FINAL
NO FURTHER ACTION DECISION UNDER CERCLA

AREE 63BC
BUILDING 1435 FORMER UST SITE
FORT DEVENS, MASSACHUSETTS

Prepared for:

U.S. Army Corps of Engineers
New England Division
Waltham, Massachusetts

Prepared by:

ABB Environmental Services, Inc.
Wakefield, Massachusetts
Project No. 7147-00

CONTRACT NUMBER:
DACA33-91-D-0006
Delivery Order 21

SEPTEMBER 1996

FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA
AREE 63BC
BUILDING 1435 FORMER UST SITE
FORT DEVENS, MASSACHUSETTS

TABLE OF CONTENTS

FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA
AREE 63BC
BUILDING 1435 FORMER UST SITE
FORT DEVENS, MASSACHUSETTS

TABLE OF CONTENTS

FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA
AREE 63BC
BUILDING 1435 FORMER UST SITE
FORT DEVENS, MASSACHUSETTS

LIST OF FIGURES

FINAL
NO FURTHER ACTION DECISION
UNDER CERCLA
AREE 63BC
BUILDING 1435 FORMER UST SITE
FORT DEVENS, MASSACHUSETTS

LIST OF TABLES

EXECUTIVE SUMMARY

Investigations and remedial actions of Area Requiring Environmental Evaluation 63BC (Building 1435 Former Underground Storage Tank Site) at Fort Devens, Massachusetts, have resulted in the decision that no further hazardous waste studies or remediation are required at this site. Area Requiring Environmental Evaluation 63BC was identified in the Underground Storage Tank Removal Protocol as a potential site of contamination.

On December 21, 1989, Fort Devens was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation and Liability Act as amended by the Superfund Amendments and Reauthorization Act. In addition, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens was selected for cessation of operations and closure. In accordance with these acts, numerous studies, including a short term remedial measure, a Supplemental Site Evaluation, and a soil removal action have been conducted at Area Requiring Environmental Evaluation 63BC.

Building 1435 is an abandoned warehouse located in the northeastern portion of the Main Post on a service road at its junction with Antietam Street in Harvard, Massachusetts. Building 1435 was originally used as a signal warehouse. Tank 24 was located on the south side of the building, and was used to store No. 2 fuel oil.

In 1993, Arthur D. Little, Inc., under contract with the U.S. Army Environmental Center, conducted the Base Realignment and Closure Environmental Evaluation for Area Requiring Environmental Evaluation 63, Previously Removed Underground Storage Tanks. The Draft Previously Removed Underground Storage Tanks Report, issued November 15, 1993, identified locations where underground storage tanks had caused contaminant releases into the environment. Based on document and file reviews, personnel interviews, and site inspections, the report recommended that a Supplemental Site Evaluation be conducted at Area Requiring Environmental Evaluation 63. Fifty-three underground storage tanks removed between 1988 and 1992 were identified by Arthur D. Little, and an additional 21 former underground storage tanks (including a tank removed from Area Requiring Environmental Evaluation 63BC) were identified by ABB Environmental Services, Inc., under contract with the New England Division of the U.S. Army Corps of Engineers.

In 1993 and 1994, ABB Environmental Services, Inc. personnel advanced six Terraprobe borings to identify potential contamination at Area Requiring Environmental Evaluation 63BC. Fourteen soil samples were collected and screened for total petroleum hydrocarbons and volatile organic compounds in the field laboratory. A soil boring was also completed, and three samples were collected and field screened for total petroleum hydrocarbons and volatile organic compounds. Based on field screening results, two soil samples were submitted to a laboratory and analyzed for total petroleum hydrocarbons, volatile organic compounds, and semivolatile organic compounds. One groundwater sample was collected from the soil boring and submitted to a laboratory for total petroleum hydrocarbons, volatile organic compounds, and semivolatile organic compounds analyses. Total petroleum hydrocarbons were detected in soils at concentrations greater than the Massachusetts Contingency Plan Method 1 S-2/GW-1 soil standards. No other analytes detected in soil exceeded applicable soil standards.

In September and October 1994, OHM Remediation Services Corporation removed approximately 217 tons of petroleum-contaminated soil at Area Requiring Environmental Evaluation 63BC in the area of the former underground storage tank. Field screening and laboratory analytical results confirm that all soil containing total petroleum hydrocarbons in excess of the target cleanup level has been excavated. Removal of the soil effectively eliminated the risk to human health and the environment from potential exposure to contaminants. Following the removal of soil and collection of confirmation samples, OHM Remediation Services Corporation personnel backfilled the excavation with clean fill and graded the site.

With the removal of contaminated soil from the Building 1435 Former Underground Storage Tank Site and a determination of no residual risk, there is no evidence or reason to conclude that residual hazardous waste contamination due to historical oil spills or releases of petroleum has caused significant environmental contamination or poses a threat to human health or the environment. The decision has been made to remove Area Requiring Environmental Evaluation 63BC from further consideration in the Installation Restoration Program process.

1.0 INTRODUCTION

This decision document has been prepared to support a no further action decision at Area Requiring Environmental Evaluation (AREE) 63BC, Building 1435 Former Underground Storage Tank (UST) Site, at Fort Devens, Massachusetts. The report was prepared as part of the U.S. Department of Defense (DOD) Base Realignment and Closure (BRAC) program to assess the nature and extent of contamination associated with site operations at Fort Devens.

In conjunction with the Army's Installation Restoration Program (IRP), Fort Devens and the U.S. Army Environmental Center (USAEC, formerly the U.S. Army Toxic and Hazardous Materials Agency) initiated a Master Environmental Plan (MEP) in 1988. The MEP assesses the environmental status of study areas (SAs), specifies necessary investigations, and provides recommendations for response actions with the objective of identifying priorities for environmental restoration at Fort Devens. On December 21, 1989, Fort Devens was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act.

An Enhanced Preliminary Assessment (PA) was performed at Fort Devens to address areas not normally included in the CERCLA process, but requiring review prior to closure. A final version of the Enhanced PA report was completed in April 1992. In addition to the SAs identified in the MEP, the Enhanced PA identified 10 facility-wide AREEs. AREE 63 is comprised of previously removed USTs. In 1993, DOD, through USAEC, initiated a BRAC Environmental Evaluation (BRAC EE) to identify locations at Fort Devens where USTs had caused releases of contaminants into the environment. The BRAC EE for AREE 63 sites was conducted by Arthur D. Little, Inc.

Under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens was selected for cessation of operations and closure. An important aspect of BRAC actions is to determine environmental restoration requirements before property transfer can be considered. Studies at AREE 63 were conducted to support this overall mission.

2.0 BACKGROUND AND PHYSICAL SETTING

2.1 DESCRIPTION AND LAND USE

Fort Devens is located approximately 35 miles northwest of Boston, Massachusetts, adjacent to the town of Ayer and within Middlesex and Worcester counties. The installation consists of approximately 9,280 acres and includes portions of the towns of Ayer, Harvard, Lancaster, and Shirley. Cities in the vicinity include Fitchburg, Leominster, and Lowell. Land surfaces range from about 200 feet (ft) above mean sea level (MSL) along the Nashua River in the northern portion of the installation to 450 ft above MSL in the southern portion of the installation.

Fort Devens was established in 1917 as Camp Devens, a temporary training camp for soldiers from the New England area. In 1931, the camp became a permanent installation and was redesignated as Fort Devens. Throughout its history, Fort Devens has served as a training and induction center for military personnel and a unit mobilization and demobilization site. All or portions of this function occurred during World Wars I and II, the Korean and Vietnam conflicts, and operations Desert Shield and Desert Storm. The most recent mission of Fort Devens was to command and train its assigned units and support various tenant activities. Fort Devens closed in 1996, in accordance with the Defense Base Realignment and Closure Act.

Fort Devens consists of three major land use areas: Main Post, South Post, and North Post.

The majority of the facilities on Fort Devens are located in the Main Post area, north of Massachusetts Highway 2. The Nashua River intersects the Main Post along its western edge. The Main Post provided all of the on-post housing, including over 1,700 family units and 9,800 bachelor units (barracks and unaccompanied officer's quarters). Other facilities on the Main Post included community support activities (such as a cafeteria, post exchange, commissary, bowling alley, and golf course), administrative buildings, classrooms and training facilities, maintenance facilities, and ammunition storage facilities. AREE 63BC is located on the Main Post (Figure 2-1).

The South Post is located south of Massachusetts Highway 2 and contains individual training areas designated for troop training, range activities, and a parachute drop zone where air training exercises are performed. The Nashua River bounds the South Post on the northeast side.

The North Post is directly north of the Main Post. The principal activities on the North Post included the Douglas E. Moore Army Airfield, and the currently operating installation Waste Water Treatment Plant.

The primary mission of Fort Devens was to command, train, and provide logistical support for non-divisional troop units. The installation also supported that portion of the U.S. Army Intelligence School located at Fort Devens, the Army Readiness Region, Reserve Components, and Army Reserve and National Guard in the New England area.

2.2 REGIONAL GEOLOGY

Fort Devens is located near the western boundary of the Seaboard Lowland Section of the New England-Maritime Physiographic province (Jahns, 1953). It is adjacent to the Worcester County Plateau of the Central Uplands province and part of the installation lies within the province (Koteff, 1966). The land surface is almost completely covered with unconsolidated glacial outwash deposits, resulting in few bedrock outcrops. The surficial deposits are underlain by a highly complex assemblage of intensely folded and faulted metasedimentary rocks with occasional igneous intrusions. The geomorphology of the region is dominated by glacial features such as outwash plains, kames, kame terraces, drumlins, and eskers.

2.3 REGIONAL HYDROGEOLOGY

Groundwater at Fort Devens occurs largely in the permeable glacial-deltaic outwash deposits of sand, gravel, and boulders. Well yields within these sediments are dependent upon the hydraulic characteristics of the aquifer and can range from 2 to over 300 gallons per minute (gpm). Small amounts of groundwater can be obtained from fractured bedrock with yields ranging from 2 to 10 gpm. Minor amounts of groundwater may be found in thin, permeable glacial lenses elsewhere on the installation. The primary hydrogeologic feature at Fort Devens is the Nashua River, which flows through the installation in a south to north direction, with an average discharge rate of 55 cubic feet per second. In addition to the Nashua River,

numerous brooks that are associated with attendant wetlands dissect the terrain. There are also several kettle ponds and one kettle lake located within the installation.

