ACTION MEMORANDUM

REMOVAL ACTION

STUDY AREA 15

(LANDFILL 11)

AND

STUDY AREA 48

(BUILDING 202 UNDERGROUND STORAGE TANK)

FORT DEVENS, MASSACHUSETTS

Final

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United States Army Toxic and
Hazardous Materials Agency

ACTION MEMORANDUM, STUDY AREAS 15 AND 48
FORT DEVENS, MASSACHUSETTS

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I. PURPOSE

The purpose of this Action Memorandum is to document the decision to perform removal actions at Study Areas (SA) 15 and 48 at Fort Devens Massachusetts. This Action Memorandum identifies removal actions to address soil contamination at one location within SA 15 and two locations within SA 48.

II. SITE CONDITIONS AND BACKGROUND

The National Contingency Plan (NCP) states that a removal action may be conducted at a site when a threat to human health or the environment is determined. An appropriate removal action is undertaken to abate, minimize, stabilize, mitigate, or eliminate the release or threat of release at a site.

The following subsections provide a physical description of Fort Devens and SAs 15 and 48 and information on the characteristics of SAs 15 and 48.

A. SITE DESCRIPTION

1. Removal Site Evaluation

Fort Devens is located in the State of Massachusetts approximately 35 miles northwest of the City of Bostom. Fort Devens is located within the towns of Ayer, Harvard, Lancaster, and Shirley and comprises approximately 9,280 acres of land area. Since 1917, Fort Devens has been used for a variety of training missions. The current mission of Fort Devens is to command and train its assigned units and support various tenant activities.

On 21 December, 1989, Fort Devens was placed on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA). In addition, under Public Law 101-510, the Base Realignment and Closure (BRAC) Act of 1990, Fort Devens was selected for cessation of operations and closure.

During development of the Master Environmental Plan (MEP) and the Enhanced Preliminary Assessment (PA), 59 SAs were identified. SA 15 was labeled as "Landfill 11" and SA 48 was labeled as "Building 202 Underground Storage Tank (UST)".

During Site Investigations (SIs) at SAs 15 and 48, surface soil contamination from petroleum-derived compounds was detected (USATHAMA, 1992). The SI report

provides details of the sampling rational and results, as well as conclusions and recommendations, including the recommendation for removal actions at SAs 15 and 48. This report serves as the detailed Removal Site Evaluation for these two SAs.

2. Physical Location and Site Characteristics

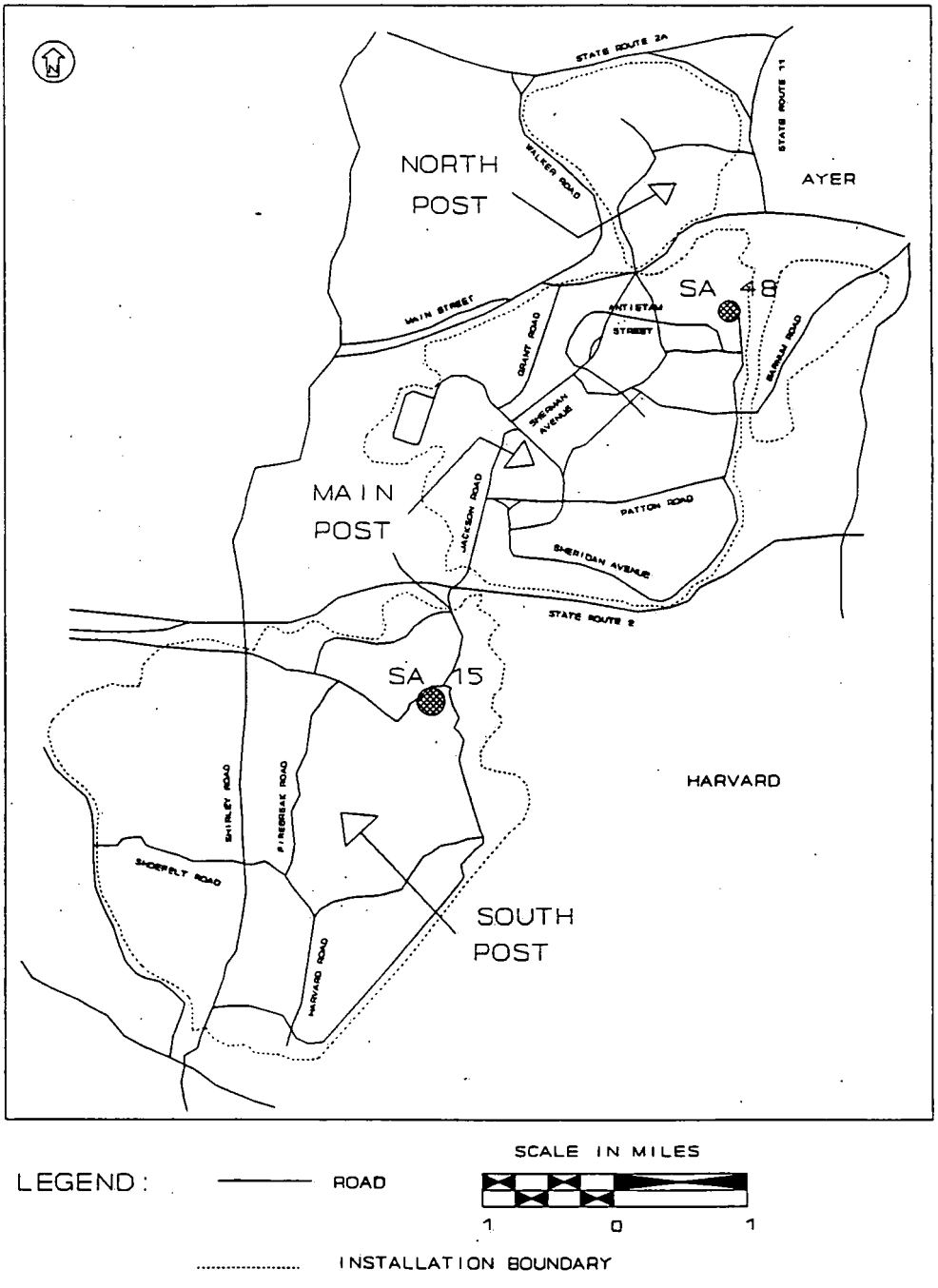
(1) **SA 15:** SA 15 is located southwest of the intersection of Jackson and Dixie Roads, in the northern portion of South Post (Figures 1 and 2). SA 15 was identified in the MEP as a location where, reportedly, Fuel Oil Number 2 and Fuel Oil Number 4 was burned in a series of pits (Gates, 1986, 1987, and 1989). Currently, there is a helipad and antenna system in the area of the suspected pits and no physical evidence of their actual location.

