on the above lists.

Specific criteria such as age, construction, pressure test results, documentation of leaks or spills, and costs associated with upgrading were used to further categorize the USTs into the following groups:

- USTs that met current requirements

- USTs that were suitable for upgrading
- USTs that should be replaced
- USTs that were no longer in use and should be removed
- USTs whose purpose could be replaced by another facility or by an alternative energy source or system
- Hazardous waste (primarily waste oil) USTs that should be replaced or eliminated.

Each UST generally fell into one of the above groups. Tables containing UST Summary Sheets and illustrations containing CADD site plans were included as appendixes to the Underground Storage Tank Management Plan (HLA, 1991a).

According to a list provided by the ENRD, approximately 39 ASTs are located at Fort Ord (Temple, 1994a). The condition of these ASTs is unknown. In August 1993, the ENRD registered one 210,000-gallon diesel ASTs at Fort Ord with the California Regional Water Quality Control Board, in accordance with applicable guidelines (Aboveground Petroleum Storage Act, 1990; see California Health and Safety Code). In that letter, the ENRD stated that no changes, modifications, deletions, or additions had been made to the ASTs since its last storage statement on April 13, 1993.

HLA interviewed Ms. Claire Murdo, ENRD, on January 4, 1994, requesting information about any known spills from ASTs on Fort Ord property. She was unaware of any reportable spills or leaks from the ASTs other than a 50-gallon diesel spill near Building 2722, which is outside of the CSUMB parcel. Additionally, Ms. Murdo indicated that for many years 55-gallon barrels of waste oil were emptied into fuel pods that were parked temporarily in various motor pools throughout the base. Spills apparently occurred when waste oil was accidentally poured over the sides of the pods and onto the ground. These spills reportedly occurred in motor pool areas that were most likely paved with asphalt.

4.7.2 Program Status and EBS Results

This section summarizes the status of the UST program at Fort Ord, including a listing of the number of tanks removed recently or that are in place, a description of site characterization activities, and a listing of the number of tanks anticipated for future removal. Information presented below was obtained from Fort Ord (Schmitt, 1994):

- One hundred forty USTs were removed from Fort Ord, primarily between 1991 to 1993
- Of the sites where those 140 USTs were removed, approximately 20 sites were found to be contaminated
- Site characterization studies are under way on the 20 contaminated sites to evaluate the vertical and horizontal extent of contamination.
- Remediation at the 20 sites will likely include excavating, removing, and treating the contaminated soil
- Approximately 113 USTs remain in place for storage of heating fuel, vehicle and aircraft fuel, waste oil, or Stoddard solvent or as emergency storage reservoirs
- Of the remaining USTs, approximately 64 have been identified recently for removal due to base closure. USTs associated with operation of water wells, sewage lifts, or emergency facilities or that are in areas to be retained by the Army will be replaced with double-walled tanks or ASTs (Schmitt, 1994).

An inventory of existing and former USTs on the CSUMB parcel was compiled from various sources of information, including a database and a map of the parcel boundaries provided by the ENRD and COE, respectively, the CERFA report (ADL, 1994), and the Underground Storage Tank Management Plan (HLA, 1991a). The potential exists for some minor discrepancies in the exact number of tanks, planned removals, or other

remedial actions because of recent changes in or uncertainties regarding the parcel boundaries.

Approximately 95 existing and former USTs are or were located within or immediately adjacent to the boundaries of the CSUMB Parcel (Plate 6). Of those 95 tanks, 37 are currently in place, and 58 have been removed (Table 5). By October 1994, the MCDOH had granted closure to 45 of the former USTs (Table 5). Fort Ord is in the process of meeting with the County to assemble proper documentation pertaining to the other former USTs for which closure has not been granted.

Site characterization activities are planned or underway at seven of the former UST locations within the CSUMB parcel: USTs 1685-1, 1685-2, 1685-3, 3803-1, 3803-2, 3803-3, and 4855-1. Investigations have been completed for USTs 1483-1, 1483-2, 1697-1, 1697-2, 4534-1, and 4590-1, and reports are in preparation. Eight of the former USTs are located within the boundaries of NPL sites, as follows:

- Site 14: Tank 4855-1
- Site 17: Tank 1483-1 and 1483-2
- Site 18: Tanks 1685-1, 1685-2, 1685-3, 1697-1, and 1697-2.

Former UST 4855-1 is being investigated under the NPL program. The other 11 former UST locations that are undergoing characterization are being investigated under the Fort Ord UST program.

The 37 USTs remaining in place at the CSUMB parcel are scheduled for removal, and the work plan has been prepared. As of October 1994, removals of existing tanks within the CSUMB parcel had not been initiated.

An inventory of existing ASTs on the CSUMB parcel was compiled from a list provided by the ENRD (*Temple, 1994c*). Three ASTs are located within the boundaries of the CSUMB parcel (Plate 6). None of the tanks were noted to be double-walled but all are contained by a berm (Table 6). Although not within the CSUMB parcel, the standby fuel storage tank, an AST

with a capacity of 210,000 gallons, is located near Building 4441, approximately 300 feet east of the CSUMB parcel boundary.

4.8 Solid and Hazardous Waste Management Program

Fort Ord's procedures for managing hazardous wastes were identified by reviewing available documents and through interviews of personnel responsible for implementation of those programs. The documents reviewed are described in Section 3.5. According to information from these sources, management of hazardous wastes at Fort Ord is conducted in accordance with applicable federal, state, and local laws and regulations for managing hazardous wastes (Fort Ord Hazardous Waste Management Plan (HWMP), Fort Ord Regulation 200-1, September 4, 1990; and AR 200-1). Other sections of the Fort Ord HWMP were not available for review because those sections are being updated on the basis of changes in command and changes in operations resulting from Fort Ord's closure.

The SPCC indicates that hazardous materials, such as brake fluid, acetylene, paint and paint strippers, batteries, transmission and motor oils, waste oils, acids, solvents, and adhesives, were stored at Fort Ord (Table 1 of the SPCC, *Dynamac Corporation, 1993*). These materials were stored at motor pools, maintenance shops, equipment sheds, and the DRMO yard. Storage containers typically ranged from 1 gallon to 55 gallons, although at a few locations, waste oils were reportedly stored in containers of up to 400 gallons. Compressed gas cylinders were used for materials such as oxygen and acetylene. Table 1 of the SPCC lists known container volumes and quantities. Information in Table 1 of the SPCC was current through the end of 1993, but does not reflect the status of hazardous materials storage resulting from downsizing and closure of operations. Current storage of these materials is expected to be significantly reduced from that listed in Table 1 of the SPCC.