2.4 STUDY AREA DESCRIPTION AND HISTORY

Building 1435, Former UST Site, is located in the northeastern portion of the Main Post on a service road at its junction with Antietam Street in Harvard, Massachusetts (Figure 2-1). Building 1435 was originally used as a signal warehouse, and is currently empty. According to the *Devens Reuse Plan*, AREE 63BC is located within a parcel of land designated for Rail, Industrial, and Trade Related Uses (Vanasse Hangen Brustlin, Inc., 1994).

Tank 24 was located on the south side of Building 1435 and contained No. 2 fuel oil. The 1,000 gallon UST was removed in January 1992 by ATEC Environmental Consultants (ATEC). Two soil samples collected following the tank removal contained total petroleum hydrocarbons (TPH) at concentrations of 4,430 micrograms per gram (μg/g) (west sidewall) and 3,380 μg/g (base of excavation). ATEC removed additional contaminated soil in July 1992, at which time a water service line was inadvertently broken. Water filled the tank grave, and subsequently permeated into the soil. TPH in final confirmation samples was below 100 μg/g; however, a soil sample collected from an unspecified location within the excavation contained TPH at a concentration of 10,800 μg/g (ATEC, 1992). The excavation was backfilled with clean fill (ABB-ES, 1996).

Soil samples collected from Terraprobe borings installed during a Supplemental Site Evaluation (SSE) indicate that soils at the site ranged from well graded fine to medium sand to uniform fine sand, within an area mapped by Jahns (1953) as kame terrace sands and gravels. The water table was measured at approximately 20 ft below ground surface. Bedrock was not encountered during sampling (ABB-ES, 1996).

3.0 RELATED INVESTIGATIONS

3.1 MASTER ENVIRONMENTAL PLAN

AREE 63, Previously Removed Underground Storage Tanks, is a facility-wide AREE that was not identified in the MEP.

3.2 ENHANCED PRELIMINARY ASSESSMENT

The Enhanced PA included a review of the study and recommendations presented in the MEP and considered other areas that might require evaluation due to the closure of Fort Devens. During development of the Enhanced PA, several AREEs were identified. AREE 63 was identified as Previously Removed Underground Storage Tanks, and included 53 areas. The Enhanced PA recommended that spill records be consolidated, and all documentation be reviewed to determine the adequacy of cleanup. The Enhanced PA further recommended that site inspections and interviews be conducted, and that a sampling program be developed based on the information collected (Roy F. Weston, Inc., 1992).

3.3 BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL EVALUATION REPORT

The BRAC EE was initiated in 1993 and included four of the facility wide AREEs listed in the Enhanced PA, and one AREE that was not previously identified (AREE 70).

- AREE 61 Maintenance and Waste Accumulation Areas
- **AREE 63 Previously Removed Underground Storage Tanks**
- AREE 66 Transformers
- AREE 69 Past Spill Sites
- AREE 70 Storm Sewer System Survey

The purpose of the AREE 63 BRAC EE, which was conducted by Arthur D. Little, Inc. under contract with the USAEC, was to identify locations where USTs had caused releases of contaminants into the environment. The Previously Removed Underground Storage Tanks (AREE 63) Draft Report was issued November 15, 1993 (Arthur D. Little, Inc., 1993).

The AREE 63 study consisted of document and file reviews, personnel interviews, and site inspections. Each area was evaluated based on the following potential criteria:

- former and current use
- storm and sanitary sewer systems
- dry wells or cesspools
- sand and gas traps
- parking lots
- overhead vehicle maintenance structures
- floor drains and sumps
- equipment washing facilities
- oil/water separators
- underground and aboveground storage tanks

Based on recommendations in the Previously Removed Underground Storage Tanks Report, an SSE was conducted at AREE 63 at 53 locations where USTs had been removed (Arthur D. Little, Inc., 1993). An additional 21 former UST locations, including AREE 63BC, were studied by ABB Environmental Services, Inc. (ABB-ES), under contract with the New England Division (NED) of the U.S. Army Corps of Engineers (USACE).

3.4 SUPPLEMENTAL SITE EVALUATION

The SSE which addressed AREE 63BC was conducted by ABB-ES in 1993 and 1994 under contract with the USACE NED, and the SSE Final Report was issued January 1996. The specific objective of the SSE was to determine whether the sites had residual contamination from releases of hazardous materials (ABB-ES, 1996).

The field sampling program at AREE 63BC, conducted by ABB-ES in 1993 and 1994, included soil and groundwater sampling. ABB-ES personnel completed six Terraprobe borings and one soil boring to identify potential residual contamination from the UST (Figure 3-1). Fourteen soil samples were collected and screened for TPH and volatile organic compounds (VOCs) in the field laboratory. A soil boring was also advanced and three samples were collected and field screened for TPH and VOCs. Based on the results of field screening, two soil samples were submitted to a laboratory and analyzed for TPH, VOCs, and semivolatile organic compounds (SVOCs). One groundwater sample was collected from the soil boring and

submitted to the laboratory for TPH, VOCs, and SVOCs analyses (ABB-ES, 1996). Analytical results of the SSE are presented in Section 4.1.

3.5 HUMAN HEALTH PRELIMINARY RISK EVALUATION METHODOLOGY

A preliminary risk evaluation (PRE) was performed as part of the SSE to help establish whether environmental contamination at AREE 63BC required further investigation or remediation. ABB-ES completed the human health PRE, which evaluated contamination in subsurface soil and groundwater. Because exposure to subsurface contaminants by ecological receptors is unlikely, and no rare or endangered species are known to exist at AREE 63BC, an ecological PRE was not conducted. This section presents the general approach used in conducting the human health PRE; the findings of the PRE are presented in Section 5.

The human health PRE at AREE 63BC included the following elements:

Current and Future Land Use: Current and future land uses are particularly relevant with respect to the applicability of soil and groundwater screening values used in the PRE. AREE 63BC has been designated for Rail, Industrial, and Trade Related Uses in the *Devens Reuse Plan* (Vanasse Hangen Brustlin, Inc., 1994). Because this intended future use is industrial, detected compounds were compared to U.S. Environmental Protection Agency (USEPA) Region III risk-based concentrations (RBCs) for commercial/industrial soil, Massachusetts Department of Environmental Protection (MADEP) Massachusetts Contingency Plan (MCP) Method 1 S-2/GW-1 soil and groundwater standards, and federal and Massachusetts drinking water standards. Comparison to commercial/ industrial criteria in the PRE is consistent with the future use of AREE 63BC.

Comparison to Public Health Standards and Guidelines: For soil and groundwater, human health standards and/or guidelines were used as screening criteria to evaluate the significance of the sampling data. The lowest of federal and Massachusetts drinking water standards and guidelines were used to evaluate SSE groundwater results. Similarly, USEPA Region III residential RBCs and the MADEP MCP Method 1 standards were used to evaluate SSE soil results (ABB-ES, 1996). The basis for and applicability of these guidelines are discussed below.

USEPA Region III Risk-Based Concentration Table. This table is a risk-based screening tool for Superfund sites, used by USEPA Region III toxicologists as a benchmark for evaluating preliminary site investigation data and preliminary remediation goals (USEPA, 1995). Although it has no official status either as regulation or guidance, it is a useful screening tool. The table is updated quarterly and therefore regularly incorporates new USEPA toxicity constants as they are developed. The PRE used the January to June 1995 update (USEPA, 1995).

For subsurface soil in the UST graves, Region III RBCs for commercial/industrial soil exposures were used. Subsurface soil was defined in this PRE as soil between 3 ft and 15 ft in depth. RBCs for commercial/industrial soil assume that a worker ingests soil 250 days per year for 25 years, at an ingestion rate of 100 milligrams/day.

Massachusetts Contingency Plan Method 1 Soil and Groundwater Standards. Health-protective soil and groundwater standards categories were established by the MADEP for use in risk characterization (MADEP, 1995). For assumed future commercial/industrial use, soil and groundwater concentrations are compared to the S-2/GW-1 category. The S-2 category indicates high adult use of the area and minimal use of the area by children. The GW-1 category additionally assumes the potential use of groundwater as a drinking water source. For a Method 1 Risk Characterization under the MCP, compliance with the appropriate Method 1 soil standards constitutes a demonstration of no significant health risk from exposure to oil or hazardous material in soil.

USEPA Drinking Water Regulations. The USEPA Office of Drinking Water has promulgated maximum contaminant levels (MCLs), enforceable standards for contaminants determined by the USEPA to have an adverse effect on human health (USEPA, 1994). MCLs apply to groundwater or surface water that is a current or potential source of drinking water.

Massachusetts Drinking Water Standards and Guidelines. MADEP has promulgated Massachusetts MCLs (MMCLs) which for some compounds are more stringent than USEPA MCLs (MADEP, 1994). MADEP has also developed drinking water guidelines for compounds for which no federal

standards exist. MMCLs apply to water that is delivered to any public water system user.

4.0 CONTAMINATION ASSESSMENT

AREE 63BC analytical results are discussed in the following paragraphs. A discussion of the analytical results is also included in the SSE Report (ABB-ES, 1996).

4.1 SUPPLEMENTAL SITE EVALUATION

In 1993 and 1994, ABB-ES personnel collected fourteen soil samples to evaluate potential contamination associated with the UST at Building 1435. These samples were field screened for TPH and VOCs. Elevated TPH concentrations (1,500 to 9,800 μg/g) were detected by field screening in soil samples from the northeast quadrant of the excavation (Figure 4-1 and Table 4-1). The concentrations were highest at the bottom of the excavation (10 ft), and diminished with decreasing depth (ABB-ES, 1996).

