

2.0 DECISION SUMMARY

2.1 Site Description

Fort Ord is located near Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco. 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 portion of Fort Ord, separating the beach front 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.

2.2 Site History

Since its opening in 1917, Fort Ord has 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 closure in 1991. The majority of the soldiers were reassigned to other Army posts in 1993. Although Army personnel still operate the base, no active army division is currently stationed at Fort Ord.

The three major developed areas within Fort Ord are the Main Garrison, the East Garrison, and Fritzsche Army Airfield (FAAF). The remaining undeveloped property (approximately 20,000 acres) was used for training activities. The Main Garrison contains commercial, residential, and light industrial facilities. It was constructed between 1940 and the 1960s, starting in the northwest corner of the base and expanding southward and eastward. During the 1940s and 1950s, there was a small airfield in the central portion of the Main Garrison. This airfield was decommissioned when FAAF was

completed, and the airfield facilities were redeveloped as motor pools or for other operations. FAAF, which serves as the general airfield for Fort Ord, is in the northern portion of the base, adjacent to the city of Marina. FAAF 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.

Generally, chemicals present in soil at Interim Action sites are the result of former routine maintenance and support activities on Fort Ord. Such activities include: maintenance of military vehicles at wash racks, tank storage of chemicals such as waste oil, the use of oil/water separators in drainage areas, and pesticide use and storage.

2.3 Enforcement and Regulatory History

Environmental investigations began at Fort Ord in 1984 at FAAF under RWQCB cleanup or abatement orders 84-92, 86-86, and 86-315. Investigations indicated the presence of residual organic compounds from fire drill burning practices at the Fire Drill Burn Pit (Operable Unit 1 or OU-1). The subsequent Remedial Investigation/Feasibility Study (RI/FS) for OU-1 was completed in 1988, and cleanup of soil and groundwater began. In 1986, under RWQCB cleanup or abatement orders 86-87, 86-317, and 88-139, further investigations began of the landfill areas (Operable Unit 2 or OU-2), and the preliminary site characterization was completed in 1988. In 1990, Fort Ord was placed on the U.S. Environmental Protection Agency's (USEPA) National Priorities List (NPL) primarily because of volatile organic compounds found in groundwater beneath OU-2, and a Federal Facility Agreement (FFA) under CERCLA Section 120 was signed by the Army, USEPA, DTSC, and RWQCB. The FFA establishes schedules for commencing remedial investigations and feasibility studies, and requires completion of remedial actions as expeditiously as possible. The basewide RI/FS

began in 1991, and Fort Ord was placed on the Base Realignment and Closure List (BRAC). The final Feasibility Study for OU-2 was completed October 1, 1993.

2.4 Highlights of Community Participation

On November 15, 1993, the United States Department of the Army (Army) presented the Proposed Plan for this basewide Interim Action at Fort Ord to the public for review and comment. The Proposed Plan summarizes information in the Interim Action Feasibility Study (IAFS) and other documents in the Administrative Record for the base. These documents are available to the public at the following locations: Fort Ord Post Library, Building 4275 North-South Road, Fort Ord, California; and Seaside Branch Library, 550 Harcourt Avenue, Seaside, California. The entire administration record is available at 1143 Echo Avenue, Suite F, Seaside, California.

Comments on the Proposed Plan were accepted during a 30-day public review and comment period that began on November 15 and ended on December 15, 1993. A public meeting was held on November 30, 1993, at the Doubletree Hotel, Portola Plaza, in Monterey, California. At that time, the public had the opportunity to ask the Army questions and express its concerns about the plan. In addition, written comments were accepted during the public comment period. Responses to comments received during the public comment period are included in the Responsiveness Summary (Section 3.0), which is part of this Interim Action Record of Decision (IAROD).

2.5 Scope and Role of Interim Action

The scope of this IA is to address areas of limited surficial soil contamination on Fort Ord through excavation of contaminated soil. Excavated contaminated soil from these IA areas will be treated, recycled, or disposed of as described in Section 2.12.5. Plate 1 identifies 41 CERCLA sites on Fort Ord where these IA excavations may be implemented.

In 1991, Congress mandated a three-year completion schedule for RI/FS documents for

closing BRAC sites such as Fort Ord (Public Law 102-190). Furthermore, acceleration measures suggested by the USEPA's draft Superfund Acceleration Cleanup Model (SACM) Guidance Manual recommend allocating and expanding resources to clean up areas that pose the greatest risk to human health and the environment while expending resources on sites that can (1) be cleaned up quickly in keeping with reuse goals and objectives and (2) be verified as clean and turned over to government agencies or sold to private entities for use and further development.

The economic impact of Fort Ord's closure is another impetus to accelerate the implementation of remedial actions. Closure of Fort Ord will have significant repercussions on the local economy, and timely conversion of Fort Ord property to civilian uses is a high priority to the local community as well as the Army. By conducting this IA, a large portion of Fort Ord property contaminated by chemicals could be cleaned up and made ready for civilian reuse years earlier than if remedial measures for these areas were implemented after the final basewide ROD, which is anticipated to be completed in 1995. Consequently, remedial investigations and actions at Fort Ord must be accelerated.