According to Ms. Claire Murdo of ENRD, spill plans contained in the HWMP identify requirements for addressing emergencies and spills. Spill reports have been prepared as

necessary over the past 2 to 3 years and document specific releases, but are not currently available for review. However, according to Ms. Murdo and Section VI of the SPCC, during the period covered by the spill reports, no "reportable-quantity" spills or California-regulated spills have occurred. No other information about the management of hazardous waste or materials at Fort Ord is currently available for review. As noted previously, Fort Ord is updating hazardous waste or materials management documents in response to closure of Fort Ord.

Information about the status of solid waste management units (SWMUs) at Fort Ord was reviewed (AEHA, 1988, HLA, 1993c). These documents identified operations at each SWMU and whether further assessment of the SWMU was recommended to identify potential releases. This section summarizes information about the SWMUs at Fort Ord. The following text discusses the types of SWMUs at Fort Ord, the locations of SWMUs within the CSUMB parcel, and previous evaluations of the SWMUs.

4.8.1 Summary of Program

In 1988, the U.S. Army Environmental Hygiene Agency (AEHA) performed an assessment of SWMUs to identify, describe, and evaluate SWMUs at Fort Ord. The purpose of the AEHA study was to assist Fort Ord in bringing the SWMUs into compliance with state and federal regulations and to identify SWMUs requiring environmental sampling and/or remedial action. The methods used by AEHA to identify and assess the SWMUs included:

- A literature search that included review of the installation assessment previously performed by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA)
- Site visits and inspection of conditions at each site.

AEHA's Interim Final Evaluation of Solid Waste Management Units (AEHA, 1988) identified 58 SWMUs at Fort Ord (Table 7). This report divided the SWMUs into three categories:

- SWMUs with evidence of release to the environment
- SWMUs with no evidence of release to the environment
- SWMUs that required environmental sampling to complete the requirements of the Resource Conservation and Recovery Act (RCRA) facility assessment (RFA).

Recommendations to ensure environmental compliance at Fort Ord were also presented in the 1988 SWMU report and included:

- Inclusion of the 1988 SWMU report with the Part B permit renewal application for review by state and EPA Region IX regulatory authorities
- Coordination with the state and EPA Region IX for visual inspections of the identified sites
- Completion of environmental sampling and/or investigations at seven SWMUs: FTO-001, FTO-002, FTO-010, FTO-014, FTO-025, FTO-026, and FTO-041
- Completion of the closure process for abandoned landfills in accordance with state and federal regulations
- Consolidation of all hazardous waste at the numerous motor pools in temporary storage buildings.

The 1988 SWMU evaluation was updated in 1993 (HLA, 1993c). The scope of work performed in the update included:

- Reviewing the 1988 SWMU report
- Developing a site map showing the location of each of the 58 SWMUs

- Conducting site visits under the supervision of Fort Ord personnel to verify the location and status of each SWMU
- Preparing a report.

4.8.2 Program Status and EBS Results

The status of the original 58 SWMUs identified in the 1988 report was summarized in the 1993 SWMU update as follows:

- Nine SWMUs have been closed or are no longer in existence
- Nine SWMUs have different associated units
- Two SWMUs are now used differently than as described in the 1988 report
- One SWMU location is still in operation but stores its waste elsewhere
- Thirty-seven SWMUs are essentially unchanged since the 1988 report was prepared.

It is unknown whether any additional changes have occurred since the 1993 SWMU update.

4.8.3 SWMUs Within the CSUMB Parcel

Twenty-three SWMUs are within the boundaries of the CSUMB parcel; these SWMUs are generally motor pools, container storage areas, and other temporary container storage areas. The names of each SWMU and the types of activities occurring at each are listed in Table 7. Plate 6 shows the locations of the SWMUs within the CSUMB parcel. All SWMUs in the CSUMB parcel are in NPL sites and are not being considered for transfer at this time. In locating each SWMU, the AEHA report identified only the main building representing each SWMU. In the case of motor pools, however, the boundaries around the active areas of waste management activities should be considered the boundaries of the motor pool, not the building outline.

AEHA reported that 21 of the 23 SWMUs within the CSUMB parcel showed no evidence of an environmental release and required no further action (AEHA, 1988). AEHA recommended environmental sampling for the other 2 SWMUs in the CSUMB parcel: FTO-025 and -026. Both SWMUs are within Site 22, the 4400/4500 Block Motor Pool, West, but have not been evaluated under the Site 22 investigation and are not included in CSUMB Phase I.

In August 1993, the SWMU summary prepared by AEHA was updated. The status of several SWMUs in the CSUMB parcel had changed since the AEHA report was prepared (HLA, 1993c). FTO-045, the 237th Medical Detachment Motor Pool, is reportedly no longer in existence. Changes in operations or in SWMU names were made for several other SWMUs, including FTO-015, -018, -023, -044, -050, -052, -053, and -056. As of October 1994, Fort Ord had not completed an RFA or RCRA facility investigation (RFI). The Army is planning an additional assessment of the SWMUs at Fort Ord under the CERCLA program to meet the substantial requirements of an RFA/RFI.

4.9 Environmental Restoration Program

This section discusses two principal components of Fort Ord's overall environmental restoration program, the CERFA program and the RI/FS program. As explained below, the CERFA program involves the identification of uncontaminated real property. The RI/FS program involves the characterization and cleanup of contaminated property and was formally initiated in 1991, following Fort Ord's 1990 listing on the NPL, although investigation of Fort Ord soil and groundwater contamination began in 1984 at the Fritzsche Army Airfield (FAAF) Fire Drill Area (Operable Unit 1). The discussion below presents an overview of the CERFA and RI/FS programs, the locations of sites within and adjacent to the boundaries of the CSUMB parcel, the status of site investigation and remedial activities, and the overall strategy for completing the programs.

4.9.1 Community Environmental Response Facilitation Act (CERFA)

This section discusses the CERFA program, including the purpose of CERFA legislation, the effect of the legislation on real property transfer, and the status and preliminary findings of the draft Fort Ord CERFA report.

4.9.1.1 Summary of CERFA Program

CERFA became law (Public Law 102-426) on October 19, 1992, and amended CERCLA in two principal areas. First, CERFA added CERCLA 120(h)(4), which requires the identification of uncontaminated property ("CERFA parcels"). The fundamental purpose of Section 120(h)(4) is to expedite identification of real property having the greatest opportunities for redevelopment at facilities at which federal operations are terminating. Properties are identified by evaluating the current and historical uses of real property at the installations. Specific procedures for conducting the evaluation are described in the CERFA legislation. In general, the procedures encompass the following:

- A search of government records
- Review of recorded chain of title documents
- Review of aerial photographs reflecting prior uses
- Physical inspection of the property
- Review of information for adjacent properties.

For installations on the NPL, the identification of uncontaminated property is not considered complete until the EPA concurs.

Second, CERFA clarifies the requirements for declaring that all necessary remedial actions pursuant to CERCLA 120(h)(3) have been taken. Generally, according to CERFA, remedial action has been taken if an approved remedial system has been constructed and demonstrated to the Administrator of U.S. EPA to be operating properly and successfully. This revision permits the transfer of real property in a significantly

more favorable time frame for revitalization of communities surrounding closing installations by allowing such transfer potentially well before remedial actions are concluded.