Three soil samples collected from the soil boring were field screened for TPH and VOCs (10 - 12 ft, 15 - 17 ft, and 20 - 22 ft). TPH was not detected in the sample from the 20 - 22 ft interval, where the water table was intercepted. The two samples in which TPH was detected (collected at the 10-ft and 15-ft depth intervals) were submitted to the laboratory for TPH, VOCs, and SVOCs analyses (Table 4-2). TPH was detected at 4,100 μg/g in the 10-ft sample, 1,680 μg/g in a field duplicate sample from the same interval, and 41 μg/g in the 15-ft sample. Methylene chloride and acetone were detected in samples from both depth intervals, but were also detected in the associated method blanks and are likely laboratory contaminants. Di-n-butylphthalate was detected at 0.49 μg/g (below the sample quantitation limit) in the 10-ft sample. Bis(2-ethylhexyl)phthalate was detected below the sample quantitation limit in both samples, but was also present in the associated method blanks.

The groundwater sample was submitted for laboratory analysis of TPH, VOCs, and SVOCs (Table 4-3). TPH was detected at 300 micrograms per liter (μg/L), below the MCP Method 1 GW-1 standard of 1,000 μg/L for TPH in groundwater. Methylene chloride was detected in the groundwater sample at a concentration (5 μg/L) equivalent to the MCP GW-1 groundwater standard, but was also detected in the associated method blank. SVOCs were not detected (ABB-ES, 1996).

4.2 SOIL REMOVAL ACTION

Based on the elevated TPH concentrations detected in the soil samples from AREE 63BC, it was determined that soil in this area should be removed. The Army's decision to conduct a removal action was documented in the Final Action Memoranda for Areas Requiring Environmental Evaluation (ABB-ES, 1994).

Fort Devens tasked the USACE NED to initiate a response action at AREE 63BC. The USACE NED contracted OHM Remediation Services Corporation (OHM) of Hopkinton, Massachusetts, to perform removal actions at AREE 63BC and at several other sites. The following provides a summary of the soil removal action. Further details and documentation are provided in the Final Closure Report (OHM, 1996), which is presented as Appendix A.

4.2.1 Removal Action Objectives

MCP Method 1 S-1/GW-1 soil standards were used as risk-based guidelines to establish target cleanup levels for the AREE 63BC removal action. MADEP revised the MCP and promulgated Method 1 soil standards (MADEP, 1993). For a Method 1 Risk Characterization under the MCP, compliance with these soil standards constitutes a demonstration of no significant health risk from exposure to oil or hazardous material in soil. Category S-1 has the greatest potential for exposure. The S-1 soil standard for TPH, 500 μg/g, was selected as the target cleanup goal for the AREE 63BC removal action.

4.2.2 Field Observations and Screening Results

On September 29, 1994, OHM began the soil removal action at AREE 63BC in the area of the 1992 UST excavation. This area was identified in the SSE as having the highest TPH concentrations. The excavation extended to a depth of approximately 20 ft below ground surface. Soil samples were continually collected from the excavation walls and floor for field screening for TPH by infrared spectroscopy. Field screening results, shown on Table 4-4, were used to direct the excavation. The removal action continued until screening results indicated that TPH concentrations in residual soils were below 500 μg/g (OHM, 1996). A total of 217 tons of soil were removed; the final excavation limit is shown on Figure 4-2. Groundwater was not encountered during the excavation.

When field screening results indicated that TPH concentrations were below the target cleanup level, ten confirmation samples and two duplicate samples were collected from the base and walls of the excavation on October 5, 1994, and were submitted to a contract laboratory for TPH analysis. Two additional confirmation samples were collected on October 26, 1994 from underneath the building foundation (north sidewall), because soil in this area could not be removed without first backfilling the southern section of the excavation. Confirmation sample locations are shown on Figure 4-2. Final analytical results, presented on Table 4-5, indicate that TPH and other analytes were not detected in any of the confirmatory soil samples. Petroleum contamination at AREE 63BC has been characterized and removed (OHM, 1996).

4.3 WASTE CHARACTERIZATION AND DISPOSAL

Excavated soil was temporarily stockpiled in a staging cell which was double-lined with polyethylene sheeting and bounded by sand berms. One waste characterization sample was collected from the contaminated soil stockpile and was analyzed for TPH, TCLP metals, TCLP organics, RCRA characteristics (ignitability, corrosivity, and reactivity), benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX), and polynuclear aromatic hydrocarbons (PAHs). One sample was also collected and analyzed for RCRA metals, pesticides, and polychlorinated biphenyls (PCBs). Based on the analytical results, all contaminated soil was transferred to a temporary soil storage facility at Fort Devens pending reuse as cover material in the proposed Consolidation Landfill. Complete waste characterization results, as well as transportation and disposal documentation, are provided in Appendix A (OHM, 1996).

5.0 PRELIMINARY HUMAN HEALTH RISK EVALUATION

A preliminary human health risk evaluation was performed for AREE 63BC during the SSE. The PRE provides a screening-level evaluation of the actual and potential risks that environmental contaminants pose to persons at the site. The PRE evaluated contaminants in subsurface soil and groundwater. Findings of the PRE are presented in the SSE report (ABB-ES, 1996), and are summarized below.

5.1 SOILS

The PRE evaluated analytical results of 18 subsurface soil samples (collected prior to the 1994 removal action) from six Terraprobe locations and one soil boring location. The PRE compared detected concentrations of each analyte to published risk-based concentrations or regulatory standards and guidelines. The human health PRE at Building 1435 assumed that soils from 3 ft to 15 ft would be accessible under a commercial/industrial scenario, and therefore compared contaminant concentrations in subsurface soil to MCP Method 1 S-2/GW-1 and USEPA Region III RBCs for commercial/industrial exposure.

Tables 4-1 and 4-2 present SSE soil analytical results, and Table 5-1 presents summary statistics calculated in the PRE. TPH was detected in eight of eighteen samples, at concentrations ranging from 41 μg/g to 10,800 μg/g. The maximum detected TPH concentration exceeded the MCP S-2/GW-1 soil standard of 2,500 μg/g, although the average (2,100 μg/g) did not. The VOCs acetone and methylene chloride and the SVOCs di-n-butylphthalate and bis(2-ethylhexyl)phthalate were detected in the soil boring sample, but none of these detected analytes exceeded their respective risk-based criteria (ABB-ES, 1996).

5.2 GROUNDWATER

The PRE evaluated analytical results of a groundwater sample collected through a screened auger in the 1435B-01X borehole. The PRE compared detected concentrations of each analyte to published risk-based concentrations or regulatory standards and guidelines. The human health PRE at Building 1435 compared

analyte concentrations in groundwater to federal and Massachusetts MCLs and MCP Method 1 GW-1 standards.

Table 4-3 presents SSE groundwater analytical results, and Table 5-2 presents summary statistics calculated in the PRE. Although the VOC methylene chloride was detected in the groundwater sample, it did not exceed risk-based screening values and is not believed to be site-related. TPH was also detected in groundwater, but at a concentration (300 μg/L) below the MCP GW-1 standard for TPH of 1,000 μg/L (ABB-ES, 1996).

5.3 Qualitative Evaluation of Residual Risk

MCP Method 1 S-1/GW-1 soil standards were used to establish cleanup standards for the soil removal action at the Building 1435 Former UST Site. Soil containing TPH concentrations exceeding 500 μg/g was removed during the soil removal action in September and October 1994. TPH was not detected in any of the confirmation samples.

TPH in groundwater did not exceed the MCP Method 1 GW-1 groundwater standard of 1,000 μg/L. The absence of TPH in soil samples collected following the 1994 removal action suggests that no significant residual risks to human health or the environment exist at AREE 63BC.

6.0 CONCLUSIONS

No further action is recommended for AREE 63BC. This recommendation is based on historical site use as confirmed by physical observations, sampling, and chemical analysis. It is also based on the results of confirmatory samples collected following the soil removal action.

Analytical results of soil samples collected from the former UST area at Building 1435 suggested that a release of oil may have occurred resulting in soil contamination. TPH concentrations in subsurface soil were above the respective action levels, prompting a removal action. Soil contamination at AREE 63BC has been mitigated by the removal action, which was completed in September and October 1994. The absence of TPH in confirmatory soil samples suggests that no significant residual risks to human health or the environment exist at AREE 63BC.

7.0 DECISION

With the removal of contaminated soil from Building 1435 Former UST Site and a determination of no residual risk, there is no evidence or reason to conclude that residual hazardous waste contamination due to past activities at the site has caused significant environmental contamination or poses a threat to human health or the environment. The decision has been made to remove AREE 63BC from further consideration in the IRP process. In accordance with CERCLA 120 (h) (3), all remedial actions necessary have taken place, and the USEPA and MADEP signatures constitute concurrence in accordance with the same.

James C Chambers — 5 SEP 96

JAMES C. CHAMBERS — Date
BRAC Environmental Coordinator

U.S. ENVIRONMENTAL PROTECTION AGENCY

James P Byrne — 9/5/96

JAMES P. BYRNE — Date
Fort Devens Remedial Project Manager

[X] Concur

[ ] Non-concur (Please provide reasons for non-concurrence in writing)

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

D. Lynne Welsh — 9/5/96

D. LYNNE WELSH — Date
Section Chief, Federal Facilities - CERO

[X] Concur

[ ] Non-concur (Please provide reasons for non-concurrence in writing)

7.0 DECISION

With the removal of contaminated soil from Building 1435 Former UST Site and a determination of no residual risk, there is no evidence or reason to conclude that residual hazardous waste contamination due to past activities at the site has caused significant environmental contamination or poses a threat to human health or the environment. The decision has been made to remove AREE 63BC from further consideration in the IRP process. In accordance with CERCLA 120 (h) (3), all remedial actions necessary have taken place, and the USEPA and MADEP signatures constitute concurrence in accordance with the same.