(2) **SA 48:** SA 48 is located southwest of the intersection of Carey and St. Mihiel Streets, in the northeast portion of the Main Post (Figures 1 and 3). SA 48 was identified in the MEP as a location where, in 1989, a 1,000 gallon UST was removed along with approximately 100 cubic yards (cy) of contaminated soil. Currently, the area is used by the 756th Engineering Company, U.S. Army Reserve, as a maintenance facility.

3. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

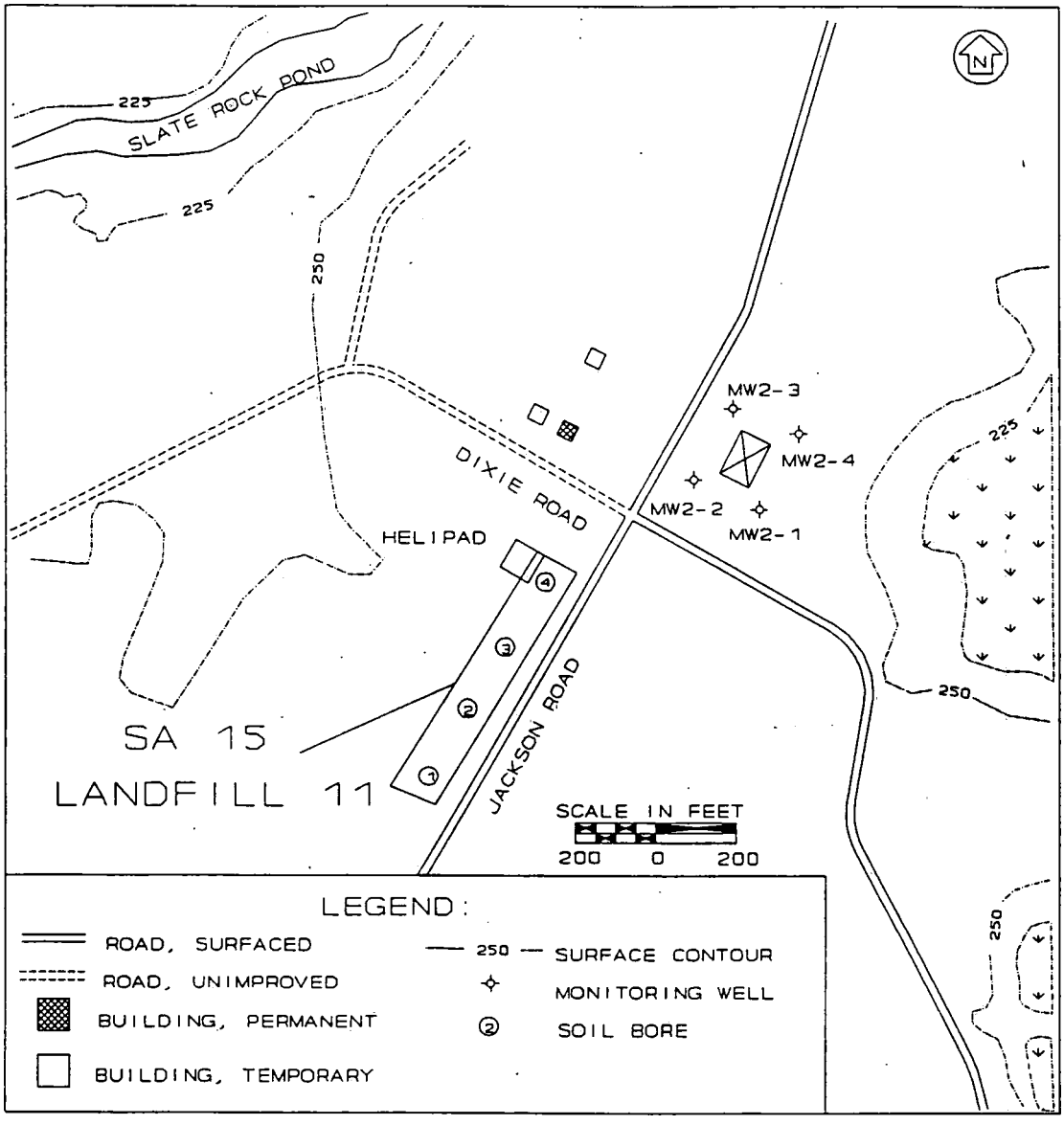
(1) **(SA 15):** The SI of both SA 15 and SA 48 was conducted by Ecology and Environment, Inc., under contract to the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). The investigation of SA 15 included the use of surface geophysics and interpretation of aerial photos to attempt to determine the suspected pit locations. The geophysical investigation was inconclusive. The aerial photos were studied, and a suspected location of the pits was determined. Four soil borings were drilled to a depth of 25 feet in the suspected pit area and 10 soil samples were collected from each boring (Figure 4). One boring, LF11-03, showed elevated levels of Total Petroleum Hydrocarbons (TPHC). The levels were 14,600 parts per million (ppm) at a depth of 0 - 2.0 feet and 288 ppm at a depth of 2.5 - 4.5 feet. All other samples were below the detection limit of the method. The samples were also analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (semi-VOCs), inorganic compounds, and Pesticides and Polychlorinated Biphenyls (PCBs). None of these compounds were detected at significant levels.