As noted above, a focus of the CERFA program is the identification of uncontaminated property. The CERFA report functions as a basewide EBS for Fort Ord and provides information that supports the parcel-specific EBSs currently in preparation. Because real property identified as uncontaminated under CERFA appears to have no history of storage, release, or disposal of CERCLA hazardous substances or petroleum products or their derivatives, and because no remedial actions are, therefore, considered necessary, a deed for transfer of such real property can indicate that the requirements of CERCLA 120(h)(4) have been met.

4.9.1.2 Program Status and EBS Results

A CERFA assessment was initiated for Fort Ord in Fall 1992. The CERFA program for Fort Ord was conducted by the U.S. Army Environmental Center (USAEC) on behalf of Fort Ord. On December 6, 1993, the draft CERFA report was issued to Fort Ord and the regulatory agencies. On January 28, 1994, a meeting was conducted to discuss preliminary comments on the draft CERFA report. A final CERFA report was released on April 8, 1994 (*ADL, 1994*). EPA and DTSC concurrences on the CERFA clean parcels were received on April 18 and 19, 1994, respectively.

The principal result of the CERFA assessment is a map showing the areas identified as uncontaminated property. Plate 8 presents information from the final CERFA report for areas in the vicinity of the CSUMB parcel. The distribution of CERFA-defined parcels (CERFA parcels, CERFA with qualifiers parcels, CERFA disqualified parcels, and CERFA excluded parcels) is taken directly from the CERFA report. Table 8 provides definitions of the categories developed in the CERFA report.

Plate 8 shows a number of areas within the CSUMB parcel that have been categorized as uncontaminated or CERFA parcels, as defined by

CERFA. Based on available information that was developed for and considered in the CERFA report, these areas potentially offer the greatest opportunity for development by the surrounding community. CERFA and CERFA with qualifiers parcels have no history of storage of CERCLA-regulated hazardous substances, petroleum, or petroleum derivatives for 1 year or more, and no release or disposal of CERCLA-regulated hazardous substances, petroleum, or petroleum derivatives, or threat of migration of such contamination from adjacent property. As such, they meet requirements under CERCLA 120(h)(4). According to EPA (EPA, 1994), no other decision documents are necessary to provide a covenant in the deed warranting that necessary remedial action has been taken for these CERFA and CERFA with qualifiers parcels, in accordance with CERCLA 120(h)(4).

4.9.2 Remedial Investigation/Feasibility Study (RI/FS)

4.9.2.1 Summary of RI/FS Program

Fort Ord was added to the National Priorities List (NPL) of hazardous waste sites (55 Federal Register 6154) on February 21, 1990. A Federal Facilities Agreement (FFA) was signed by Fort Ord for the U.S. Army with the U.S. Environmental Protection Agency, Region IX (EPA), the California Department of Health Services (DHS), and the California Regional Water Quality Control Board, Central Coast Region (RWQCB), in July 1990. Under the FFA, the Army is required to perform a remedial investigation/feasibility study (RI/FS) at Fort Ord.

To date, the Army and regulatory agencies have identified two RI/FS Operable Units (OUs) at Fort Ord:

- OU 1 Fritzsche Army Airfield Fire Drill Burn Pit
- OU 2 Main Garrison Landfill Areas.

The RI/FS includes basewide investigation programs and individual site characterizations. Five basewide studies have been conducted, as listed below:

- Background Soil and Groundwater Investigation
- Basewide Biological Inventory
- Basewide Hydrogeologic Characterization
- Basewide Surface Water Outfall Investigation
- Basewide Storm Drain and Sanitary Sewer System Investigation.

Forty-one individual sites at Fort Ord have been identified for inclusion in the RI/FS. Site characterization activities were designed to screen sites for contamination. The primary objective of the site characterizations was to assess the absence or presence and nature of contaminants at each site.

Based on the results of the investigations, the 41 sites have been characterized as follows:

- No action sites: Sites where screening risk evaluations of collected samples indicate that the threat to human health or the environment, if any, is acceptably low. These sites will not require additional investigation or remediation. Eighteen sites have been assigned to this category.
- Interim action sites: Sites where small areas of contamination have been delineated and remedial action can be implemented quickly by excavation. Fourteen sites have been assigned to this category.
- Remedial investigation sites: Sites where soil and/or groundwater data indicated that a complete RI/FS will be necessary prior to remediation. Nine sites have been assigned to this category.

The 41 Fort Ord NPL sites and their assigned categories are summarized in Table 9. The assignment of sites to these categories is based on available information. The ultimate designation of a site will not be considered final until the appropriate decision document has been completed. Additional information on the RI/FS Investigation is provided in the Basewide RI/FS (HLA, 1994c). Sampling and Analysis Plan

(HLA, 1991b); the Work Plan (HLA, 1991c); basewide study reports prepared by HLA; and individual site characterization reports prepared by HLA.

4.9.2.2 Program Status and EBS Results

Eleven NPL characterization sites are located partly or entirely within the boundaries of the CSUMB Parcel (Plate 6). Additionally, the groundwater plume from OU 2 appears to extend beneath a small portion of the CSUMB parcel.

OU 2, the Fort Ord Landfills site, consists of three known inactive landfill areas covering approximately 150 acres, the immediate surrounding area, and the underlying contaminated groundwater. The surface boundaries of OU 2 and the approximate extent of the groundwater plume, as defined by trichloroethene (TCE) concentrations of 1.0 part per billion (ppb), are shown on Plate 6. The landfill areas were used during the past 35 to 40 years for disposal of residential and commercial waste. The main landfill was operated as a municipal waste landfill from the early 1960s until May 31, 1987. The landfill areas are not located within the CSUMB parcel boundaries; however, the southern and eastern edges of the OU 2 groundwater plume extend beneath portions of the CSUMB parcel. The groundwater plume extends approximately 4,000 feet to the west of the main landfill areas underlying portions of Sites 15, 16, 17 and 25 (Plate 6). TCE, the most frequently detected compound in the groundwater plume, was detected at a maximum concentration of 80 $\mu\text{g}/\text{l}$. Other VOCs detected in the plume included: tetrachloroethene (PCE), benzene, cis-1,2-dichloroethene, and dichloromethane. The RI/FS has been completed for OU 2 and five remedial alternatives were evaluated in the FS. The FFA parties agreed to Alternative 4, which includes a pump-and-treat system for groundwater in the upper and 180-foot aquifers as well as construction of a landfill cap (HLA, 1994c). A Record of Decision (ROD) for OU 2 which specifies remedial actions was signed in August 1994.

Two of the NPL sites located within the CSUMB parcel, Sites 18 and 38, have been categorized as no action sites. Investigations have been conducted at these two sites, and draft site characterization reports have been submitted to the regulatory agencies. On the basis of the results of the site characterizations, these sites were placed in the no-action category. A No Action Record of Decision (NoAROD) is expected for both sites in early 1995.