IA at Fort Ord will be implemented before final remedial alternatives or cleanup levels for given chemicals or combinations of chemicals have been established. Further remedial actions may be required at IA areas after final cleanup levels are established in the approved basewide ROD for Fort Ord. A conservative approach will be used in developing soil cleanup levels for these IA areas to reduce the likelihood of further remedial actions at an IA area. (The development of these cleanup levels is detailed in Section 2.7 below). Therefore, the IA is consistent with the anticipated final remedy for these areas.

2.6 Characteristics of a Typical Interim Action Site

Fort Ord covers approximately 44 square miles. The majority of soil at Fort Ord consists of sand deposits. The average depth to water beneath Fort Ord is typically 60 to 150 feet, and, in

many places, the first major clay barrier between aquifers is located 600 to 700 feet below ground surface.

The Salinas Basin and the Seaside Basin are the two main hydrogeologic structures underlying Fort Ord. The Salinas Basin underlies the northern part of Fort Ord; the Seaside Basin underlies the southern part (approximately two-thirds of the base). The location and characteristics of the boundary are uncertain between these two basins. Further information on Fort Ord geology and hydrogeology is presented in the IAFS and other documents in the Administrative Record for Fort Ord.

Information gathered to date during ongoing site characterization activities at Fort Ord has identified areas within 41 sites that may be potentially suitable for IAs; of these, nine have been initially recommended for IAs (Plate 1). Potential IA areas are located throughout Fort Ord and are not limited to any single portion of the base. For the purpose of screening, developing, and selecting an appropriate remedial action at these IA areas, a "typical" IA remedial unit is described below. If additional sites (beyond the 41 sites) are identified for which the processes developed in this document are applicable, then an Explanation of Significant Differences (ESD) will be prepared, or this IAROD will be amended to include these additional sites and issued for public comment.

The following physical characteristics are applicable to all the preliminarily identified IA areas:

- Contaminated soil, like most surface soil at Fort Ord, consists of sand and/or silty sand of fine to medium grain size.
- Groundwater is relatively deep, typically more than 60 feet below the ground surface.
- Contaminated soil is of limited extent, often less than 500 cubic yards (cy), and no more than 5,500 cy of contaminated soil.
- Contaminated soil to be excavated is not more than 25 feet below the ground surface.

- Generally, the chemicals present in contaminated soil at these potential IA areas are the result of routine Fort Ord activities. Typically this soil is located near maintenance or service facilities, such as wash racks, oil/water separators, drainage areas, or former storage tanks.
- Chemicals in contaminated soil that are likely to be the object of an IA are: petroleum hydrocarbons, solvents, oils, metals and pesticides.

2.7 Remedial Action Objectives and Summary of Site Risks

The primary rationale for the development of Interim Remedial Action Objectives (RAOs) is the reduction of immediate risks to human health and protection of groundwater at an IA area. RAOs for the protection of human health from exposure to chemicals in contaminated soil at an IA area consider the following exposure routes: ingestion or dermal contact with the contaminated soil, ingestion of contaminated soil or groundwater affected by chemicals leaching from contaminated soil, and the inhalation of dust created from contaminated soil.

Achievement of the RAOs for the reduction in long-term human exposure to the contaminated soil through the above pathways requires the establishment of allowable chemical concentrations in surface soils. Soil having such allowable chemical concentrations, if left in place, will not pose unacceptable risks to future residents or users of the area. Similarly, achievement of the RAOs for the protection of groundwater quality, as well as for the prevention of ingestion of contaminated groundwater, requires the establishment of allowable chemical concentrations in the soil that will not adversely impact groundwater, if present. The methodology used to establish these allowable concentrations is presented below.

Risks to the ecosystem from the contaminated soil and proposed remedial action will be qualitatively assessed at each IA area. If such a qualitative analysis indicates that a quantitative analysis is necessary to assess the ecological

risks posed either by contaminated soil or by potential remedial activities at an area, the appropriateness of conducting an IA will be re-evaluated. As mentioned previously, further remedial actions at IA areas may be specified in the final basewide ROD for Fort Ord; however, a conservative approach will be used to minimize the likelihood of future remedial actions.