_____ _____

JAMES C. CHAMBERS Date
BRAC Environmental Coordinator

U.S. ENVIRONMENTAL PROTECTION AGENCY

_____ _____

JAMES P. BYRNE Date
Fort Devens Remedial Project Manager

[ ] Concur

[ ] Non-concur (Please provide reasons for non-concurrence in writing)

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

_____ _____

D. LYNNE WELSH Date
Section Chief, Federal Facilities - CERO

[ ] Concur

[ ] Non-concur (Please provide reasons for non-concurrence in writing)

Massachusetts Department of Environmental Protection (MADEP), 1993. "MADEP Comments on the Draft Work Plan, Supplemental Site Evaluations, 14 Former Underground Storage Tank Sites, Fort Devens, Massachusetts"; letter to James Chambers, BRAC Environmental Coordinator, Environmental Management Office, Fort Devens, Massachusetts; prepared by Molly J. Elders, Massachusetts Department of Environmental Protection, CRO, Worcester, Massachusetts; December 10.

Massachusetts Department of Environmental Protection (MADEP), 1994. "Drinking Water Standards and Guidelines for Chemicals in Massachusetts Drinking Waters"; Office of Research and Standards, Boston, Massachusetts; Autumn.

Massachusetts Department of Environmental Protection (MADEP), 1995. "Revised Massachusetts Contingency Plan", 310 CMR 40.0000 *et seq.*; January.

OHM Remediation Services Corporation, 1996. "Final Closure Report, AREE 63BC, Fort Devens, Massachusetts"; prepared for the U.S. Army Corps of Engineers, New England Division, Waltham, Massachusetts; Hopkinton, Massachusetts; May 2.

Roy F. Weston, Inc., 1992. "Delivery Order 9 Enhanced Preliminary Assessment, Fort Devens, Massachusetts"; prepared for the U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, Maryland; West Chester, PA; February.

U.S. Environmental Protection Agency (USEPA), 1994. "Drinking Water Regulations and Health Advisories"; Office of Water, Washington, D.C.; November.

U.S. Environmental Protection Agency (USEPA), 1995. "Risk-Based Concentration Table, January - June 1995"; prepared by Roy L. Smith, Ph.D.; Region III; March 7.

Vanasse Hangen Brustlin, Inc., 1994. *Devens Reuse Plan*; prepared for the Boards of Selectmen: Town of Harvard, Town of Lancaster, Town of Shirley; and the Massachusetts Government Land Bank; November 14.

ABB Environmental Services, Inc. (ABB-ES), 1994. Action Memoranda, Areas Requiring Environmental Evaluation, Fort Devens, Massachusetts; prepared for the U.S. Army Corps of Engineers, New England Division, Waltham, Massachusetts; Wakefield, Massachusetts; October.

ABB Environmental Services, Inc. (ABB-ES), 1996. Final Supplemental Site Evaluations Reports, 14 Former Underground Storage Tank Sites (AREE 63), Fort Devens, Massachusetts; prepared for the U.S. Army Corps of Engineers, New England Division, Waltham, Massachusetts; Wakefield, Massachusetts; January.

Arthur D. Little, Inc., 1993. Previously Removed Underground Storage Tanks (AREE 63), Fort Devens, Massachusetts, Draft Report; prepared for the U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland; Cambridge, Massachusetts; November 15.

Arthur D. Little, Inc., 1994. Underground Storage Tanks (AREE 63), Supplemental Site Evaluation Data Package, Base Realignment and Closure Environmental Evaluation (BRAC EE), Fort Devens, Massachusetts; prepared for the U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland; Cambridge, Massachusetts; October.

ATEC Environmental Consultants, 1992. "Post-Removal Report, Underground Storage Tank Closure, 1,000 Gallon No. 2 Fuel Oil, UST No. 24, Building 1435"; prepared for the U.S. Army Directorate of Contracting, Fort Devens, Massachusetts; Rockland, Massachusetts; February 3.

Biang, C.A., R.W. Peters, R.H. Pearl, and S.Y. Tsai, 1992. "Master Environmental Plan for Fort Devens, Massachusetts"; prepared for U.S. Army Toxic and Hazardous Materials Agency; prepared by Argonne National Laboratory, Environmental Assessment and Information Sciences Division; Argonne, IL; Final, April.

Jahns, R.H., 1953. "Surficial Geology of the Ayer Quadrangle, Massachusetts"; Scale 1:31,680; U.S. Geological Survey.

Koteff, C., 1966. "Surficial Geologic Map of the Clinton Quadrangle, Worcester County, Massachusetts;" U.S. Geological Survey Map GQ-567.

ABB-ES	ABB Environmental Services, Inc.
AREE	Area Requiring Environmental Evaluation
ATEC	ATEC Environmental Consultants
BRAC	Defense Base Realignment and Closure Act of 1990
BRAC EE	Base Realignment and Closure Environmental Evaluation
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOD	Department of Defense
ft	foot or feet
gpm	gallons per minute
IRP	Installation Restoration Program
MADEP	Massachusetts Department of Environmental Protection
MCL	Maximum Contaminant Level
MCP	Massachusetts Contingency Plan
MEP	Master Environmental Plan
MMCL	Massachusetts Maximum Contaminant Level
MSL	mean sea level
μg/g	micrograms per gram
μg/L	micrograms per liter
NED	New England Division
OHM	OHM Remediation Services Corporation
PA	Enhanced Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PRE	preliminary risk evaluation

RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
SA	Study Area
SSE	Supplemental Site Evaluation
SVOC	semivolatile organic compound
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Center
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

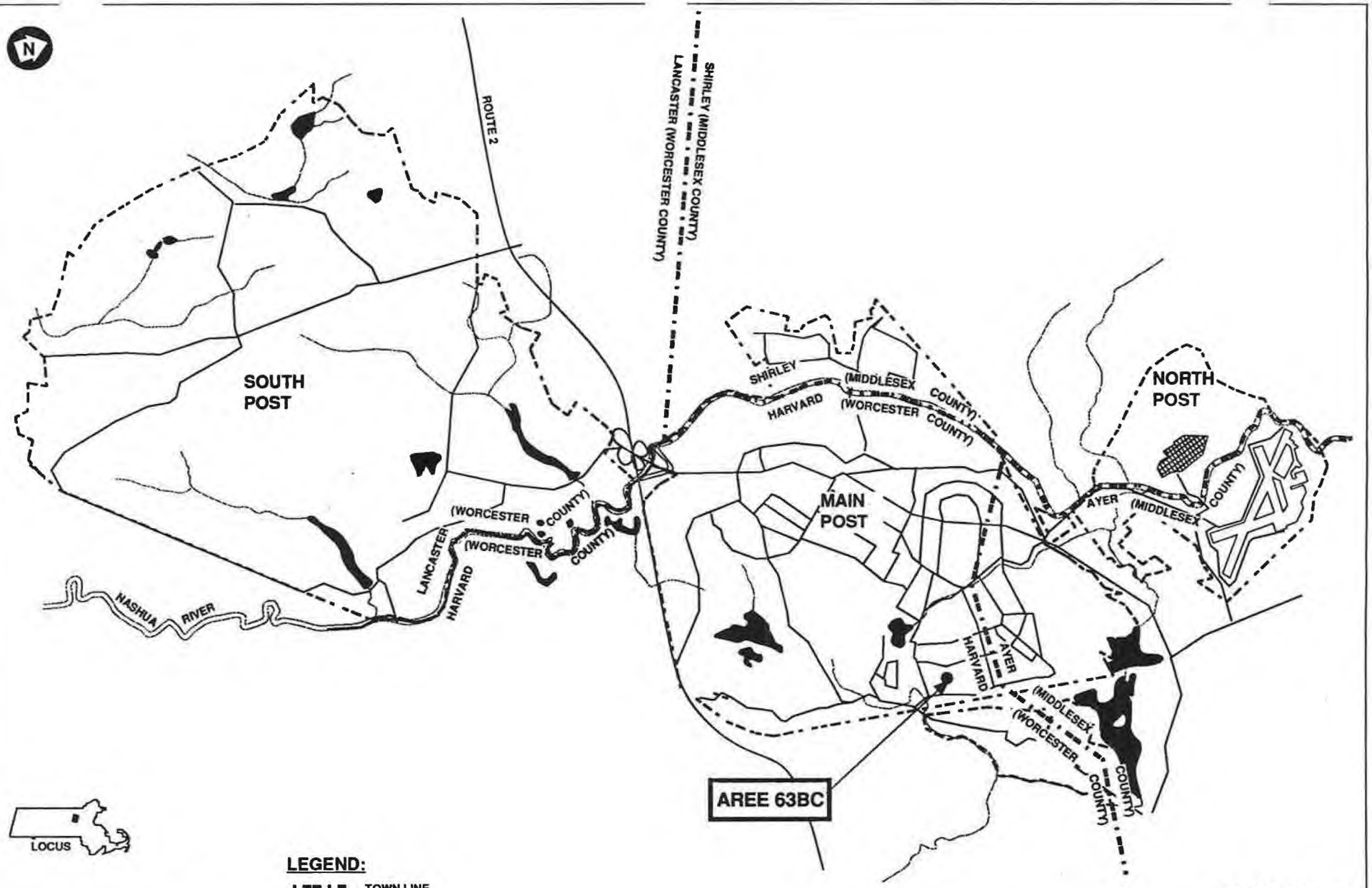


FIGURE 2-1
SITE LOCATION
NO FURTHER ACTION DECISION DOCUMENT
AREE 63BC - BUILDING 1435, FORMER UST SITE
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