Site characterization activities at Site 18 were conducted in 1990, 1991, and 1992 and included the analysis of 53 soil samples collected from 14 soil borings and the collection and analysis of four rounds of groundwater samples from three monitoring wells (HLA, 1994b). Analytical results for the soil samples showed high boiling point hydrocarbons (HBPHCs), unknown hydrocarbons (in the TPH as diesel analysis) and metals at concentrations below preliminary remediation goals (PRGs). Nickel and TCE were detected in groundwater at concentrations above federal maximum contaminant levels (MCLs). On the basis of these data, no further action has been recommended for soil at Site 18. The three monitoring wells are recommended for inclusion in the Quarterly Monitoring Program.

Site characterization activities at Site 38 were conducted in 1990 and included installation of two soil borings and collection of six soil samples (JMM, 1991). The soil samples were analyzed for VOCs; VOCs were not detected in any of the soil samples (HLA, 1992a). Three USTs containing Stoddard solvent, USTs 1434-1, 1434-2, and 1434-3, are located within Site 38. UST 1434-3 was previously removed and the County has granted its closure. No VOCs, BTEX, TPH as gasoline, or TPH as diesel were detected in soil samples collected during the tank removals. On the basis of these data, no further action is recommended under the RI/FS program; however, additional work may be necessary under the UST Management Program. USTs 1434-1 and 1434-2 are slated for removal that has not been initiated.

Seven of the sites in the CSUMB parcel have been categorized for interim action:

- Site 14 707th Maintenance Facility

- Site 15 DEH Yard
- Site 20 South Parade Ground, 3800 and 519th Motor Pools
- Site 21 4400/4500 Block Motor Pool, East
- Site 22 4400/4500 Block Motor Pool, West
- Site 23 3700 Block Motor Pool Complex
- Site 24 Old DEH Yard.

These interim action sites are not included in CSUMB Phase I.

The Site 14 characterization detected hydrocarbon contamination in the soil at a former waste oil tank at Building 4855 and at the grease racks in the motor pool (HLA, 1993g). Groundwater contamination was reported in previous studies (EA, 1990), but was not confirmed during three sampling rounds conducted during Site 14 characterization activities. A supplemental investigation was conducted in January 1994 to further assess the extent of the chemicals of concern (COCs) at the site. One surface soil sample and 30 soil samples from borings were collected during the investigation (HLA, 1994e). Oil and grease (at maximum concentration of 860 mg/kg) was detected to a depth of 6 feet at the former grease racks location. Hydrocarbon contamination was limited to surface soil in the vicinity of one of the former grease racks. Based on the two phases of investigation, surface soil at the grease racks is recommended for excavation under the interim action record of decision (IAROD) along with soil at a former waste oil UST at Building 4855.

The site characterization at Site 15 occurred in two phases, an initial site characterization and a supplemental site investigation. During the initial site characterization, concentrations of the pesticide chlordane were detected at levels up to 7,100 µg/kg in an unpaved area in the vicinity of Building T-4913 within the DEH Yard (HLA, 1992b). A supplemental investigation was conducted to evaluate the lateral and vertical extent of contamination and assess whether Site 15 meets the selection criteria developed as

part of the IAROD program. Twenty-five surface and near surface samples were collected and five borings were completed. Compounds detected during the supplemental investigation included the pesticides chlordane, heptachlor (at maximum concentrations of 4,000,000 µg/kg respectively), 4,4-DDE, and 4,4-DDT, and the VOCs 1,2-dichloroethene, toluene, ethylbenzene, and xylenes (HLA, 1994d). Results of the supplemental investigation indicate that the contamination at Site 15 is limited to the upper 5 to 8 feet of soil in the unpaved area near Building 49B. Based on these results, the shallow soil at Site 15 is recommended for excavation under the IAROD because the detected concentrations of chlordane are above the PRG.

The site characterization at Site 20 occurred in two phases, an initial site characterization and a supplemental site investigation. During the initial site characterization, soil and groundwater samples were collected and analyzed for organic and inorganic compounds (HLA, 1993e). Soil gas samples also were collected. Soil samples were collected from both borings and trenches and analyzed for TPH as gasoline, TPH as diesel, gasoline constituents (BTEX), VOCs, and priority pollutant metals. Organic compounds detected in soil samples were considered to be likely due to laboratory contamination or were detected at concentrations well below PRGs. Organic compounds were detected in soil gas samples, but the detected concentrations are considered near the limits of reliability of the test method. Metals also were detected in soil samples, but at concentrations below PRGs, except for chromium, which was detected at a concentration of 350 mg/kg in one surface soil sample. Organic compounds were not detected in groundwater samples. Cadmium was detected in one groundwater sample at a concentration of 10.8 µg/l, which is above the MCL of 5 µg/l. However, cadmium was not detected in two subsequent rounds of groundwater sampling.

A geophysical survey was also conducted to approximately locate the boundaries of suspected disposal areas. Several geophysical anomalies were reported during the investigation. Subsequent air photo review identified trenches and locations of former grease racks at the site.

Based on these data, a supplemental investigation was undertaken to assess whether the site meets the selection criteria developed as part of the IAROD program and to identify the approximate lateral and vertical extent of the COCs in soil at the three former grease rack locations.

The supplemental investigation included geophysical surveys in suspected uncontrolled and undocumented underground storage tank (UST) areas (HLA, 1994g). Fifty-one soil samples were collected in the vicinity of former grease racks at the 3800 Motor Pool and at geophysical anomalies at the former troop training area and South Parade Ground. Additionally, a ground penetrating radar (GPR) survey was completed over geophysical anomalies detected during the initial scope of work at the 519th Motor Pool. Results of the investigation included the confirmation of an anomaly at the 519th Motor Pool; a trench was excavated, but no undocumented USTs were found. The geophysical survey conducted at the troop training area identified two anomalies in an area of construction debris. Trenching in these areas indicated some construction debris (asphalt and concrete). Soil samples collected contained VOCs, SOCs, unknown hydrocarbons as diesel and nonpolar oil and grease.

In general, the highest concentrations of organic compounds were detected in samples collected at the westernmost former grease rack location. All inorganic compounds except arsenic were below preliminary remediation goals (PRGs). None of the arsenic concentrations exceeded the background threshold values for shallow or deep conditions. Based on the data collected during the supplemental investigation, the shallow soil at the westernmost grease rack location is recommended for excavation in accordance with the IAROD program. Additional exploratory trenching will be conducted in the 519th Motor Pool at the confirmed geophysical anomaly near Building 3859 as part of the Fort Ord UST program.