2.7.1 Human Health Considerations

The RAO for the IA areas is the achievement of an acceptable aggregate human health risk estimate of: (1) 10^{-6} excess cancer risk (one-in-one million probability of an exposed individual developing cancer) or lower in accordance with USEPA methods (see Table 1) and (2) a hazard index of 1 or less, to address possible noncancer health risks. Achievement of the RAO will be evaluated separately for each of the IA areas and will apply to soil treated at the Fort Ord Soil Treatment Area, as described in Section 2.10. Site Characterization Reports for proposed IA areas will contain Screening Risk Evaluations (SREs), which identify Preliminary Remediation Goals (PRGs), also listed in Table 1 of this document, for individual soil chemical concentrations at each proposed IA area. The SREs performed for each site using chemical-specific PRGs and environmental concentration data will be used to evaluate contributions of site chemicals to cumulative area-related health risk estimates. Chemical-specific PRGs will then be revised as necessary to develop Target Cleanup Concentrations (TCCs) that address possible cumulative effects of exposure to multiple site-related chemicals and meet the overall interim RAOs. Interim RAOs and potential remediation requirements were also listed in the IAFS. These RAOs are in accordance with the National Contingency Plan (NCP), and CERCLA guidance. The development of PRGs is described in detail in the *Draft Technical Memorandum, Preliminary Remediation Goals*, dated June 14, 1993; these PRGs were also presented in the IAFS and are presented in Table 1. If necessary, additional PRGs will be developed using the same methodology.

2.7.2 Protection of Groundwater

Chemicals in contaminated soil at each IA area will be evaluated for their potential impact to groundwater. As discussed in the *Technical Memorandum: Approach to Evaluating Potential Groundwater Quality Impacts*, dated July 29, 1993, organic compounds in the contaminated soil within the unsaturated zone will be evaluated using an USEPA-developed partitioning mass transport model (VLEACH). This model will use groundwater depth and soil characteristics specific to an IA area to estimate potential maximum groundwater chemical concentrations for given chemical soil concentrations. TCCs for organic chemicals based on human health exposures discussed above will be evaluated using this model to ensure that state and federal primary maximum contaminant levels (MCLs) in groundwater will not be exceeded. If state or federal primary MCLs are predicted to be exceeded in groundwater, the TCCs for organic chemicals will be reduced accordingly until this standard of protection is obtained. Pesticide- and metal-contaminated soil will be assessed qualitatively to determine potential impacts to groundwater quality.

2.8 Description of Alternatives

Two alternatives were developed in the IAFS for detailed analysis: Alternative 1, No Action (as required by CERCLA guidance); and Alternative 2, Excavation with Soil Treatment, Recycling, and/or Disposal. Each of these remedial alternatives were evaluated in the IAFS in accordance with nine screening criteria as described in the NCP. These criteria are:

- Overall Protection of Human Health and the Environment
- Compliance with ARARs
- Long-Term Effectiveness
- Reduction of Toxicity, Mobility, and Volume Through Treatment
- Short-Term Effectiveness
- Implementability
- Cost
- State Acceptance
- Community Acceptance.

Table 2 presents a summary of these evaluations.

2.9 Alternative 1 - No Action

Alternative 1, the No Action alternative, provides a baseline from which to evaluate other alternatives and is required to be considered under CERCLA guidance. Some minimal actions were assumed to be necessary for this alternative, such as securing the area from public access with fencing, installing monitoring wells, and placing deed restrictions on the property. Annual water quality monitoring reports and site assessments were also assumed to be necessary.

The No Action alternative could be easily implemented at an IA area; however, gaining community and regulatory acceptance of this alternative would be difficult. The estimated cost, primarily O&M, to implement the No Action alternative when all 41 potential sites are considered, would be approximately \$19 million. This cost is based on the net present value of annual O&M costs of approximately \$1 million per year, primarily for groundwater monitoring, over 30 years using a 5 percent interest rate.

2.10 Alternative 2 - Excavation with Soil Treatment, Recycling, and/or Disposal

Alternative 2 involves excavating contaminated soil from the IA area and backfilling the excavation with clean material. Soil will be removed using a backhoe and either placed in stockpiles (nonhazardous) or containers (hazardous) at the IA area while waiting for laboratory analytical results or hauled immediately for storage, treatment, or disposal.

Excavation is a simple, readily implementable, remedial alternative for IA areas that will be protective of the community and site workers. The services and materials required for treatment of soil will also be readily available.

Excavation at an IA area could be completed within a week, because soil to be excavated is shallow and does not cover a large area. Field screening analyses and laboratory confirmation

samples will be required to establish that contaminated soil had been removed before backfilling began. Analytical results may require up to two weeks to obtain. One destination for excavated soil will be the Fort Ord Soil Treatment Area (FOSTA) located at the 519th Motor Pool. The FOSTA will serve several purposes: (1) as an area to store excavated IA soil pending waste classification as well as for storage of soil until sufficient quantities are obtained for treatment or recycling; and (2) as a treatment area for nonhazardous soil containing petroleum hydrocarbons and solvents.

Some excavated soil will be stored in containers at FOSTA pending results of laboratory analysis. If the soil is characterized as hazardous, and cannot be treated at FOSTA, it will be sent offsite for treatment, recycling, and/or disposal.