7053-07 AA

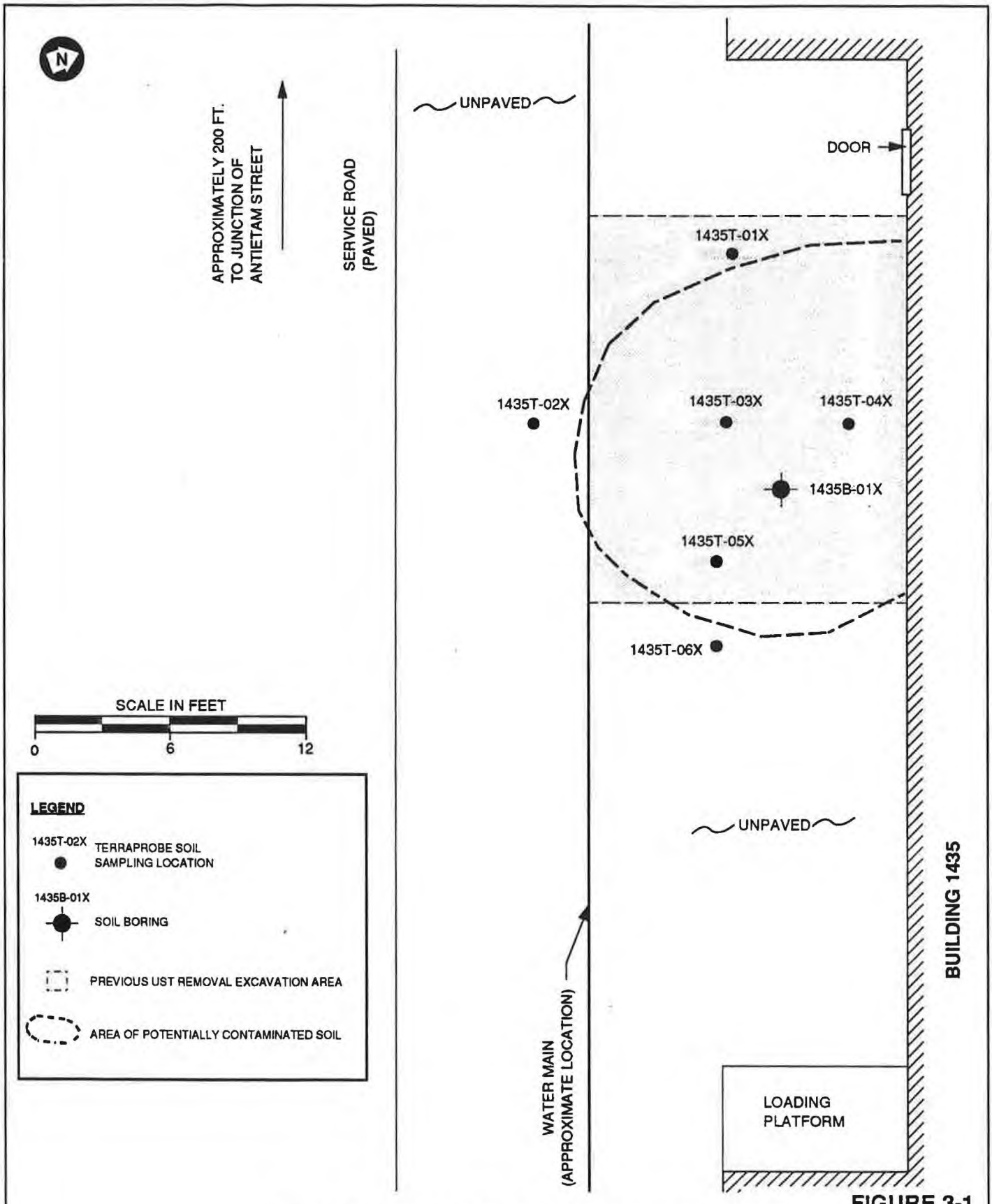


FIGURE 3-1
SUPPLEMENTAL SITE EVALUATION SOIL SAMPLING LOCATIONS
NO FURTHER ACTION DECISION DOCUMENT
AREE 63BC - BUILDING 1435, FORMER UST SITE
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

7147-00 (aa)

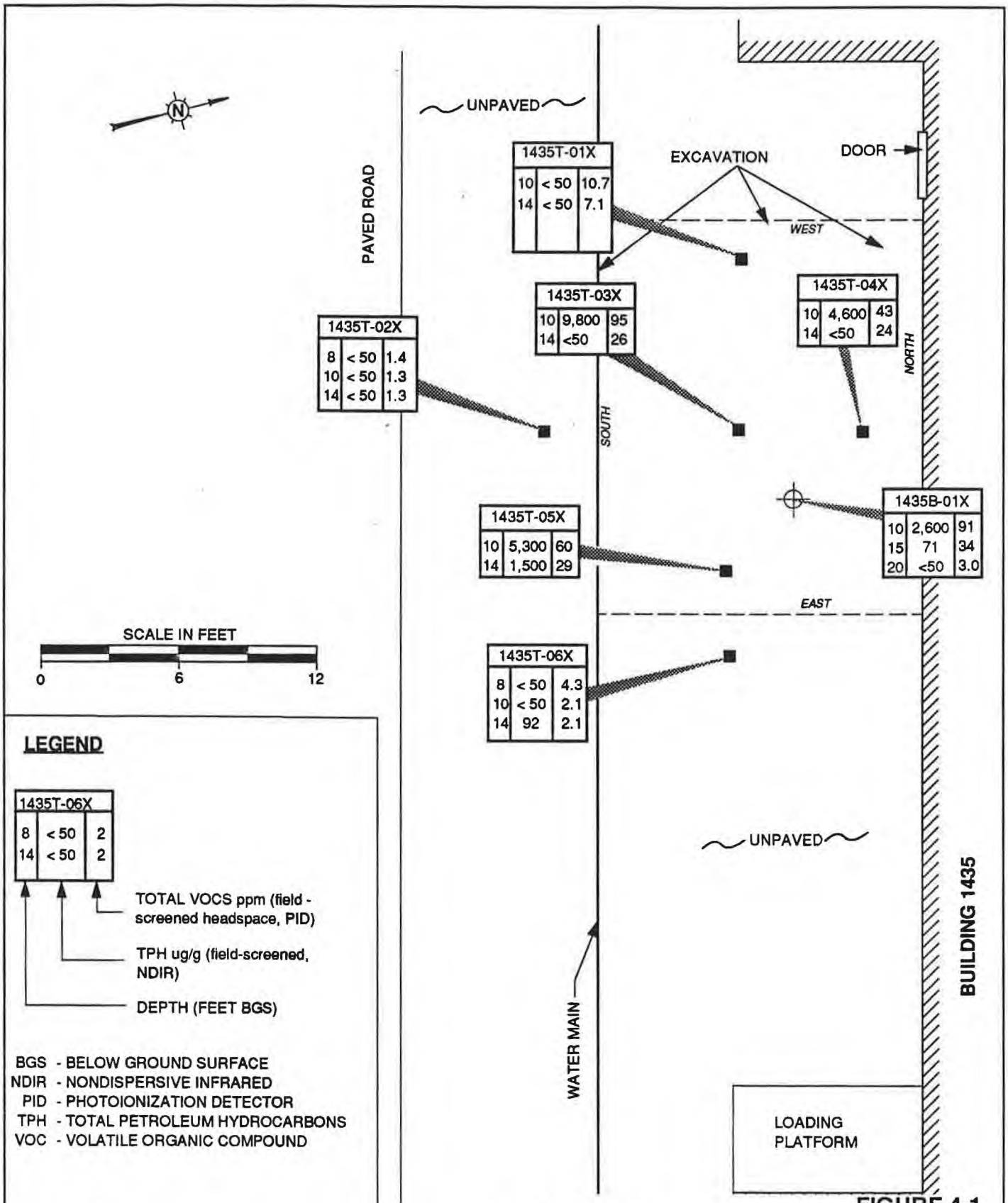
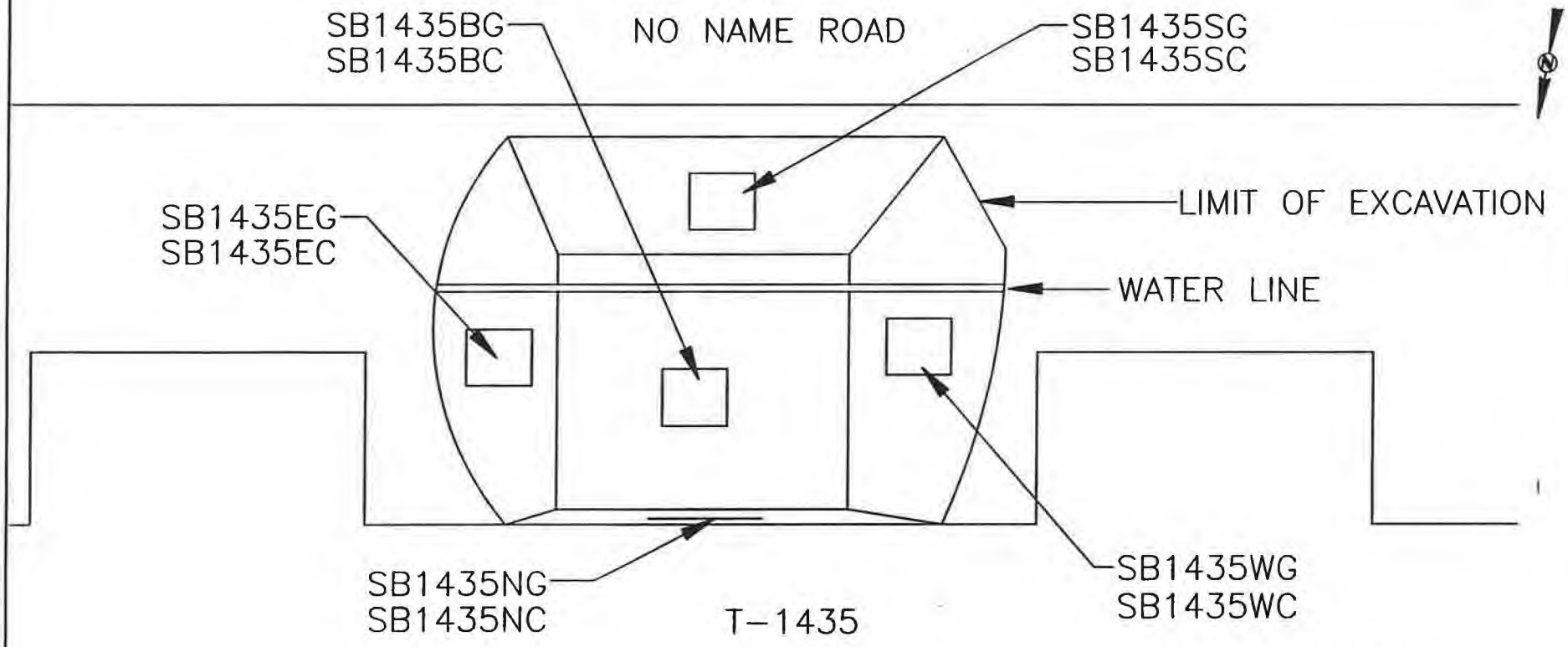


FIGURE 4-1
SUPPLEMENTAL SITE EVALUATION SOIL FIELD SCREENING RESULTS
NO FURTHER ACTION DECISION DOCUMENT
AREE 63BC - BUILDING 1435, FORMER UST SITE
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

7137-00 B



NOTES

SCALE
1 INCH = 10 FEET

1. SAMPLES COLLECTED WITH EXCAVATOR BUCKET SINCE EXCAVATION WAS UNSAFE FOR ENTRY.
2. 3 BUCKETS COLLECTED FROM THE BOTTOM AND EACH SIDE WALL.
   A. SUBSAMPLES COLLECTED FROM EACH OF 3 BUCKETS TO FORM COMPOSITE SAMPLE FOR TPH AND SVOC ANALYSIS.
   B. DISCRETE GRAB SAMPLE WAS COLLECTED FROM 1 OF 3 BUCKETS AND ANALYZED FOR BTEX COMPOUNDS.