At Site 21, the characterization included an area near Building 4495 where a 400-gallon gasoline fuel spill occurred in 1979, 6 oil/water separators, a concrete-lined canal and its unpaved discharge area, 9 wash racks, 9 grease racks, and 20 current

and former USTs. HLA's investigation consisted of collecting 16 soil gas samples at the 400-gallon fuel spill location, drilling soil borings at each of the 6 oil/water separators and at adjacent runoff accumulation locations, collecting 10 surface soil samples at the unpaved canal discharge area and 1 surface soil sample where water was ponded. The soil samples were analyzed for petroleum hydrocarbons, VOCs and metals.

Unknown hydrocarbons (identified in the TPHd analysis) and TOG were detected in some soil samples near the oil/water separators. The maximum concentration detected was 400 mg/kg, which is below the TPH PRG of 500 mg/kg. TRPH, benzene, and toluene were detected in soil gas samples near Building 4495 and appear to be related to a leaking gasoline UST rather than to the reported spill. Arsenic, lead, antimony, beryllium, cadmium, and chromium were detected at concentrations above PRGs and/or background values in one or more soil samples at the canal discharge area. On the basis of these data, near-surface soil has been recommended for excavation under the IAROD. In addition, work associated with the current and former USTs will be performed under the UST management program. Details of the investigation are provided in the draft site characterization report for Site 21 (HLA, 1993f).

At Site 22, TOG was detected in soil samples at concentrations ranging from 55 to 1,200 mg/kg at Grease Rack 4531. The contaminated soil at this location is proposed for removal under the Interim Action Program. Three rounds of sampling three groundwater monitoring wells did not detect organic or inorganic chemical above federal or state MCLs. During a previous investigation, TRPH in soil at a maximum concentration of 1,300 mg/kg was reported at the Fueling Station Building 4526 (EA, 1990). Soil hydrocarbon contamination with a maximum TPH as diesel concentration of 4,400 mg/kg was reported at a former waste oil tank location at Building 4534. The former UST locations will be further investigated under the UST Program and are described in Section 4.7.3.

At Site 23, high boiling point hydrocarbons (HBPHC) were detected in two surface soil samples at a maximum concentration of

420 mg/kg (JMM, 1991). Site characterization activities included drilling nine borings at three former grease racks, three oil/sand interceptors, a drain that leads to an oil/water separator, and a former UST location. Twenty-seven samples were analyzed for organic and inorganic chemicals. Organic compounds detected included TOG in five samples at a maximum concentration of 140 mg/kg, and unknown hydrocarbons in three samples at a maximum concentration of 39 mg/kg. Stained gravel which could not be sampled was observed at the former grease rack near Building T-3778. The soil sample collected at 2 feet contained an unknown TPH at a concentration of 38 mg/kg and numerous tentatively identified compounds (TICs) (HLA, 1994f). Arsenic and beryllium were the only inorganic compounds detected in soil at concentrations exceeding PRGs. Neither concentration of arsenic or beryllium exceeded the background threshold values. No organic compounds were detected and no inorganic compounds were detected above federal or state MCLs in three rounds of groundwater samples collected from three monitoring wells. On the basis of the results of this investigation, it is recommended that soil near the former grease rack southwest of Building T-3778 be excavated under the IAROD.

At Site 24 (Old DEH Yard), previous investigations detected the pesticide DDT at 1.3 mg/kg in one surface soil sample and HBPFC at 600 mg/kg in one surface soil sample. Completed site characterization activities have included sampling at a former UST location and in the vicinity of former soil sampling locations where DDT was detected. Additional site characterization is currently underway to investigate a former grease rack, former drum storage area, and areas of possible subsurface disposal noted during an aerial photo review conducted as part of the ongoing Site 24 investigation. The draft site characterization report for Site 24 is anticipated to be completed in late 1994.

Two of the sites partially or wholly within the CSUMB parcel are categorized as remedial action sites:

- Site 16 DOL Maintenance Yard and Pete's Pond
- Site 17 1400 Block Motor Pool and Suspected Disposal Area.

Sites 16 and 17 were investigated in two phases. The Phase 1 investigations at each site were conducted to evaluate the potential presence of contamination associated with activities within the DOL Maintenance Yard, the suspected disposal area within Pete's Pond, the 1400 Block Motor Pool and the Site 17 suspected disposal area (HLA, 1993b, d). At Site 16, one pilot boring was drilled and geophysically logged, and one monitoring well was installed in the A-aquifer. The investigation at the DOL Maintenance Yard included the drilling of seven soil borings. The investigation at Pete's Pond included performing a geophysical survey, collecting soil gas samples from 21 probe locations, excavating 6 trenches, and drilling 5 shallow borings. Fifty-seven soil samples were collected from trenches and borings for analysis. The site characterization results indicated the presence of petroleum hydrocarbon contamination within the shallow soil beneath the DOL Maintenance Yard, and subsurface debris with associated organic and inorganic contamination within the shallow soil beneath Pete's Pond. Three rounds of groundwater samples were collected for analysis. No organic or inorganic compounds were detected at concentrations above MCLs. A potential chemical spill area and an additional suspected disposal area adjacent to Pete's Pond (referred to as Pete's Pond Extension) were identified on aerial photographs during the site characterization. The suspected disposal areas within and adjacent to Pete's Pond are outside the CSUMB Parcel boundary.

At Site 17, one pilot boring was drilled and geophysically logged, and two monitoring wells (one in the A-aquifer and one in the Upper 180-foot Aquifer) were installed. The investigation also included collecting soil gas samples at 23 locations within the Site 17 suspected disposal area and at a fueling facility, performing a geophysical survey, excavating 6 trenches at the suspected disposal area, and drilling 2 shallow soil borings at UST and oil/water separator locations. Twenty-two soil samples

were collected from borings and trenches for analysis. The site characterization results indicated the presence of subsurface debris, including partially incinerated medical debris, beneath a portion of the 1400 Block Motor Pool (referred to as the Site 17 Disposal Area). No shallow soil contamination was identified at other areas of the site. Three rounds of groundwater samples were collected for analysis. PCE and carbon tetrachloride were detected at concentrations above MCLs in both wells during one sampling round, indicating that the OU 2 groundwater plume may extend beneath a portion of Site 17.

On the basis of the results of the Phase 1 investigation results, Sites 16 and 17 were included in the RI/FS program. The Phase 2 RI for Sites 16 and 17 were performed together because of their close geographic proximity, similar development histories, and similar contaminants. The Phase 2 RI was performed to collect sufficient data to assess (1) the lateral and vertical extent of potential contamination, (2) the potential threat to human health and the environment from site-related chemicals, and (3) the potential remedial measures, if needed. The Phase 2 RI at Site 16 included excavating 12 trenches and drilling 8 shallow soil borings at the DOL Maintenance Yard; drilling 3 shallow soil borings at Pete's Pond; and performing a geophysical survey, excavating 22 trenches, and drilling 5 shallow soil borings at Pete's Pond Extension. The Phase 2 RI at Site 17 included performing a geophysical survey, excavating 14 trenches, and drilling 10 shallow soil borings at the Disposal Area. Ninety-one soil samples from Site 16 and 48 soil samples from Site 17 were collected from trenches and borings for chemical analysis. Two to three additional rounds of groundwater samples were collected from the three wells for analysis. The results of the RI/FS are summarized below.