Soil treatment using bioremediation and soil vapor extraction (SVE) treatment technologies are considered "presumptive" remedies because their effectiveness has already been established by previous successful implementation at Fort Ord. The effectiveness of bioremediation was demonstrated at the Operable Unit 1 Fire Drill Area at Fritzsche Army Airfield. Soil vapor extraction was demonstrated as an effective technology in a pilot study at a non-NPL petroleum hydrocarbon cleanup also at Fritzsche Army Airfield. These technologies are presumed to work successfully for excavated IA soil at the FOSTA because the contaminated soil types, as well as the chemicals, are similar to those in areas where these technologies have been successfully implemented previously. Application of these technologies at FOSTA is described below.

- **Bioremediation:** Contaminated soil will be segregated depending on the soil type and the type of petroleum hydrocarbons present. Treatment may consist of irrigating, aerating, and mixing the soil to provide soil conditions conducive to increased microbial activity. Inorganic nutrients (i.e., bulk agricultural fertilizers or ammonia, nitrate, and phosphate of industrial or food-grade quality) will be dissolved in water and periodically applied to the soil. The amount and rate of application will be based on data

collected from field operations and pretreatment laboratory studies, if necessary. To maintain proper soil moisture conditions, the soil will be irrigated with water as needed. The application of water will be controlled to minimize the production of leachate. The amended and irrigated soil will be mixed periodically or aerated using perforated plastic pipes within the pile. Air emissions are not anticipated to present any significant health risks as a result of bioremediation activities. This treatment is intended for use on soils contaminated with heavy, nonvolatile petroleum hydrocarbons such as jet or diesel fuels, and/or pesticides.

- Soil Vapor Extraction: Vacuum extraction pipes consisting of plastic perforated pipes will be installed beneath or within each pile. Each soil pile will be covered with polyethylene sheeting. Concrete blocks or sand bags will be used all around and on top of each pile to hold down the plastic cover. An electric blower will draw air through the soil to remove volatile organic compounds (VOCs) from the soil. Air leaving the piles will be treated with vapor phase carbon or prefabricated abatement units as required. Soil amenable for this treatment will generally contain volatile petroleum hydrocarbons or solvents.

Prior to treatment of excavated soil, the FOSTA will be modified in the following manner:

- A liner system (permeability less than 10^{-6} cm/sec) will be constructed beneath the treatment unit(s) areas that minimizes leachate migration from the units.
- Perimeter berming will be constructed around the treatment unit(s) that prevents precipitation runoff from the unit(s) and prevents runoff from outside the unit(s).

The Army will prepare a groundwater monitoring plan to perform groundwater monitoring during the FOSTA's operation, closure, and if necessary, post closure period. If groundwater monitoring is technically warranted, existing monitoring wells around the FOSTA will be used. The location of monitoring wells and frequency of sampling will

be established during the Remedial Design phase.

At the conclusion of soil treatment, the FOSTA will be closed. Closure will include decontamination of treatment components, and removal and proper disposal of contaminated components and associated soil at an appropriate waste management facility.

Future IA areas may require treatment technologies in addition to those described above. An Explanation of Significant Differences or IAROD Amendment will be used to address these new IA areas and any new necessary soil treatment technologies. These technologies may include: low temperature thermal desorption, soil stabilization/solidification, or soil aeration.

Recycling or treatment of excavated soil sent offsite will be performed at an approved facility whenever this option is feasible. When appropriate, treated or untreated soil below health-based standards and classified as "inert" under Title 23 CCR, Chapter 15, Article 2, "Waste Classification and Management" may be used on Fort Ord as part of the OU 2 landfill cap, as roadbase material, or as clean fill. Soil that can not be treated at the FOSTA will be transported off Fort Ord using, where appropriate, a licensed hazardous waste hauler. Such soil will be sent to a licensed treatment, storage, or disposal (TSD) facility designed and approved to accept such wastes.

The cost of Alternative 2, Excavation with Soil Treatment, Recycling, and/or Disposal, is comparable to the No Action alternative. The cost, including capital and O&M, for implementing this alternative at the nine preliminarily identified IA areas is approximately \$1 million. A total of 6,600 cubic yards (cy) is anticipated to be excavated for all of these nine areas. Extrapolating these costs to all 41 sites results in a total cost of approximately \$24 million. A quantity of 2,750 cy of excavated soil from each of the other 32 sites with potential IA areas assumed in this extrapolated cost estimate. This quantity of excavated soil is a conservative maximum. This cost assumes that the soil from the other 32 areas will be treated at FOSTA, recycled, or

disposed in the same ratio as the nine preliminary identified sites (79 percent for the FOSTA, 19 percent for offsite disposal, and 2 percent for recycling.). Furthermore, costs for the construction of FOSTA, two years of groundwater monitoring, excavation and backfill, mobilizing, and regulatory interaction are also included in this estimate.

2.10.1 Screening Process for Recommended IA Areas

An IA area must meet given site conditions with respect to the nature and extent of the contaminated soil and IA location constraints, as described below. These criteria are included in the IA area eligibility checklist presented in the IAFS.