FIGURE 1, FORT DEVENS



The (TPHC) results confirm that activities in the area have resulted in the release of petroleum-derived products into the soil. This contamination is confined to the near surface area, and the threat for release to underlying soil and groundwater is minimal due to the

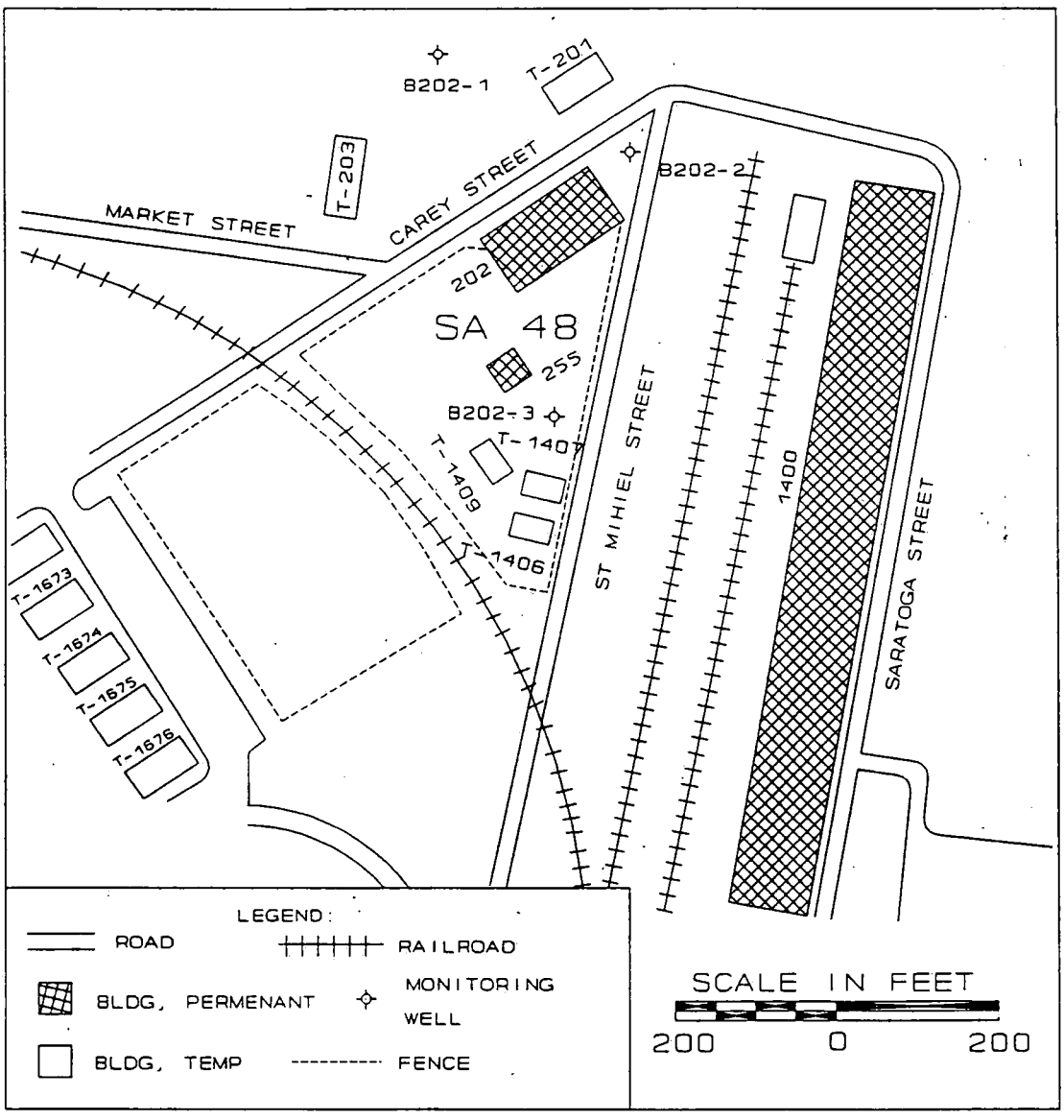
FIGURE 2, LOCATION OF SA 15



suspected source of burned heavy oil constituents.

(2) **SA 48:** In 1989, a 1,000 gallon UST at SA 48 was removed by Environmental Engineering and Geotechnics, Inc. Approximately 100 cy of soil was also removed. Confirmatory