The Phase 2 RI for Sites 16 and 17 concluded that (1) shallow soil near an oil/water separator and wash pad at the DOL Maintenance Yard was contaminated with petroleum hydrocarbons, (2) shallow soil at Pete's Pond, Pete's Pond Extension, and the Disposal Area contains municipal-type debris and associated organic and inorganic chemical contamination, and

(3) groundwater beneath both sites contains organic chemicals (TCE, PCE, and carbon tetrachloride) likely associated with the OU 2 plume. Debris at Pete's Pond Extension and the Disposal Area also contains incinerated and nonincinerated medical debris, and at Pete's Pond Extension, unexploded ordnance. On the basis of the results of the risk assessment and feasibility study evaluations, the currently proposed remediation plan is to excavate and treat hydrocarbon-containing soil at the DOL Maintenance Yard, and to excavate debris from Pete's Pond Extension and encapsulate this debris with the debris at the disposal area. The debris beneath Pete's Pond does not pose a health risk and does not require remediation. Groundwater beneath Sites 16 and 17 will be remediated as part of the OU 2 plume.

The basewide surface water outfall investigation evaluated the quality of the discharges from the surface drainage system (including the storm drain system) and characterized the impact of those discharges on soil at the outfalls. The investigation was completed in two phases. Phase 1 (completed in 1992) consisted of prioritizing the basewide surface water outfalls based on their potential to transport contaminants to the outfall, sampling and analyzing soil gas samples, and obtaining soil boring samples and sediment samples at each prioritized outfall. Eleven surface water outfalls were sampled on or immediately adjacent to the CSUMB parcel (Plate 6). The results of the 1992 Phase 1 field investigation and a work plan for additional Phase 1 activities were presented in the *Draft Basewide Surface Water Outfall Investigation*, dated April 5, 1993. The additional Phase 1 activities included a source area evaluation; additional soil, sediment and particle size sampling; remote video reconnaissance of a portion of the storm drain pipe system; a human health risk evaluation of the 1992 and 1993 data, and the preparations of a *Draft Data Summary Report and Work Plan, Phase 1, 1992 and 1993 Sampling*, dated April 18, 1993.

Inorganic compounds were detected in all of the 1992 and 1993 soil and sediment samples. In addition, fluoranthene, dieldrin, 4,4'-DDE, 4,4'-DDT, 4,4'-DDD, endosulfan II, endosulfan

sulfate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, pyrene, phenanthrene, and benzo(ghi)perylene were each detected in at least one sample. Pesticides and unknown hydrocarbons were detected in 29 and 27 of the 83 soil and sediment samples, respectively. No organic compounds were detected in 18 of the 83 soil and sediment samples. The human health screening risk evaluation performed to evaluate the soil and sediment samples identified three sampling locations for further characterization. The additional characterization at sampling locations OF-11 (north of and adjacent to the CSUMB parcel), OF-15, and OF-26 is proceeding under Phase 2 of the Basewide SWO1. The remaining outfalls require no further action under this investigation.

The basewide storm drain and sanitary sewer investigation assessed the integrity of the storm drain and sanitary sewer pipelines and evaluated the potential presence of contamination in soil beneath the storm drain and sanitary sewer systems (HLA, 1994c). Five representative 30-foot sections of pipeline (three storm drain and two sanitary sewer) were excavated, a visual inspection of pipe integrity was completed, samples were collected from the soil beneath pipe joints, and the trenches were backfilled. Three trenches were excavated on or immediately adjacent to CSUMB parcel (Plate 6).

No evidence of open fractures was observed in excavated pipes. Chemical analysis of soil samples from beneath excavated pipe joints in one trench detected zinc above background concentrations for soil. Trichlorobenzene and TPH as diesel were also detected at a few locations. The screening risk evaluation indicated that no adverse health or ecological effects are expected to be associated with the chemicals detected in the trench soil samples. The evaluation of possible chemical migration to groundwater indicated that impacts to groundwater are not expected. No additional field investigation activities are proposed.

4.10 Potential Impacts From Adjoining Properties

This section summarizes potential environmental impacts from properties within approximately 1 mile of the CSUMB parcel. Discussions in this section are based on documents furnished by the Army and review of reports pertaining to specific environmental concerns.

Asbestos: Asbestos surveys found both friable and nonfriable ACM in numerous buildings adjacent to the CSUMB parcel (Weston, 1990 and DEI, 1993). Buildings containing ACM in and near the CSUMB parcel are shown on Plate 4.

Lead-Based Paint: LBP surveys of family housing structures at Fort Ord have been completed. Based on available information, pre-1978 structures are likely to contain LBP (ADL, 1994). Pre-1978 structures in the area surrounding the CSUMB parcel are shown on Plate 5.

Radon: Radon testing for buildings within approximately 1 mile of the CSUMB parcel found no buildings with concentrations exceeding 4 pCi/l (Plate 5).

Radiological Decommissioning: Buildings adjacent to the CSUMB parcel where radiological survey activities have been conducted are shown on Plate 6. No radiological hazards were found to be present in the buildings surveyed.

Ordnance and Explosive Waste: A number of locations in the vicinity of the CSUMB parcel are potential OEW areas as shown on Plate 7 and Table 10. These locations were identified during the Site 39 investigation as having no known ordnance-related chemical hazards (HLA, 1994a). Pete's Pond and Imjin Road Practice Mortar Range, which are in the immediate vicinity of the CSUMB parcel, have been sampled and found to contain no OEW (Temple, 1994d). OEW has been found at the Sinkhole Practice Mortar Range (Plate 7), and clearance of this parcel is underway (Temple, 1994d). The Machine Gun Proficiency Training Area (Plate 7) appears to be a non-live fire training area and does not appear to warrant investigation under the Fort Ord RI/FS or USAEDH programs. The Storage Yard Land Mine Area (Plate 7) was identified as a potential

OEW area because of the presence of a single practice mine. The mine was subsequently removed and the area does not warrant further investigation.

Polychlorinated Biphenyls: Transformers with concentrations of PCBs above 50 ppm reportedly have been removed from Fort Ord. As noted in Section 4.6, 25 transformers containing dielectric fluid with less than 7 ppm PCBs were buried in the Fort Ord Landfill adjacent to the CSUMB parcel. The transformers were subsequently uncovered and the fluid pumped out and disposed. Dielectric fluid removed from the transformers was stored in drums at the East Garrison DRMO (Site 29, 0.8 mile east). Reportedly, transformers were also stored at this location and leaked dielectric fluid to the soil. PCBs were not detected in soil samples collected during an investigation of Site 29.