- Maximum Depth of Chemicals: IA excavations will be made with standard construction equipment to a maximum depth of 25 feet below grade. This depth limitation is based on the maximum reach of an extended backhoe. Furthermore, the bottom of IA excavations will be no deeper than 5 feet above the groundwater table, including the capillary fringe, at that area.

The maximum depth of chemicals detected above their respective TCCs will be estimated from data presented in the site characterization report. This estimated depth will be compared with the depth limitation discussed above. Any site with contaminated soil that requires excavation below those depth limitations will not be recommended for an IA as defined in this document and will be addressed in the basewide RI/FS.

- Maximum Volume of Excavated Soil: The maximum volume of contaminated soil to be removed from a recommended IA area will be estimated from available data collected during site characterization activities and presented in the Approval Memorandum. The maximum quantity of contaminated soil to be excavated at any single area considered for IA will be not more than 5,500 cy. This maximum volume is based on a preliminary review of potential IA site data from available SCRs and is not a technical or

regulatory restriction. Because an IA is intended to be limited in scope, this maximum quantity requirement is presented as a reasonable limit. Many IA areas will have much smaller quantities of soil. Agency approval will be required to exceed quantity limitation of 5,500 cy.

- Location Restrictions for IA Areas: Excavation activities will be restricted in certain locations. Each recommended IA area will meet the following criteria:
 - No IA will divert, modify, or impact an existing stream, watercourse, or wetland
 - No property listed in the National Register of Historic places will be impacted by IA excavations
 - IA excavations will not impact oak trees greater than 6 inches in diameter and more than 2 feet tall
 - IA areas in the coastal zone will require a consistency determination that the proposed remedial actions are in conformance with California's Coastal Zone Management Plan.
- Biological and Cultural Resource Screening: Because endangered or threatened plants and animals are present at some locations at Fort Ord, a Biological Area Clearance (BAC) will be completed for each IA area. These species are generally found at undeveloped regions of the base. Because preliminarily identified IA areas are located in developed areas, these species are not anticipated to be impacted by the proposed IAs. Documentation of the BAC will be included with the approval memorandum.

Similarly, a Cultural Resources Clearance (CRC) will be completed for each IA, either as part of current site characterization activities or prior to IA. Documentation of the CRC will also be included in the Approval Memorandum.
- Ecological Assessment: A qualitative Ecological Assessment (EA) of each IA area will be performed to determine if a

quantitative risk assessment is required for an IA area. A summary of this qualitative ecological risk assessment will be included with the Approval Memorandum. If a quantitative risk assessment is recommended, the appropriateness of an IA at each area will be re-evaluated.

- Materials Restricted from Interim Action: IAs are intended only to address shallow contaminated soil that may contain pesticides, metals, solvents, and petroleum hydrocarbons. The remediation of other wastes, such as radioactive materials, medical wastes, liquids, and sludges, are not addressed in this document. Agency approval, such as an Explanation of Significant Differences (ESD) or ROD amendment, will be required to perform an IA excavation on such materials.

Flowcharts on Plates 2 and 3 summarize the methodology used to evaluate and recommend areas for an IA, and the implementation process for these recommended IA areas. These flowcharts as well as a checklist for site eligibility criteria that will be used to screen a proposed IA area were presented in the IAFS; this checklist will be completed and included in the Approval Memorandum as described below in Section 2.10.3.

2.10.2 Approval Process for Interim Actions

Prior to performing an IA, an Approval Memorandum will be prepared for each recommended IA area. This memorandum will demonstrate that the proposed IA area meets the requirements and site conditions for an IA as described in the IAFS. This memorandum will reference completed SCRs and will include, at a minimum:

- A description of the IA area and its geologic conditions
- A completed site eligibility checklist for the area
- Results of a biological area clearance for endangered species that will be impacted by

excavation activities, as well as other potential ecological impacts

- Results of a cultural resources clearance
- A table of expected chemicals, with their respective PRGs and TCCs
- A map showing the estimated areal extent of contaminated soil, and an estimate of the cubic yards of contaminated soil to be removed
- The anticipated soil waste classification, treatment, and final disposition of the excavated soil for excavated soil
- A summary of the qualitative ecological risk assessment for the IA area.

Each Approval Memorandum will be submitted by the Army to the USEPA, DTSC, and RWQCB. A verbal notification of submittal will be performed by the Army. Before beginning excavations at an IA area, approval of this memorandum will be obtained from agency representatives. Agency review of the Approval Memorandum will be completed within 10 working days of its submittal. Any agency approvals for the authorization of the Approval Memorandum or modifications of IA area eligibility requirements will be confirmed in subsequent written correspondence from the USEPA, DTSC, and RWQCB. In the event of an agency failure to respond to the Army regarding the Approval Memorandum within the specified review period, the Army will assume concurrence and commence with IA activities. If a dispute that cannot be settled informally arises regarding the Approval Memorandum, dispute resolution under the FFA could be invoked. A dispute regarding any particular IA area(s), however, will not prevent activities at other approved IA areas.