SOURCE: OHM CORP.

FIGURE 4-2
FINAL EXCAVATION LIMIT AND CONFIRMATION SAMPLE LOCATIONS
NO FURTHER ACTION DECISION DOCUMENT
AREE 63BC - BUILDING 1435, FORMER UST SITE
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

TABLE 4-1
FIELD ANALYTICAL RESULTS: SUPPLEMENTAL SITE EVALUATION
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	SAMPLE DEPTH	1435T-01X 10-11 FT	1435T-01X 14-15 FT	1435T-02X 8-9 FT	1435T-02X 10-11 FT	1435T-02X 14-15 FT	1435T-03X 10-11 FT
TOTAL PETROLEUM HYDROCARBONS (ppm)		< 50	< 50	< 50	< 50	< 50	9800

NOTES:

< = less than detection limit shown

ppm = parts per million

TABLE 4–1, continued
FIELD ANALYTICAL RESULTS: SUPPLEMENTAL SITE EVALUATION
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	SAMPLE DEPTH	1435T–03X 14–15 FT	1435T–04X 10–11 FT	1435T–04X 14–15 FT	1435T–05X 10–11 FT	1435T–05X 14–15 FT	1435T–06X 8–9 FT
TOTAL PETROLEUM HYDROCARBONS (ppm)		< 50	4600	< 50	5300	1500	< 50

NOTES:
< = less than detection limit shown
ppm = parts per million

TABLE 4–1, continued
FIELD ANALYTICAL RESULTS: SUPPLEMENTAL SITE EVALUATION
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	SAMPLE DEPTH	1435T–06X 10–11 FT	1435T–06X 14–15 FT	1435B–01X 10–12 FT	1435B–01X 15–17 FT	1435B–01X 20–22 FT
TOTAL PETROLEUM HYDROCARBONS (ppm)		< 50	92	2600	71	< 50

NOTES:
< = less than detection limit shown
ppm = parts per million

TABLE 4–2
ANALYTES DETECTED IN SOIL: SUPPLEMENTAL SITE EVALUATION[1]
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MASSACHUSETTS

ANALYTE	BORING DEPTH	1435B–01X 10–12 FT	1435B–01X 10–12 FT (DUP)	1435B–01X 15–17 FT
VOLATILES (mg/kg)				
METHYLENE CHLORIDE		0.008 B,J	0.013 B	0.014 B,J
ACETONE		0.035 B	0.011 B	0.015 B,J
SEMIVOLATILES (mg/kg)				
DI–N–BUTYLPHTHALATE		0.49 J	<0.36	<0.35
BIS(2–ETHYLHEXYL)PHTHALATE		1.3 B,J	<0.36	0.061 B,J
PETROLEUM HYDROCARBONS (mg/kg)				
TOTAL PETROLEUM HYDROCARBONS		4,100	1,680	41.0

NOTES:

1. Data as reported by CompuChem Environmental Corporation; data have not been "blank–corrected".

Table lists detected analytes only.

mg/kg = milligrams per kilogram

B = Also found in associated method blank.

J = Estimated value, below sample quantitation limit.

< = less than detection limit shown

TABLE 4–3
ANALYTES DETECTED IN GROUNDWATER: SUPPLEMENTAL SITE EVALUATION[1]
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MASSACHUSETTS

ANALYTE	BORING[2]	1435B–01X
VOLATILES (ug/L)		
METHYLENE CHLORIDE		5 BJ
TOTAL PETROLEUM HYDROCARBONS (ug/L)		
TOTAL PETROLEUM HYDROCARBONS		300

NOTES:

1. Data as reported by CompuChem Environmental Corporation; data have not been "blank–corrected".
2. Groundwater sample collected through screened auger in borehole.

Table lists detected analytes only.

ug/L = micrograms per liter

B = Also found in blank.

J = Estimated value, below sample quantitation limit.

TABLE 4–4
FIELD SCREENING RESULTS: SOIL REMOVAL ACTION
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

Sample ID	Date Collected	Sample Location	Sample Depth (feet)	TPH (mg/kg)
SB1435W1	30–Sept–94	north sidewall	11.5	11,300
SB1435W2	30–Sept–94	north sidewall	12	461
SB1435W3	30–Sept–94	east sidewall	11	ND (42)
SB1435W4	30–Sept–94	east sidewall	10	ND (42)
SB1435W5	30–Sept–94	south sidewall	10.5	1,030
SB1435W6	30–Sept–94	south sidewall	12.4	5,207
SB1435W7	30–Sept–94	west sidewall	10.5	ND (42)
SB1435W8	30–Sept–94	west sidewall	10.5	ND (42)
SB1435W9	30–Sept–94	south sidewall	9.3	77
SB1435W10	30–Sept–94	south sidewall	10.6	4,517
SB1435W11	30–Sept–94	north sidewall	13	ND (42)
SB1435W12	30–Sept–94	north sidewall	10	ND (42)
SB1435W13	30–Sept–94	southwest corner – wall	9.5	35 J
SB1435W14	30–Sept–94	south sidewall	9.5	3,005
SB1435W15	30–Sept–94	south sidewall	9.5	2,149
SB1435W16	30–Sept–94	south sidewall	9.5	ND (42)
SB1435W17	30–Sept–94	north sidewall	12	ND (42)
SB1435W18	30–Sept–94	northwest corner – wall	12	ND (42)
SB1435W19	30–Sept–94	north sidewall	12	ND (42)
SB1435B1	30–Sept–94	northwest bottom	14	ND (42)
SB1435B2	30–Sept–94	northeast bottom	14	63
SB1435B3	30–Sept–94	center bottom	14	5,692

NOTES:
TPH = total petroleum hydrocarbons
mg/kg = milligram per kilogram
ND() = indicates TPH was not detected at specified practical quantitation limit
J = Qualifier indicating estimated concentration below practical quantitation limit

SOURCE: OHM Remediation Services Corp., 1996.

TABLE 4–4 (continued)
FIELD SCREENING RESULTS: SOIL REMOVAL ACTION
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

Sample ID	Date Collected	Sample Location	Sample Depth (feet)	Lead (mg/kg)
SB1435W20	03–Oct–94	east sidewall	13.5	ND (42)
SB1435W21	03–Oct–94	east sidewall	13.5	ND (42)
SB1435W22	03–Oct–94	west sidewall	13.5	ND (42)
SB1435W23	03–Oct–94	west sidewall	13.5	2,880
SB1435W24	03–Oct–94	south of water main	7.5	ND (42)
SB1435W25	03–Oct–94	south of water main	7.5	ND (42)
SB1435W26	03–Oct–94	south of water main	7.5	ND (42)
SB1435W27	03–Oct–94	south of water main	7.5	ND (42)
SB1435W28	03–Oct–94	south of water main	4.5	ND (42)
SB1435B4	03–Oct–94	south of water main	8.5	ND (42)
SB1435B5	03–Oct–94	south of water main	8.5	ND (42)
SB1435B6	03–Oct–94	center bottom	15	7,086
SB1435B7	03–Oct–94	east center bottom	15	ND (42)
SB1435B8	03–Oct–94	west center bottom	15	43 J
SB1435B9	03–Oct–94	south bottom	15	1,035
SB1435W29	03–Oct–94	west sidewall	9	ND (42)
SB1435W30	03–Oct–94	west sidewall	11	ND (42)
SB1435W31	03–Oct–94	south sidewall	14.5	384
SB1435W32	03–Oct–94	west sidewall	14.5	ND (42)
SB1435W33	03–Oct–94	south sidewall	13	ND (42)
SB1435B10	04–Oct–94	south center bottom	16	ND (42)
SB1435B11	04–Oct–94	west center bottom	16	ND (42)
SB1435B12	04–Oct–94	north center bottom	16	ND (42)
SB1435B13	04–Oct–94	east center bottom	16	5,157

NOTES:
TPH = total petroleum hydrocarbons
mg/kg = milligram per kilogram
ND() = indicates TPH was not detected at specified practical quantitation limit
J = Qualifier indicating estimated concentration below practical quantitation limit

SOURCE: OHM Remediation Services Corp., 1996.

TABLE 4–4 (continued)
FIELD SCREENING RESULTS: SOIL REMOVAL ACTION
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

Sample ID	Date Collected	Sample Location	Sample Depth (feet)	TPH (mg/kg)
SB1435B14	04–Oct–94	east center bottom	19	395
SB1435B15	04–Oct–94	east center bottom	18	1094
SB1435B16	04–Oct–94	east center bottom	20	67
SB1435B17	04–Oct–94	east center bottom	20	ND (42)
SB1435BC	05–Oct–94	bottom composite	20	23 J
SB1435WC	05–Oct–94	west sidewall composite	N/A	17 J
SB1435EC	05–Oct–94	east sidewall composite	N/A	ND (42)
SB1435SC	05–Oct–94	south sidewall composite	N/A	ND (42)
SB1435DUPC	05–Oct–94	west sidewall split	N/A	ND (42)
SB1435TRPC	05–Oct–94	west sidewall split	N/A	ND (42)
1435 clean pile	12–Oct–94	clean pile composite	N/A	ND (42)
SB1435W34	26–Oct–94	north sidewall	10.5	17 J
SB1435W35	26–Oct–94	north sidewall	10.5	ND (42)
SB1435NC	26–Oct–94	S sidewall composite	N/A	ND (42)

NOTES:
TPH = total petroleum hydrocarbons
mg/kg = milligram per kilogram
ND() = indicates TPH was not detected at specified practical quantitation limit
J = Qualifier indicating estimated concentration below practical quantitation limit

SOURCE: OHM Remediation Services Corp., 1996.