soil samples from the excavation were taken and shown to contain 3,212 and 916 ppm of TPHC. Two soil borings were then drilled, and soil samples were taken and analyzed for VOCs. One sample from the 18-20 foot depth range contained 150 ppm Total Volatile

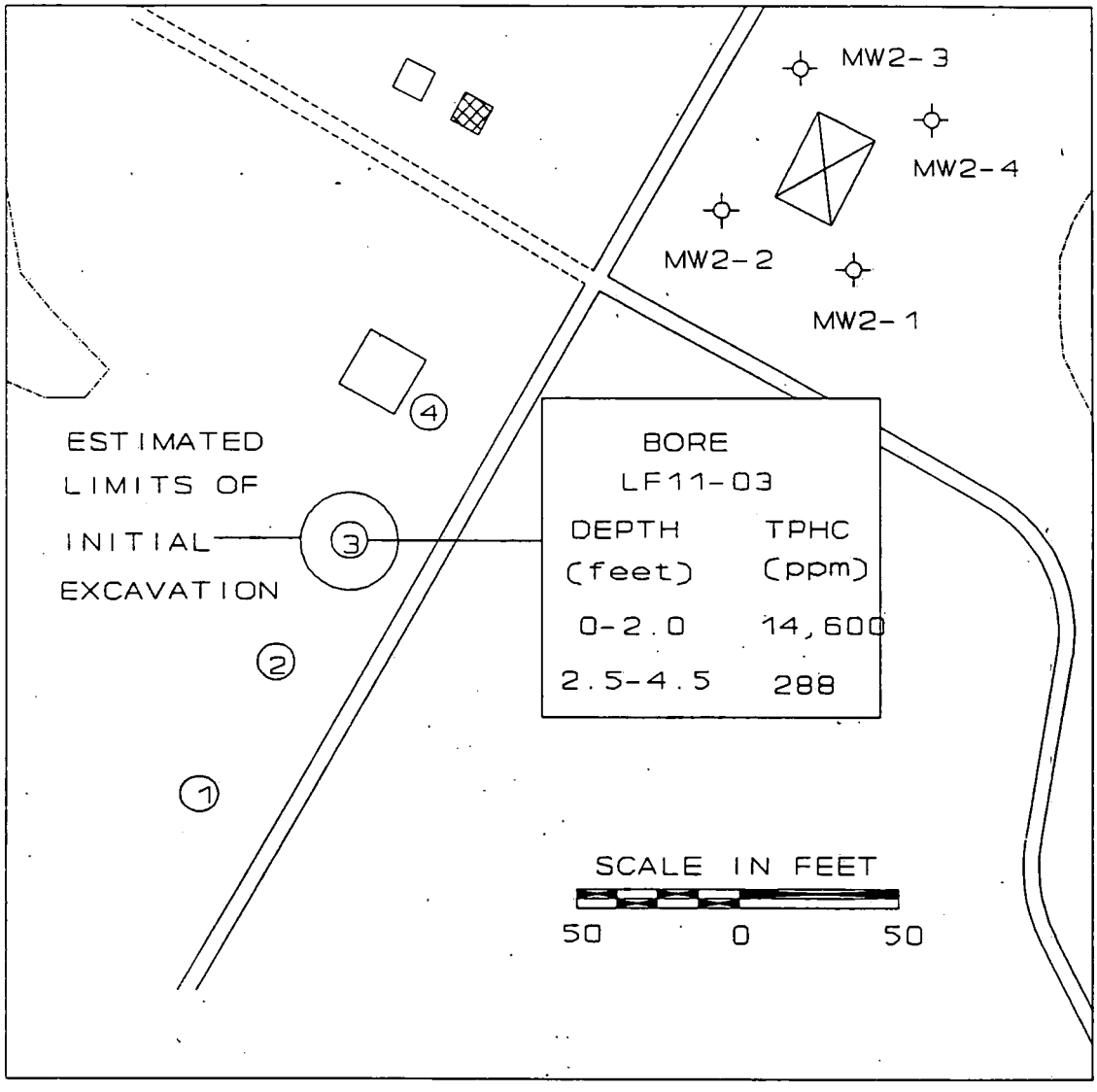
FIGURE 3, LOCATION OF SA 48



Organic Compounds (TOV). All other samples were less than 0.6 ppm TOV. The high levels of TPHC in the confirmatory soil samples taken at the time of removal would suggest that contamination remained in the subsurface, but this was not confirmed in the soil borings.