Generally, modifications to the Approval Memorandum are not anticipated because of the restrictive nature of IA area eligibility criteria. Some modifications of the Approval Memorandum may be required, however, by the uncertain nature of field activities and extent of chemicals present at an IA area. If a dispute that cannot be settled informally arises over any

modification to the Approval Memorandum, dispute resolution under the FFA could be invoked. Such a modification will be required:

- To exceed the expected volume estimate of contaminated soil to be removed at the proposed IA area presented in the Approval Memorandum.
- To remove soil containing unanticipated hazardous materials or chemicals encountered in an IA excavation. In such an event, field work will be postponed until an evaluation is made of the applicability of an IA. If an IA is not applicable to chemicals or materials, the site will be recommended for the RI/FS process and IA activities will cease.
- If excavated soil requires a different treatment or class of landfill than proposed in the Approval Memorandum.

Agency approval (verbal or written) will be required for any of these modifications by the USEPA, DTSC, and RWQCB. Written confirmation of such changes will be sent to the agencies within 10 working days.

2.10.3 Public Notice

Advance notice of an IA will be placed in a major local newspaper at least two weeks before excavation activities. Prior, ongoing, or planned future IA activities will also be described in the quarterly newsletter, the *Advance*, prepared by the Army for local residents. Notification of these proposed IA activities will also be distributed to other local county agencies, such as the Monterey County Health Department and Monterey County Unified Air Pollution Control District, although site remedial activities at IA areas are not expected to fall within the direct jurisdiction of these agencies.

2.10.4 Suitability for Onsite Treatment

Available data for soil at each IA area will be evaluated to determine its preliminary waste classification. This waste classification will be used to determine the anticipated treatment and final disposition of the contaminated soil. These

preliminary determinations, as well as the estimated quantity of excavated soil, will be presented in the Approval Memorandum. If soil from an IA area is not suitable for treatment on Fort Ord, the Army will document the rationale for this decision. Cumulative quantity totals will be recorded for all soil sent off Fort Ord for disposal and will be available for agency review. Soil may be stored in rolloff bins pending confirmation of the waste classification.

Excavated soil taken to the FOSTA as part of these IA activities will be classified according to Chapter 11 of Title 22 CCR, "Identification and Listing of Hazardous Waste." Excavated soil will be assessed for the presence of pesticides, metals, solvents, and total petroleum hydrocarbons (TPH). Soil expected to be characterized as hazardous waste will be containerized for further characterization and/or storage. As described in Plates 4 and 5, excavated soil will be treated and classified at the FOSTA, as appropriate.

Soil containing only petroleum hydrocarbons, without metal concentrations above background levels or detectable pesticide concentrations, will be treated to 500 mg/kg. This level was developed based on conservative site-specific data for Fort Ord, and applies to the placement or removal of TPH-containing soil throughout all of Fort Ord. This cleanup level is demonstrated to be protective both of human health and groundwater quality and is consistent with the inert waste as defined in Title 23 CCR, Chapter 15, Article 2 for Fort Ord. A 10^{-6} excess cancer risk and hazard index of less than one was used in the Fort Ord *Draft Technical Memorandum: Preliminary Remediation Goals*, dated June 14, 1993 to evaluate health-related risks of TPH in surface soil. To evaluate potential groundwater impacts of these PRGs, VLEACH, a USEPA-developed groundwater modeling program, was run using conservative assumptions. The specific modeling techniques used in assessing groundwater impacts are outlined in the Fort Ord *Technical Memorandum: Approach to Evaluating Potential Groundwater Quality Impacts*, dated July 29, 1993.

Soil containing metals, solvents, and/or pesticides will be containerized and

characterized to determine if offsite disposal or onsite treatment and/or onsite disposal in the OU-2 landfill is applicable for this waste (see Plate 5). The characterization data will be qualitatively evaluated to determine if the soil has the potential to impact groundwater quality (exceed their respective MCLs). If the data indicates that no potential for exceeding MCLs in groundwater exists, then the soil would be classified as inert waste as defined in 23 CCR Chapter 15 Article 2. Soil that contains a listed RCRA hazardous waste will be sent off Fort Ord for disposal.

Soil containing chemicals other than metals, pesticides, solvents, and TPH will be evaluated on a case-by-case basis for continued storage, treatment, recycling, and/or disposal. Agency approval will be required for onsite treatment and/or recycling.