Underground and Aboveground Storage Tanks: Approximately 158 existing and former USTs are located at Fort Ord in the area surrounding the CSUMB parcel (Plate 6). Of those 158 tanks, about 76 are currently in place, and 82 have been removed. Approximately 39 ASTs are located at Fort Ord, 3 of the tanks being present on the CSUMB parcel. The condition of the ASTs is unknown.

Solid Waste Management Units: Thirty-four former or existing SWMUs were identified within about 1 mile of the CSUMB parcel (Plate 6, Table 10). According to the 1988 SWMU report (AEHA, 1988), there is no evidence of an environmental release at 24 of the SWMUs and no further action is required. For 3 of the SWMUs, FTO-006 through FTO-008, the IFR recommended changes in general housekeeping; however, no evidence of releases was noted. For 2 of the SWMUs, FTO-020 and FTO-041, the IFR recommended environmental sampling. At SWMU FTO-021, the IFR noted evidence of a release of acetic acid on cement, but no sampling was recommended. This SWMU was shut down in Fall 1992. Four of the SWMUs, FTO-001, FTO-002, FTO-012 and FTO-014, have had documented environmental releases, and are currently being investigated or undergoing remediation.

Remedial Investigation/Feasibility Study Program: In the vicinity of the CSUMB parcel, 24 NPL sites, including OU 1 and OU 2, are being investigated as part of the RI/FS at Fort Ord. The 24 sites are listed in Table 10. Plate 6 shows site locations in the study area. At 8 of the locations, Sites 13, 19, 25, 27 through 29, 32, and 35, investigations have been completed, and no further action has been recommended. Site 4 had previously been investigated under the Basewide Surface Water Investigation and currently is continuing to be investigated under the Baseline Ecological Risk Assessment currently being performed at this site to evaluate potential hazards. The remaining 15 locations in the study area, Sites 2, 3, 10 through 12, 16, 20 through 22, 24, 30, 34, 40, OU 1, and OU 2, all have some level of documented soil and/or groundwater contamination and are currently undergoing or are slated for further site characterization or remediation.

4.11 Air Quality

Air quality issues at Fort Ord have been investigated in three major studies undertaken at the base. These studies and the years they were conducted are:

- Solid Waste Air Quality Assessment Test (SWAQAT) at the Fort Ord Landfills (OU 2), 1987
- Toxic Air Emissions Inventory Report, Headquarters 7th Infantry Division and Fort Ord, 1990
- Site 3 - Beach Trainfire Ranges, 1993.

Each study and its results are summarized below.

The SWAQAT was undertaken to evaluate the presence and distribution of landfill gas (LFG) and the ambient air quality in the vicinity of the landfill. The LFG contained methane, carbon dioxide, and nitrogen in ratios consistent with those found in landfills of similar age. Methane was found to have migrated outside the landfill into the soil of bordering recreational areas north of Imjin Road. No bare areas or dead vegetation were found, however, that might indicate that methane was migrating to the surface and

presenting a health or explosive hazard. Sampling in the air space immediately above the landfill detected 6 parts per million (ppm) total organic compounds. Low levels of 1,1-dichloroethene (1,1-DCE) were detected in the LFG and the ambient air both upwind and downwind of the landfill. The prevailing wind direction during sampling was from the west.

The Toxic Air Emissions Inventory measured emission rates of chemicals from various sources around the base, including the CSUMB parcel, when it was fully active in 1990. This investigation quantified emissions from:

- Diesel-fired boilers
- Natural gas-fired boilers
- Pathological waste incinerator
- Stationary engines
- Munitions use
- Painting booths
- Offset printing presses
- Miscellaneous paint and solvent use
- Ozalid (blueprint) printers
- Gasoline storage and transfer
- Laboratory chemical use.

The six most significant emissions to the air and their sources were found to be:

- Gasoline vapors (110,000 lbs/yr) from filling stations
- Toluene (2,700 lbs/yr) from paint and solvent use
- Chlorofluorocarbons (CFCs) (1,900 lbs/yr) from paint booths
- Ammonia (1,550 lbs/yr) from munitions and ozalid

- Trichloroethylene (TCE) (1,350 lbs/yr) from solvent use.

The remaining chemical emissions to air were estimated to amount to less than 900 lbs/yr. Note that all these emissions, excluding a portion of the gasoline emissions, have been drastically reduced or eliminated by base closure.

Site 3, the Beach Trainfire Range, forms the western portion of Fort Ord. Site 3 extends for 3.2 miles and comprises approximately 780 acres along the Pacific Ocean. The portion of the ranges closest to the base is approximately 3,000 feet west of the CSUMB Parcel. The chemicals of concern for air monitoring were heavy metals related to expended munitions (bullets) in the target area. During the summer of 1993, high-volume ambient air monitoring for particulates was attempted in three locations in the eastern (downwind) side of Site 3. The monitoring effort was not successful and air quality modeling was performed instead to estimate particulate loading.

5.0 FINDINGS AND CONCLUSIONS

5.1 Findings

This EBS presents an overview of existing environmental conditions on the CSUMB parcel based on available information. Although some of the environmental programs discussed in the preceding portions of this EBS are not complete and not all documentation is available, information that is available about the environmental conditions on the CSUMB parcel has been gathered and described. Findings of the EBS for the CSUMB parcel include:

- The parcel boundaries used in this study and shown in this report are approximate and are based on information from the Army, COE, and on subsequent revisions by CSUMB representatives.
- Asbestos surveys have been completed for approximately 128 housing and 271 nonhousing structures on the CSUMB parcel. These surveys show that 58 structures contain no ACM. The remaining 341 structures surveyed contain either nonfriable ACM, friable ACM, or both. Approximately 46 of these structures contain friable ACM in poor condition, representing a potential health hazard. The presence of asbestos in these units does not preclude their transfer. However, disclosure of the conditions is necessary at the time of transfer. Reports presenting the results of asbestos surveys for housing structures (Fredericks and Schoonover Parks) are being completed. A summary report for the housing areas will be made available to the recipients of the property.
- Lead-based paint surveys have been conducted for the Korean Barracks on the CSUMB parcel. Six structures in the Korean Barracks were selected for representative sampling and found to contain LBP. Based on those results, all 21 barracks are assumed to contain LBP. Buildings within the Fredericks Park and Schoonover Park housing areas are not suspected of containing LBP due to their post-1978 construction date. Of the remaining 271 nonhousing structures on the CSUMB parcel, 241 are suspected of containing LBP and 30 are not suspected of containing LBP based on their construction dates. The possible presence of LBP in these units does not preclude their transfer; however, disclosure of the conditions is necessary at the time of transfer. Information from the surveys will be made available to the recipient of property previously transferred.
- Initial radon surveys showed that two buildings, Buildings 4792 and 5604G, within the CSUMB parcel had radon levels above 4 pCi/l. These two buildings were retested and both had results below 4 pCi/l. No further testing is required for those buildings.
- Radiological surveys have been conducted for 47 buildings in the CSUMB parcel. No radiological health hazards were identified.
- OEW is being addressed under separate sampling programs. Approximately nine potential ordnance-related training areas have been identified within the CSUMB parcel. The identification and clearing of OEW is being conducted by USAEDH. OEW items found at one or more of these areas include assorted practice mines, assorted booby trap devices, mine fuses, flares, and a smoke grenade. Based on this information, USAEDH has indicated that several of the potential ordnance training areas are contaminated with OEW. The 100-Pound Bomb Site, Mine and Booby Trap Areas 2 and 3, CBR 3, Mortar Square 4, and Firing Point 1 are not included in CSUMB Phase I, but will be transferred as part of a subsequent phase after completion of OEW clearance. Within CSUMB Phase I, Machine Gun Square 3 and 4 were non-live fire exercise areas and are, therefore, not considered to require further OEW clearance. Training Site 25 has been recommended for OEW clearance by USAEDH. The possible