The SI of SA 48 included the installation of three groundwater monitoring wells and collection of two rounds of groundwater samples and the drilling of a

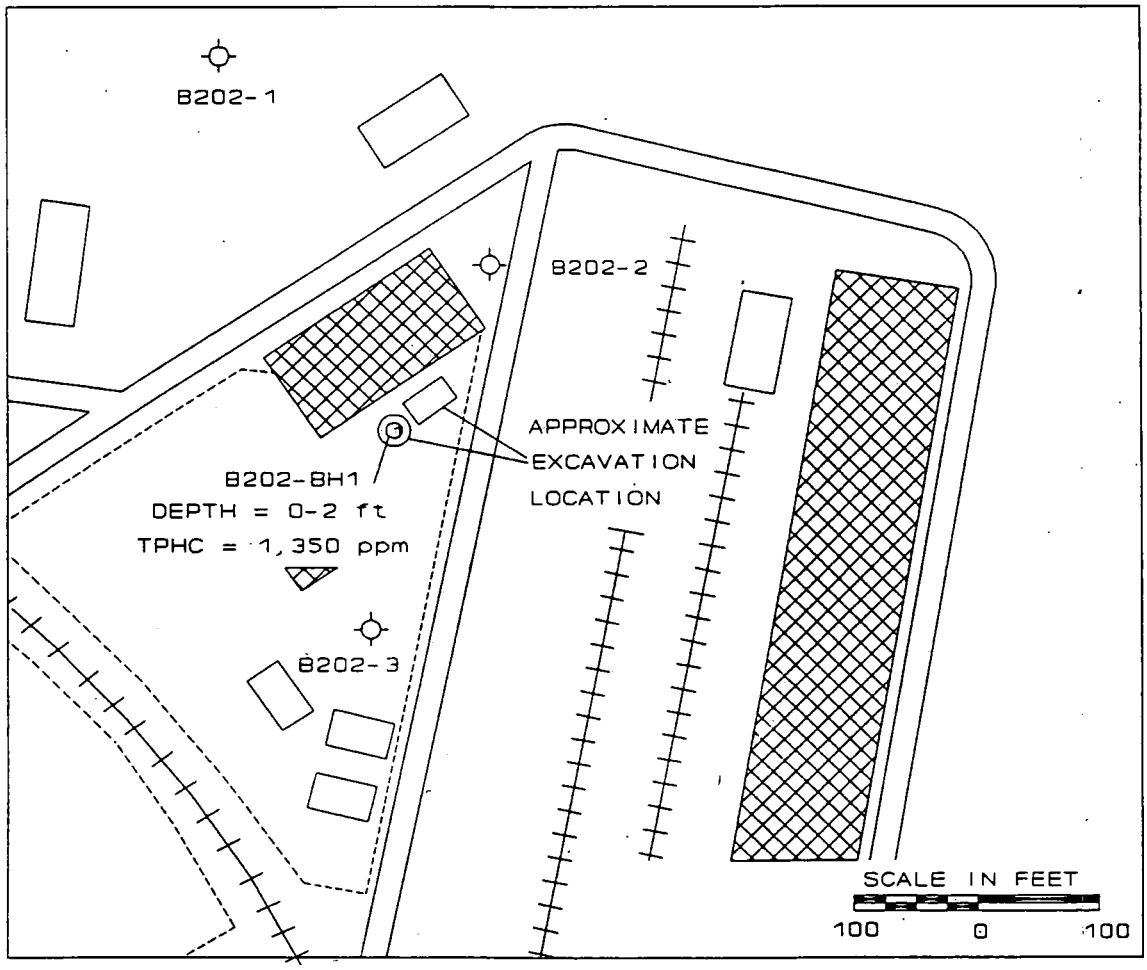
FIGURE 4, SAMPLING LOCATIONS AND RESULTS, SA 15



soil boring (B202-BH1) to a depth of 36 feet near the location of the removed UST and the collection of seven soil samples from the boring (Figure 5). The soil samples were analyzed for TPHC. The only sample with levels above the detection limit of the method was from the 0 - 2.0 foot depth, with a level of 1,350 ppm of TPHC detected. This suggests a second contamination source from a surface spill, not related to the UST. The two rounds of groundwater samples were analyzed for VOCs, semi-VOCs, inorganic compounds, and Pesticides and PCBs. Petroleum-related contamination was not

detected in the groundwater samples. The groundwater samples indicate that contamination either from the surface spill or the removed UST has not contaminated the groundwater with petroleum derived compounds.