TABLE 4–5
CONFIRMATION SAMPLE RESULTS: SOIL REMOVAL ACTION
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

COMPOSITE CONFIRMATION SAMPLES:

Sample ID	Date Collected	Naphthalene (mg/kg)	2–Methyl–naphthalene (mg/kg)	Phenanthrene (mg/kg)	TPH (mg/kg)
SB1435BC	05–Oct–94	ND (0.352)	ND (0.352)	ND (0.352)	ND (7.07)
SB1435WC	05–Oct–94	ND (0.373)	ND (0.373)	ND (0.373)	ND (7.41)
SB1435SC	05–Oct–94	ND (0.356)	ND (0.356)	ND (0.356)	ND (7.18)
SB1435EC	05–Oct–94	ND (0.365)	ND (0.365)	ND (0.365)	ND (7.29)
SB1435DUPC	05–Oct–94	ND (0.369)	ND (0.369)	ND (0.369)	ND (7.34)
SB1435NC	26–Oct–94	ND (0.342)	ND (0.342)	ND (0.342)	ND (6.91)

DISCRETE CONFIRMATION SAMPLES:

Sample ID	Date Collected	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
SB1435BG	05–Oct–94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435WG	05–Oct–94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435SG	05–Oct–94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435EG	05–Oct–94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435DUPG	05–Oct–94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435NG	26–Oct–94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)

NOTES:
TPH = total petroleum hydrocarbons
mg/kg = milligrams per kilogram.
ND() = indicates TPH was not detected at specified practical quantitation limit

SOURCE: OHM Remediation Services Corp., 1996

TABLE 5-1
HUMAN HEALTH PRELIMINARY RISK EVALUATION OF SUBSURFACE SOIL
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	CONCENTRATION [a]		FREQUENCY OF DETECTION	USEPA REGION III COMMERCIAL/INDUSTRI SOIL CONCENTRATION (ug/g)	MCP STANDARD [c] S-2/S-3 (ug/g)	MAXIMUM EXCEEDS GUIDELINE CONCENTRATION?
	AVERAGE (ug/g)	MAXIMUM (ug/g)				
VOLATILES (ug/g)						
Methylene chloride	0.0105[BJ]	0.0105[BJ]	1/1	760	0.1/--	No
Acetone	0.023[B]	0.023[B]	1/1	200,000	3/--	No
SEMIVOLATILES (ug/g)						
Di-n-butyl-phthalate	0.335[J]	0.335[J]	1/1	200,000	NA/--	No
Bis(2-ethylhexyl)phthalate	0.74[BJ]	0.74[BJ]	1/1	410	100/--	No
PETROLEUM HYDROCARBONS (ug/g)						
Total Petroleum Hydrocarbons (TPH) Depth <15 ft.	2,100	10,800	8/18	16,360 [b]	2,500/--	Yes
Total Petroleum Hydrocarbons (TPH) Depth >15 ft.	46	71	2/3	16,360 [b]	--/5,000	No
INORGANICS (ug/g)						
Not analyzed	--	--	--	--	--/--	--

Notes:
[a] TPH data include field screening results from six Terraprobe locations (1435T-01X through 1435T-06X, at 8 to 15 feet depths); soil boring field screening results from sample location 1435B-01X, at 10 to 12 feet depths; laboratory analysis results from soil boring location 1435B-01X (and its duplicate), at 10 to 12 feet depth and ATEC samples RSS-1 and RSS-2.
Volatiles and semivolatiles data include laboratory analyses of soil boring 1435B-01X (and its duplicate).
[b] Calculated commercial/industrial soil concentration for No. 2 fuel oil (using diesel oil as a surrogate); see Section 2.4 for discussion.
[c] The lowest of the S-2/GW-1, S-2/GW-2, S-2/GW-3 or the S-3/GW-1, S-3/GW-2, S-3/GW-3 soil standards.
Shaded line indicates an exceedance of a screening guideline.
NA = not available
ug/g = micrograms per gram
B = also found in blank
J = estimated value, below sample quantitation limit

TABLE 5–2
HUMAN HEALTH PRELIMINARY RISK EVALUATION OF GROUNDWATER
AREE 63BC – BUILDING 1435 FORMER UST SITE
NO FURTHER ACTION DECISION DOCUMENT
FORT DEVENS, MA

ANALYTE	CONCENTRATION [a]		FREQUENCY OF DETECTION	DRINKING WATER STANDARD/GUIDELINE [b] (ug/L)	MCP GROUNDWATER STANDARD [c] ug/L	MAXIMUM EXCEEDS STANDARD/GUIDELINE?
	AVERAGE (ug/L)	MAXIMUM (ug/L)				
VOLATILES (ug/L)						
Methylene chloride	5[BJ]	5[BJ]	1/1	5	5	No
SEMIVOLATILES (ug/L)						
Not detected	--	--	--	--		--
PETROLEUM HYDROCARBONS (ug/L)						
Total petroleum hydrocarbons	300	300	1/1	NA	1,000	No
INORGANICS (ug/L)						
Not analyzed	--	--	--	--	--	--

Notes:

[a] Based on analytical data from location 1435B–01X; sample was collected through screened auger in borehole. .

[b] Includes the lowest of either the EPA or MA drinking water standards, or if no federal or state standard or guideline is available, the USEPA Region III tap water concentration.

[c] The lowest of the GW–1, GW–2, and GW–3 standards.

NA = not available

ug/L = micrograms per liter

B = also found in blank

J = estimated value, below sample quantitation limit

OHM Corporation

FINAL CLOSURE REPORT
AREE 63BC
FORT DEVENS, MASSACHUSETTS

Prepared for:

U.S. Army Corps of Engineers
New England Division
Waltham, Massachusetts
Contract Number DACW45-89-D-0506

Prepared by:

OHM Remediation Services Corp.
Hopkinton, Massachusetts

Kevin J. Mack
Project Manager

May 2, 1996
OHM Job 16208

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AREE	Area Requiring Environmental Evaluation
ABB	ABB Environmental Services, Inc.
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CQAR	Chemical Quality Assurance Report
CY	Cubic yards
EMO	Fort Devens Environmental Management Office
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
MEP	Master Environmental Plan
MSR	Material Shipping Record
NED	US Army Corps of Engineers New England Division
NPL	National Priority List
PAHs	Polycyclic Aromatic Hydrocarbons
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
SA	Study Area
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
SVOCs	Semivolatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
USAEC	U.S. Army Environmental Center
USACE	United States Army Corps of Engineers
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Fort Devens was placed on the National Priority List (NPL) on December 21, 1989, under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, Superfund Act) as amended by the Superfund Amendments and Reauthorization Act (SARA). Subsequently, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens was selected for cessation of operations and closure. In accordance with these acts, investigations have been conducted at numerous locations at the base, including Areas Requiring Environmental Evaluation (AREEs), to determine if residual contamination was present. AREE 63BC was identified in the Federal Facilities Agreement between the U.S. Environmental Protection Agency and the U.S. Department of Defense as a potential site of contamination. The information gathered through studies on this site indicated petroleum contamination in the subsurface soils. This closure report documents the historical information and investigation results leading to the recommendation to remove soil, and the remedial actions taken at AREE 63BC.

AREE 63BC, adjacent to Building 1435, is located in the northeast portion of the Main Post, about 100 feet east of Antietam Street. The study area was established as a result of a release from a 1,000 gallon underground storage tank (UST), used to store No. 2 fuel oil to heat Building 1435. This tank, designated UST 24, was located on the south side of Building 1435 and was removed in January 1992, along with approximately 25 cubic yards (cy) of petroleum-contaminated soil. Additional excavation was conducted in July of 1992, but contamination still remained. ABB Environmental Services (ABB) conducted a Supplemental Site Evaluation at the site in 1994 to determine the extent of subsurface contamination. The results of this investigation indicated that petroleum contamination was present in the area of the former UST at depths greater than 10 feet below ground surface (bgs).

The New England Division (NED) of the United States Army Corps of Engineers (USACE) contracted OHM Remediation Services Corporation (OHM) to address the remaining petroleum-contaminated soil. OHM removed 216.5 tons (an estimated 144 cubic yards (cy)) of contaminated soil from the excavation at AREE 63BC. Confirmation soil samples were collected and analyzed for the total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes, referred to collectively as BTEX, and select polycyclic aromatic hydrocarbons (PAHs) to document that applicable site action levels for these constituents had been met. The PAHs selected for analysis were derived from the "Policy for the Investigation, Assessment, and Remediation of Petroleum Releases" Policy #WSC-401-91, and were part of the contract scope of work. The contaminated soil removed from the excavation is presently stockpiled at a temporary storage facility located adjacent to Building 202 in the northeast portion of the Main Post, for eventual disposal at the Consolidation Landfill proposed for construction at Fort Devens. The stockpiled soil was characterized to verify that it could be used on the proposed landfill. Based upon previous investigations and the results of remedial activities described herein, no further action is recommended at this site.

SECTION 1.0
INTRODUCTION

Fort Devens was placed on the National Priority List (NPL) on December 21, 1989, under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA; Superfund) as amended by the Superfund Amendments and Reauthorization Act (SARA). Subsequently, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens has been selected for cessation of operations and closure. This closure report has been prepared as part of the U.S. Department of Defense Base Realignment and Closure program to assess the nature and extent of contamination associated with site operations at Fort Devens. This report contains a summary of activities conducted under CERCLA at AREE 63BC.