2.10.5 Confirmation Reports

A summary of IA field activities for each will be presented in a Confirmation Report for each area. The report will include, at a minimum:

- Copies of waste manifests for the excavated soil, if applicable
- A site map showing the limits of the excavation and location of confirmation samples
- A brief documentation of field activities, including a discussion of any agency-approved deviations or modifications to the Approval Memorandum
- Records of backfill compaction and density tests
- Chain of custody forms and laboratory analytical results for soil samples taken from the IA area
- A map showing the vertical and horizontal extent of excavated soil, and remaining chemical concentrations in any impacted soil left in place after the IA
- A determination of whether RAOs have been achieved at the IA area. This determination

may be used as the basis for subsequent decision documents that indicate that all necessary remedial actions have been taken at the area, in accordance with CERCLA 120 (h) (3), and thus is suitable for transfer by deed

- Planned future remediation or characterization activities, if any, that are apparent at the time of the preparation of the confirmation report.

Each Confirmation Report will evaluate the risks of residual IA chemical concentrations at IA areas and document that further remedial actions are or are not required. Each confirmation report will be sent to the EPA, DTSC, and RWQCB. These confirmation reports will support subsequent decision documents that may allow for the transfer of property, and that may be prepared prior to the basewide ROD.

2.11 The Selected Remedy

The selected IA alternative must meet the first two of the nine CERCLA screening criteria described in Section 2.8 above: protection of human health and the environment as well as compliance with ARARs. The next five criteria are primarily balancing criteria used for comparing alternatives. The final two criteria, state and community acceptance, are used to address the concerns of state agencies and surrounding communities. Table 2 presents a summary of the alternative screening evaluation. Based on the assessment in the IAFS, Alternative 2 is the selected remedial alternative for the following reasons:

- Alternative 1: No Action is not protective of human health and the environment. In addition, this alternative will not be timely because it will delay or prohibit transfer of property from the Army to civilian use. Thus, Alternative 1 is not a feasible alternative for IA at Fort Ord.
- Alternative 2: Excavation with Soil Treatment, Recycling, and/or Disposal will allow timely transfer of Army property to

civilian use, will be protective of human health and the environment through the achievement of interim RAOs, and will comply with ARARs for IAs at Fort Ord, except for the waiver as noted below.

The selected remedy, alternative 2, will meet Interim RAOs. These RAOs are based on the reduction of immediate risks to human health and the environment. The development of these RAOs is discussed in Section 2.7.

2.12 Statutory Determinations

The selected remedy meets the requirements of Section 121 of CERCLA to:

- Be protective of human health and the environment
- Comply with ARARs, (except for one waiver as described in Section 2.12.2 below)
- Utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practical
- Satisfy the preference for treatment as a principal alternative.

2.12.1 Protection of Human Health and the Environment

The selected remedy for Interim Actions at Fort Ord is protective of human health and the environment through the removal of contaminated soil from the IA areas. Excavated soil will be classified according to its waste characteristics and handled appropriately. This excavated soil will be treated to reduce toxicity mobility and/or the volume of chemicals in the contaminated soil, whenever feasible.

2.12.2 Compliance With ARARs

ARARs include "applicable" or "relevant and appropriate" requirements. The categories of ARARs are: Action-specific, chemical-specific, and location specific. Action-, chemical-, and location-specific ARARs for the selected remedy, excavation with soil treatment, recycling, and/or disposal, are presented in Table 3.

The selected remedy complies with ARARs, except that a waiver from the 90-day storage limitation for hazardous wastes (Title 22 CCR, Chapter 12, Article 3, Section 66262.34) is invoked. Such storage requirement under Title 22 would otherwise function to limit the Army's ability to store both RCRA hazardous waste and non-RCRA hazardous waste (as defined in Title 22, Chapter 11, Article 5) at the FOSTA beyond 90 days. However, Section 121(d)(4) of CERCLA legislation allows selected ARAR(s) to be waived for a remedial action under certain circumstances. One such circumstance is a remedial action that is only part of a total remedial action, such as an IA, which will attain or meet such standards when completed. Upon completion of the final remedy for Fort Ord, the standard or level of control of Title 22, Chapter 11, Article 3, Section 66262.34 shall have been met.

The waiver will apply as outlined in Table 4, Application of Waiver. The purpose of the waiver is twofold. One, for RCRA hazardous waste, the waiver is invoked to allow storage until sufficient amounts of material are accumulated to make offsite treatment or disposal practical. Currently, the FOSTA is not designed to treat RCRA hazardous waste, and the selected remedy in the ROD is limited to treatment of designated and inert waste as classified by CCR Title 23, Chapter 15. Thus, as stated above, an extended storage period is required to accumulate the materials to be shipped offsite. Two, for non-RCRA hazardous waste, the waiver is similarly invoked to allow storage until sufficient amounts are accumulated to make offsite treatment or disposal practical. Additionally, because the Army may decide to treat non-RCRA hazardous waste, given the statutory preference for treatment, the waiver is also required to allow time to decide whether the ROD should be amended or an explanation of significant difference obtained in order to allow such treatment.