FIGURE 5, SAMPLING LOCATIONS AND RESULTS, SA 48



The high level of TPHC detected in the confirmatory samples taken after the tank removal indicate that petroleum-derived contamination as a result of leaks from the UST may still exist in the subsurface. While soil borings have not confirmed this contamination, a removal action is suggested in the area of the former

UST to provide final confirmation. The surface location of the soil sample taken during the SI indicates a surface spill, not related to the UST, which will be removed during this recommended removal action.

B. OTHER ACTIONS TO DATE

1. SA 15

To date, the no other actions taken to abate, minimize, stabilize, or eliminate the release of contamination from SA 15.

2. SA 48

To date, the other actions taken to abate, minimize, stabilize, or eliminate the release of contamination from SA 48 include the aforementioned removal of the 1,000 gallon UST and approximately 100 cy of associated contaminated soil.

C. STATE AND LOCAL AUTHORITIES' ROLE

The proposed removal actions and corresponding documents for SA 15 and SA 48 will be reviewed by the U.S. Environmental Protection Agency (USEPA) Region I and the Massachusetts Department of Environmental Protection (MDEP) prior to implementation. To date, no emergency response action or requests for USEPA assistance have been made.

III. THREATS TO HUMAN HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Section 300.415 of the NCP outlines factors to be considered to determine the appropriateness of a removal action. This section evaluates factors for SA 15 and SA 48.

A. THREATS TO HUMAN HEALTH OR WELFARE

1. Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain

(1) **SA 15**: A formal human health risk assessment will not be conducted for this site. The recommendation for removal action documented in this action memorandum and the Site Investigation report is based upon qualitative analysis of the location of detected compounds and their concentrations as well as potential pathways and receptors for the contamination. The primary threat for human exposure is through contact with the surface

contaminated soils. The potential receptors include soldiers training in the South Post Area and employees with access to South Post. While TPHC is not defined as a CERCLA Hazardous Waste, there is the possibility that some volatile and semi-volatile constituents could present a threat to human welfare through ingestion, inhalation, or dermal contact. The proposed removal action would eliminate the threat through removal of the soils. To date, no exposure to chemicals at SA 15 has been documented.

(2) **SA 48:** A formal human health risk assessment will not be conducted for this site. The recommendation for removal action documented in this action memorandum and the Site Investigation report is based upon qualitative analysis of the location of detected compounds and their concentrations as well as potential pathways and receptors for the contamination. The primary threat for exposure is through contact with the surface contaminated soils. The potential receptors include soldiers working in the maintenance area. A secondary threat is exposure to possibly contaminated subsurface soils during removal of soils in the area of the former UST site. The potential receptor in this case would be the workers conducting the removal. Due to the short duration of the potential exposure, the hazard is inferred to be very low. While TPHC is not defined as a CERCLA Hazardous Waste, there is the possibility that some volatile and semi-volatile constituents could present a threat to human welfare through ingestion, inhalation, or dermal contact. The proposed removal action would eliminate the threat through removal of the soils. To date, no exposure to chemicals at SA 48 has been documented.

2. Actual or potential contamination of drinking water supplies

(1) **SA 15:** The potential for contamination of drinking water supplies is considered to be very low. This is because the suspected source of contamination is burned heavy fuel oils, which would be tightly bound to the soil particles and very immobile. However, to confirm the absence of petroleum-derived contamination in the groundwater, monitoring well MW2-1 and MW2-2, located approximately 200 feet to the northeast of SA 15 will be sampled during the removal action and analyzed for TPHC. The closest public supply drinking water wells are the two wells operated by the Massachusetts Correction Institute Pre-Release Center (registration numbers 2270001-01G and 2270001-02G), located approximately 1.25 miles to the northwest and serving

an approximate population of 650 persons. There are no identified surface water bodies in the area which serve as a drinking water source.

(2) **SA 48:** The SI at SA 48 included the installation and sampling of three groundwater monitoring wells. These wells were sampled twice, and no petroleum-derived contamination was detected. This indicates that neither the surface contamination or possible subsurface contamination is currently impacting the groundwater. The closest public supply drinking water well is the Fort Devens Grove Pond Well Field (registration number 2019001-04S), located approximately 2,750 feet to the east. The proposed removal action would eliminate potential future groundwater contamination be removing the potential source. There are no identified surface water bodies in the area which serve as a drinking water source.

3. Hazardous substances, pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release, SA 15 and SA 58

None identified.

4. High levels of hazardous substances, pollutants or contaminants in soils at or near the surface that may pose a threat of release

(1) **SA 15:** As mentioned in Sections I.A.3.(1) and III.A.1.(1), TPHC has been detected in the surface soils. As discussed, the potential of release is low due to the suspected source of burned heavy fuel oils.

(2) **SA 48:** As mentioned in Sections I.A.3.(2) and III.A.1.(2), TPHC has been detected in the surface soils. While contamination of groundwater with petroleum-derived compounds has not been detected, a limited potential for release into the subsurface exists. The proposed removal action would eliminate this possibility through removal of contaminated soils.

5. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released, SA 15 and SA 48

None Identified.

6. Threat of fire or explosion, SA 15 and SA 48

None identified.