presence of OEW in areas of the CSUMB parcel does not preclude their transfer under CERCLA; however, disclosure of the conditions is necessary at the time of transfer. The Army does not transfer property with known or suspected OEW without conducting clearance surveys. Information from the surveys will be made available to the recipient to the property.

- PCBs in transformer dielectric fluids have been examined in two basewide sampling programs, encompassing approximately 1,000 transformers. Reportedly, only three transformers at Fort Ord had PCB concentrations greater than 500 ppm. All other transformers had PCB levels of less than 100 ppm, including approximately 168 transformers with levels of PCBs ranging from 5 to 50 ppm. The remaining transformers had concentrations of less than 5 ppm. Transformers with PCB concentrations greater than 50 ppm were removed from Fort Ord. Currently, PCB testing of transformer fluids is conducted as the transformers are removed from service. No reported spills of transformer fluids have occurred at locations on the CSUMB parcel, although a release of transformer fluids potentially containing PCBs was reported for Site 29, East Garrison DRMO. This area was subsequently investigated, and no PCB-contaminated soil was found.
- USTs and ASTs are located on the CSUMB parcel. Approximately 95 former or current USTs have been located in the CSUMB parcel. Fifty-eight USTs have been removed over the past several years. The County has granted closure of 45 of the 58 tanks that have been removed. Fort Ord is coordinating with the County to obtain closure on the remaining 13 former USTs. The 37 remaining USTs existing in the CSUMB parcel are slated for removal, and a work plan detailing the activities to remove the tanks has been prepared. Releases from USTs have been reported and are being investigated. Three ASTs are located on the CSUMB parcel. Little information is available regarding the status of these ASTs, but not releases have been reported. The

ASTs reportedly conform to current standards.

- Solid waste management units are located at 23 locations on the CSUMB parcel. In 1988, these SWMUs were evaluated, and 21 of them were recommended for no further action. Two of the SWMUs, FTO-025 and FTO-026, were recommended for further evaluation. To date no additional investigations have been conducted at the two locations these two SWMUs are not included in CSUMB Phase I. The Army is preparing to conduct a RCRA RFA/RFI-equivalent program addressing the SWMUs at Fort Ord.
- The CERFA report, which is equivalent to a basewide EBS, identifies CERFA uncontaminated, CERFA with qualifiers, and CERFA disqualified parcels within the CSUMB parcel boundary. CERFA disqualified parcels include several NPL sites and approximately 100 current or former UST and AST locations. Parcels defined as CERFA with qualifiers, including qualifiers for asbestos, LBP, radon, and UXO, cover approximately 180 acres of the CSUMB parcel. CERFA parcels (i.e., those not defined as disqualified or qualified) encompass approximately 620 acres.
- NPL sites on the CSUMB parcel include parts of Sites 14, 15, parts of Site 16, Site 17, parts of Sites 18, 20, and 21, the northern half of Site 22, Site 23, the eastern half of Site 24, and Site 38. The sites are not included as part of CSUMB Phase I. The categorization of sites is based on available information and the status of site investigations at each location. Sites 18 and 38 have been preliminarily categorized as no action sites. The Army expects to complete a NoAROD for these and other sites by early 1995. RI/FS sites include Site 17 and a portion of Site 16, Pete's Pond, which straddles the northern side of the CSUMB parcel. The RI/FS for these sites is ongoing, and a ROD is expected in 1995. Sites 14, 15, 20 through 24 have been identified as IA sites. The Army completed an IAROD in March 1994. Following completion of the IAROD, the

Army will conduct interim actions at these sites and expects to receive regulatory agency approval by August 1, 1995, determining that all remedial actions have been taken for these sites.

- In addition to the site-specific investigations noted above, the basewide storm drain and sanitary sewer investigation evaluated whether contaminants were present at storm drain outfalls and evaluated the integrity of the storm drain and sanitary sewer system. The sanitary sewer investigation also evaluated the possible presence of contaminants beneath sewer pipes. A variety of inorganic and organic compounds were detected in samples from outfalls. Organic compounds, including pesticides and herbicides, were detected in outfall soil samples. Additional sampling has been conducted, and evaluation of the data, including a limited human-health risk assessment, is under way. Soil samples collected from beneath sanitary sewer pipes detected zinc at concentrations above those initially estimated for background soils. In addition, trichlorobenzene and TPH were detected in some of these samples. None of the detected concentrations exceeded human-health screening concentrations for exposure to surface soils or would be expected to cause groundwater concentrations to exceed screening concentrations.

5.2 Conclusions

On the basis of the draft (Version 1) EBS, this Version 2 EBS, and FOST guidance criteria, it may be concluded that much of the CSUMB parcel is transferable by deed under the provisions of CERCLA 120(h)(3) or (4). The Phase I portion of the CSUMB parcel includes most but not all of these areas (Plate 9). A copy of the signed FOST for Phase 1 of the CSUMB parcel is attached as Appendix E; this portion of the parcel was transferred to CSUMB in August 1994. A legal description of the Phase 1 parcel is also included in Appendix E.

Several health-related environmental conditions currently exist or are suspected to exist on the CSUMB parcel in areas considered suitable for transfer by deed according to draft FOST

guidance criteria. In most cases, these environmental conditions have been evaluated or investigated by the Army and the results have been summarized in this Version 2 EBS. Further activities which are not complete at this time will be made available to recipients of the parcel.

In general, the requirements of CERCLA 120(h)(3) do not appear to have been met for the NPL sites noted above. For no further action sites, CERCLA 120(h)(3) requirements will be met after NoFAROD and subsequent approval memoranda have been signed by regulatory agencies. Following completion of the IAROD, completion of interim actions and regulatory agency signature of approval memoranda, CERCLA 120(h)(3) requirements for the interim action sites will be met. These sites will then be eligible for transfer as subsequent Phases II and III.

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