Although the waiver will be applied as described above, in order to be protective of the environment, the Army will comply with the FOSTA Operation, Maintenance, Monitoring and Closure Plan, a primary document under the FFA, which will specify soil treatment, monitoring and closure, including hazardous

waste inventory, storage and tracking procedures. For the interim excavation activities proposed in this document, no other waivers of ARARs are necessary.

The parties (Army, USEPA, and State of California) have agreed that, Title 23 CCR, Division 3, Chapter 15 (Chapter 15), Article 2 applies to the discharge of treated soil. The parties have not agreed as to whether Chapter 15 is an ARAR for construction and operation of the FOSTA soil treatment area. However, the State has agreed not to dispute the IAROD because the Army has agreed to design the FOSTA treatment area as described in Section 2.10 of the IAROD.

Related guidance that was identified as To-be-considered (TBCs) in the IAFS included "public nuisance" regulations of the Monterey Bay Unified Air Pollution Control District (MBUAPCD), as well as the Monterey County Oak Tree Preservation Ordinance. The MBUAPCD has not established requirements regarding dust emissions from excavation activities. The closest regulation is the Public Nuisance regulation, which can be invoked in the interest of protecting public health. In consideration of the oak tree ordinance, mitigation measures will be taken as necessary to preserve oak trees that are larger than 6 inches in diameter and greater than 2 feet tall and that may be detrimentally contaminated by IA excavations. The Army need not comply with TBCs. These TBCs were considered as screening criteria, but are not ARARs or performance standards.

2.12.2.1 ARAR Development Rationale

The purpose of the proposed IA is to address limited volumes of contaminated soil. Because groundwater will not be treated or contaminated by the proposed IA activities, requirements regarding groundwater quality, protection, and treatment are not ARARs for these IAs. Therefore, groundwater requirements, such as Maximum Contaminant Levels (MCLs), are not presented in this review of ARARs. Requirements pertaining to groundwater will be addressed in the basewide RI/FS and will be established in the final basewide ROD.

No chemical-specific cleanup levels have been established by federal or state agencies for chemicals in soil. TCCs for each IA area will be used to define the minimum limits of excavation. Final cleanup levels for chemicals in soil will be presented in the basewide ROD. Because these TCCs will be established prior to the completion of the basewide ROD, further remedial actions may be required if final cleanup levels in the basewide ROD are more stringent than the chemical concentrations remaining in the soil at the IA area. A conservative approach, however, will be used in the development of TCCs to minimize the necessity of future remedial actions.

IA will only be performed on selected areas at Fort Ord. Proposed IA areas must pass site eligibility criteria which set definitive bounds for any recommended IA areas. Any areas that do not meet these criteria will not be the subject of an IA described in this document. Thus, location-specific ARARs are based on a specific recommended IA area that meets these site screening criteria, and not on location requirements for the entire Fort Ord site.

2.12.3 Cost Effectiveness

The selected alternative is a cost-effective solution for reducing risks to human health and the environment for the IA areas, and will also allow for the timely transfer of property to the public. The estimated net present value for the No Action alternative is approximately \$19 million. The maximum cost of the selected alternative is approximately \$24 million, and is comparable to the No Action alternative. This estimate for the selected alternative includes costs for soil excavated from all 41 sites. Actual costs for the selected alternative are likely to be significantly lower because IAs will most likely not be implemented at all of the 41 sites.

2.12.4 Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies

An IA is a remedial action that can be implemented quickly and that, although not necessarily intended as a final site remedial

measure, significantly reduces potential immediate, imminent, and/or significant risks to human health or the environment. IAs at Fort Ord will likely be implemented before final remedial alternatives or cleanup levels for given chemicals or combinations of chemicals have been firmly established. Further remedial actions may be required at IA areas after final cleanup levels are established in the approved basewide ROD for Fort Ord, but a conservative approach will be used in developing Target Cleanup Concentrations for these IA areas to reduce the likelihood of further remedial actions at an IA area. The preference for resource recovery (recycling) and treatment of excavated soil is illustrated in Plate 4.

2.12.5 Preference for Treatment as a Principal Element

The selected remedy satisfies the statutory preference for treatment as a principal element in addressing the human health and environmental threats posed by contaminated soil at the IA areas. Plate 4 is a flowchart showing soil treatment options, and which illustrates the selected alternative's preference for soil treatment.

2.13 Documentation of Significant Changes

As described in the Responsiveness Summary (Section 3.0), the Interim Action Proposed Plan for the Interim Action Feasibility Study (IAFS) was released for public comment on November 15, 1993, and a public meeting was held on November 30, 1993. This Proposed Plan

identified Excavation with Soil Treatment, Recycling, and/or Disposal as the selected remedial response action. Comments collected over the 30-day public review period between November 15 and December 15, 1993 did not necessitate any significant changes to the conclusions or procedures outlined in the IAFS and Proposed Plan. In addition, no new IA sites or FOSTA soil treatment technologies beyond those described in the IAFS and Proposed Plan have been identified at this time.