B. THREATS TO THE ENVIRONMENT

1. Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain

(1) SA 15: A formal ecological health risk assessment will not be conducted for this site. As discussed, the recommendation for removal action is based upon qualitative analysis of the risk. The primary threat for ecological exposure is through contact with the surface contaminated soils. The potential receptors include native flora and fauna. While TPHC is not defined as a CERCLA Hazardous Waste, there is the possibility that some volatile and semi-volatile constituents could present a threat to the environment through plant uptake and subsequent ingestion throughout trophic levels as well as direct ingestion, inhalation, or dermal contact. The proposed removal action would mitigate risks associated with contaminated soils at SA 15. In this manner, exposure of contaminants to ecological receptors would be controlled.

(2) SA 48: A formal ecological risk assessment will not be conducted for this site. As discussed, the recommendation for removal action is based upon qualitative analysis of the risk. The primary threat for ecological exposure is through contact with the surface contaminated soils. The potential receptors include native flora and fauna. While TPHC is not defined as a CERCLA Hazardous Waste, there is the possibility that some volatile and semi-volatile constituents could present a threat to the environment through plant uptake and subsequent ingestion throughout trophic levels as well as direct ingestion, inhalation, or dermal contact. The proposed removal action would mitigate risks associated with contaminated soils at SA 48. In this manner, exposure of contaminants to ecological receptors would be controlled.

2. Actual or potential contamination of drinking water supplies[1]

(1) SA 15: As discussed in Section III.A.2.(1), the potential for contamination of groundwater is low, but will be evaluated during the removal action. Due to the high permeability of the soils in the area, most surface water infiltrates directly into the subsurface, with little or no surface run-off. This virtually eliminates the potential for direct contamination of

surface waters," resulting in little or no threat to ecological receptors from contaminated surface water.

(2) **SA 48:** As discussed in Section III.A.2.(2), groundwater contamination at SA 48 has not been detected. It appears that most surface water infiltrates directly into the gravel parking lot, with little or no observed surface run-off. This virtually eliminates the potential for direct contamination of surface waters, resulting in little or no threat to ecological receptors from contaminated surface water.

3. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release, SA 15 and 48

None identified.

4. High levels of contaminants or pollutants or contaminants in soils at or largely near the surface that may migrate

(1) **SA 15:** As discussed in section III.A.4.(1), TPHC has been detected in the surface soils, but has a low potential to migrate.

(2) **SA 48:** As discussed in section III.A.4.(2), TPHC has been detected in the surface soils and while petroleum-derived groundwater contamination has not been detected, a limited potential for migration exists. The proposed removal action would eliminate this potential through removal of contaminated soils.

5. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate, SA 15 and 48

None identified.

6. Threat of fire or explosion, SA 15 and 48

None Identified.

IV. ENDANGERMENT DETERMINATION

A time critical removal action to facilitate the rapid cleanup of contaminated soils at SA 15 and SA 48 has been identified. Actual or threatened releases of pollutants and contaminants from this site, if not addressed by implementing the response action described in this Action Memorandum, may endanger human health and welfare and/or may present a risk to the environment.

V. EXEMPTION FROM STATUTORY LIMITS

The removal action described in this Action Memorandum will meet the "consistency" criterion as defined by the USEPA's "Superfund Removal Procedures, Action Memorandum Guidance" (December 1990; USEPA 540/P-90/004) (i.e., continued response actions are otherwise appropriate and consistent with the remedial action to be taken) for several reasons. First, the removal action is intended to remediate all known contamination at the sites and document potentially more extensive contamination. If, during the conduct of the removal, more extensive contamination is encountered, a decision on appropriate further studies will be made in consultation with the appropriate regulatory agencies. Second, the removal action is necessary to prevent potential migration of contamination from the surface soils into the underlying soil and groundwater. Third, the removal action is appropriate because it will mitigate any threat to human health and the environment and will either fully remediate the site or contribute to the overall remediation of the site if further remedial actions are determined to be appropriate.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. PROPOSED ACTION

1. Proposed action description

The proposed actions at SA 15 and SA 48 are the excavation of contaminated soil, confirmatory sampling at the excavations, and disposal of the soil at an off-site disposal facility. Field work and laboratory analysis will be conducted in accordance with Quality Assurance Project Plan, Site Investigations/Remedial Investigations, Fort Devens, Massachusetts, November 1991 (QAPjP) (USATHAMA, 1991). The removal action would be protective of human health and the environment and would be cost effective. Since the removal action will be completed as a time-critical removal, an Engineering Evaluation/Cost Analysis will not be prepared. Specific tasks are described below:

(1) SA 15

(a) Excavation of soil in vicinity of previous soil boring LF11-03 to a depth of at least 5.5 feet (Figure 4). The estimated volume of the initial excavation is 50 cy. Excavated soil will be field screened for TPHC using Non-Dispersive Infra-Red (NDIR) techniques. Excavation will continue horizontally and vertically until the NDIR screening is below the detection level of the instrument.

(b) Three soil samples will be taken from the excavation to confirm the removal of contamination. Two samples will be taken from the sides of the excavation and one sample from the bottom of the excavation (Section 5.2, USATHAMA, 1991). All three soil samples will be analyzed for TPHC (Section 8.7, USATHAMA, 1991). Quality Assurance/Quality Control will be in accordance with Sections 4-15 of the QAPjP (USATHAMA, 1991).

(c) Two soil samples will be taken from the removed soil pile and analyzed for Resource Conservation and Recovery Act (RCRA) characteristics, including Toxicity Characteristic Leaching Procedure (TCLP) analysis for metals (Section 8.7, USATHAMA, 1991).

(d) The excavated soil will be disposed of in an off-site disposal facility. The actual facility will be chosen based upon the characterization of the soil as either hazardous or non-hazardous, depending upon results of the RCRA characterization.

(e) The excavation will be back-filled using clean fill.

(f) Two groundwater samples will be collected from existing monitoring wells MW2-1 and MW2-2 (section 5.4.3, USATHAMA, 1991) and analyzed for TPHC (Section 8.7, USATHAMA, 1991).

(2) **SA 48**

(a) Excavation of soil in two locations (Figure 5). The first will be in the immediate vicinity of previous soil boring B202-BH1 to a depth of at least 3.5 feet. The estimated volume for the initial excavation is 25 cy. The second will be in the vicinity of the removed UST, to a depth of at least 20 feet. The estimated volume for the initial excavation is 100 cy. Excavated soil will be field screened for TPHC using NDIR techniques. Excavation will continue horizontally and vertically until the NDIR screening is below the detection level of the instrument.

(b) Three soil samples will be taken from each excavation to confirm the removal of contamination. Two samples will be taken from the sides of each excavation and one sample from the bottom of each excavation (Section 5.2, USATHAMA, 1991). All six soil samples will be analyzed for

TPHC (Section 8.7, USATHAMA, 1991).

(c) Two soil samples will be taken from the removed soil pile and analyzed for RCRA characteristics, including TCLP analysis for metals (Section 8.7 USATHAMA, 1991).

(d) The excavated soil will be disposed off in an off-site disposal facility. The actual facility will be chosen based upon the characterization of the soil as either hazardous or non-hazardous, depending upon results of the RCRA characterization.

(e) The excavation will be back-filled using clean fill.

2. Contribution to Remedial Performance

The removal of contaminated soil at SA 15 and SA 48 would remove a potential continuing source for deeper soil and groundwater contamination. Therefore, the removal action would be appropriate for either final remediation of the sites or any long term remedial action that may be required for these sites, based upon results of analysis conducted during the removal actions.

3. Description of alternative technologies

Since the removal action described in this Action memorandum will be conducted as a time-critical action, alternative technologies were not considered.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

ARARs have not yet been developed for these sites. The removal action will follow appropriate state and federal guidelines.

5. Project Schedule

The proposed removal action will require approximately four months to accomplish.

B. Estimated Cost

The removal actions for SA 15 and SA 48 described in this Action Memorandum will cost approximately $91,000 total.

VII. OUTSTANDING POLICY ISSUES

None Identified.

VIII. EXPECTED CHANGE IN THE SITUATION SHOULD NO ACTION BE TAKEN OR ACTION DELAYED

If the proposed action is delayed or not implemented, contaminants will potentially infiltrate into the underlying soil and groundwater.

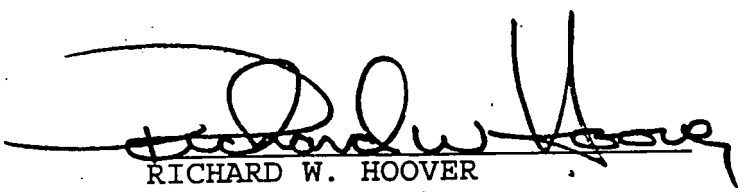
IX. ENFORCEMENT

The Department of the Army (DA) is the lead agency for Fort Devens. The removal action will not be financed through Superfund; all funding will be provided by the Department of Defense (DOD) through DA and Fort Devens. Therefore, enforcement strategies do not apply to this removal action.

X. RECOMMENDATION:

This document presents proposed removal actions for soils at SA 15 (Landfill 11) and SA 48 (Building 202 Underground Storage Tank) at Fort Devens, Massachusetts, developed in accordance with CERCLA as amended by SARA and is consistent with the NCP.

Conditions at this site meet the NCP Section 300.416(b)(2) criteria for a removal action. Therefore, the removal action is recommended for SA 15 and SA 48.



RICHARD W. HOOVER
Colonel, U.S. Army
Installation Commander

2 NOV 92
Date

GLOSSARY OF ACRONYMS

BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cy	cubic yard
DA	Department of the Army
DOD	Department of Defense
MDEP	Massachusetts Department of Environmental Protection
MEP	Master Environmental Plan
NCP	National Contingency Plan
NPL	National Priority List
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
ppm	parts per million
QAPjP	Quality Assurance Project Plan
SA	Study Area
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
TOV	Total Volatile Organic Compounds
TPHC	Total Petroleum Hydrocarbons
USATHAMA	United States Army Toxic and Hazardous Materials Agency
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

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