In conjunction with the Army's Installation Restoration Program, Fort Devens and the U.S. Army Environmental Center (USAEC; formerly the U.S. Army Toxic and Hazardous Materials Agency) developed a Master Environmental Plan (MEP) in 1988. The MEP consisted of assessments of the environmental status of SAs, specified necessary investigations, and provided recommendations for response actions with the objective of identifying priorities for environmental restoration at Fort Devens. The New England Division of the U.S. Army Corps of Engineers (USACE-NED) was tasked with removal efforts at the base. This closure report documents the historical findings leading to the response action recommendation and describes the measures taken at AREE 63BC.

1.1 Site History and Background

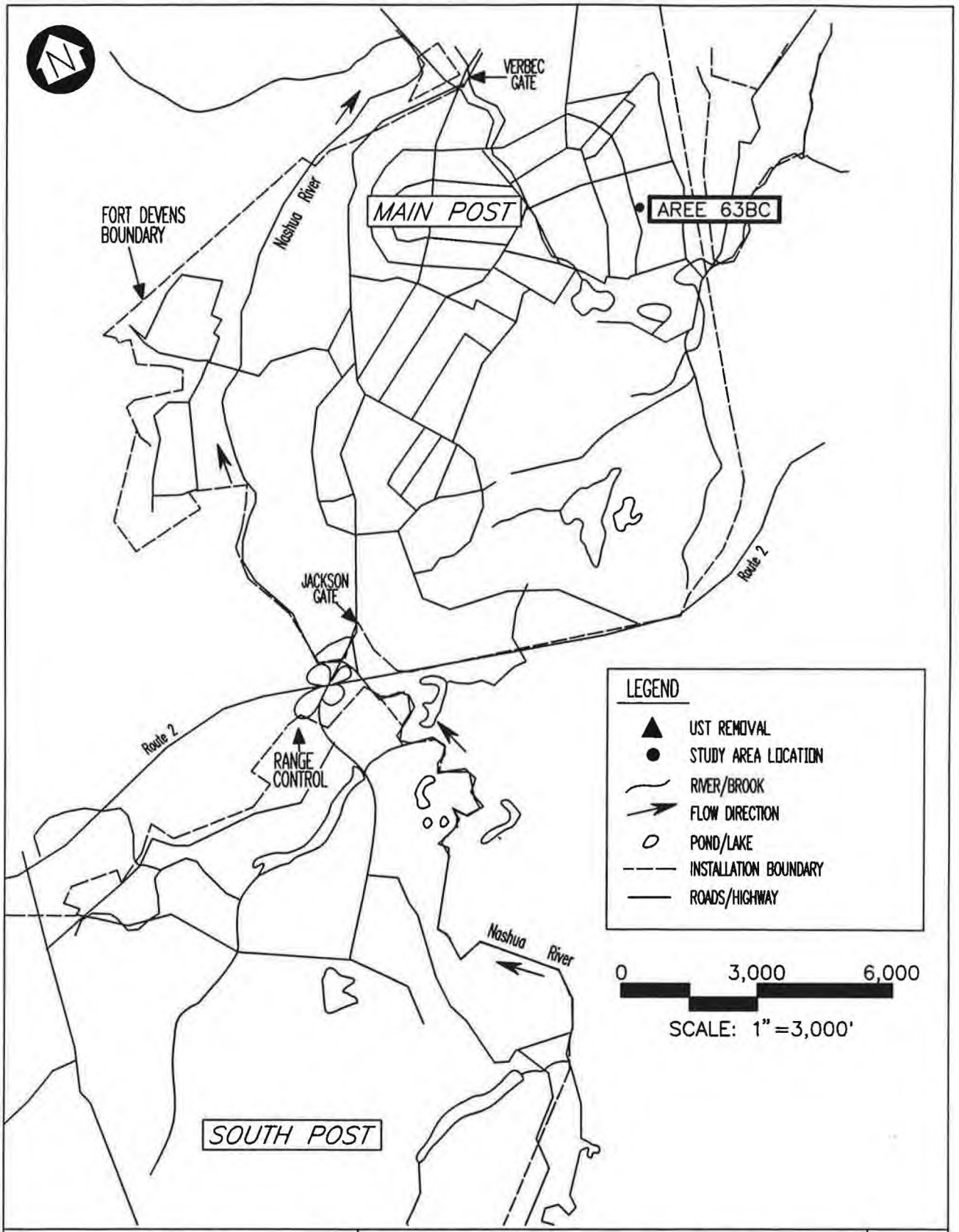
AREE 63BC, adjacent to Building 1435, is located in the northeast portion of the Main Post about 100 feet east of Antietam Street (Refer to Figure 1-1). The study area was established as a result of a release from a 1,000 gallon underground storage tank (UST 24), used to store No. 2 fuel oil to heat Building 1435. UST 24, located on the south side of Building 1435, was removed in January 1992, by ATEC, along with approximately 25 cy of contaminated soil. Soil was removed to a depth of approximately 5.5 feet below grade (Refer to the Site Plan represented as Figure 1-2). Confirmatory sampling done at this time indicated that petroleum contamination was still present in the subsurface soils.

Additional excavation was conducted in July 1992 by ATEC to an approximate depth of 10 feet bgs and backfilled, despite petroleum contamination remaining in the subsurface. A MADEP representative, present during these remediation activities, observed that the water main was broken during the removal of contaminated soils, causing the entire excavation to fill with water before the line could be shut down. The water was not pumped out, but was left to permeate into the underlying soil.

ABB conducted a TerraProbe investigation in 1994 and confirmed the presence of petroleum contaminated soil in the subsurface soils (Refer to Section 1-3) and the need for additional remediation at the site.

1.2 Site Conditions

Building 1435 is an abandoned warehouse located off Antietam Street. Soils encountered during the previous investigations ranged from well graded fine to medium sand to uniform fine sand, and groundwater was encountered at 20.2 feet bgs in an investigative soil boring installed in the area of the former UST location. The computed groundwater flow at the site is reported as approximately northeast.



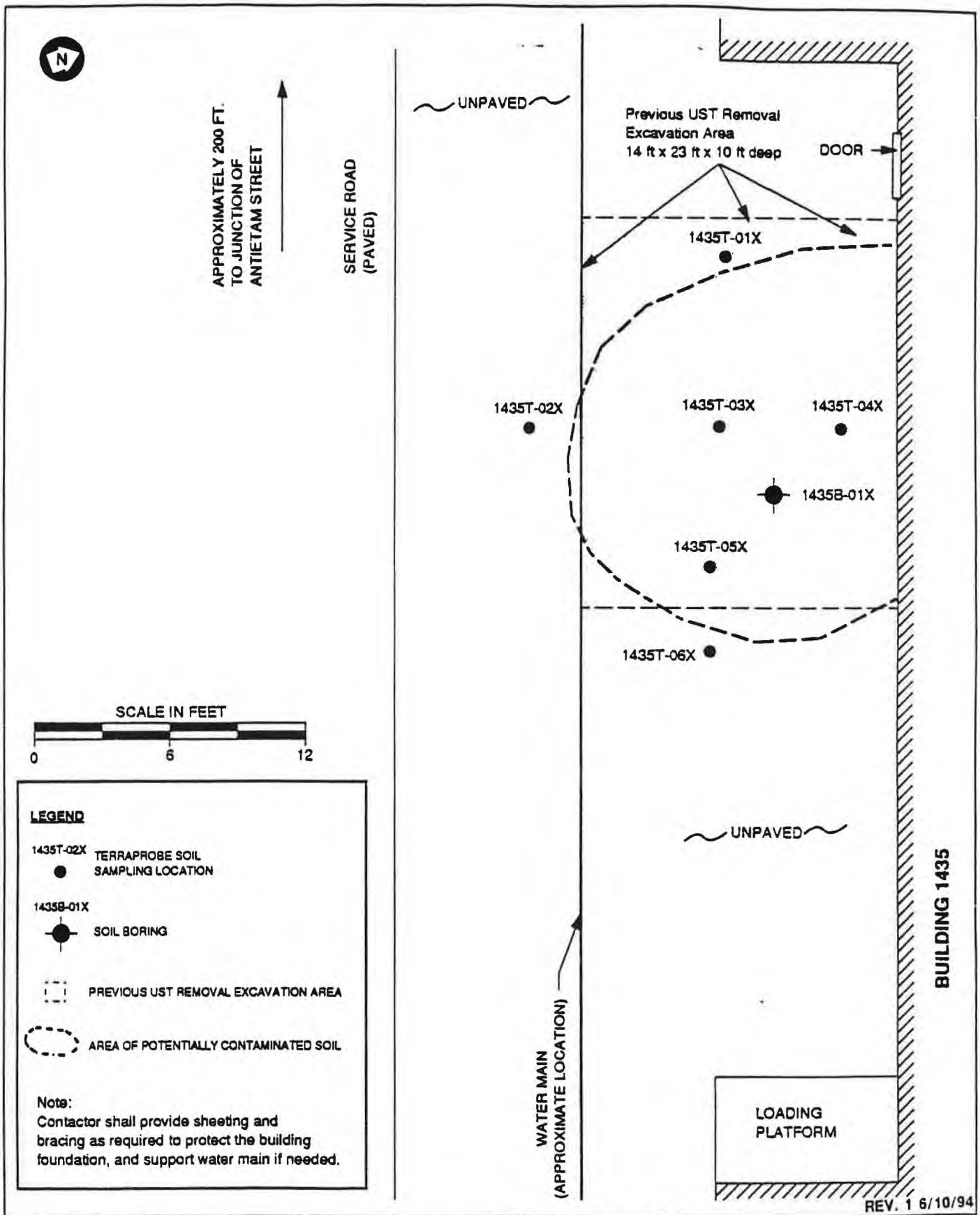
DEPARTMENT OF THE ARMY NEW ENGLAND DIVISION CORPS OF ENGINEERS WALTHAM, MASS	FORT DEVENS, MASSACHUSETTS CONTAMINATED SOIL REMOVAL, VARIOUS SITES COMPREHENSIVE SITE LOCATION MAP	FIGURE 1-1

1.3 Previous AREE 63BC Investigation Activities

ABB was tasked by NED with conducting the investigation at AREE 63BC. The objective of the investigation was to determine the vertical and horizontal extent of contamination around the former UST (Refer to the Site Plan in Figure 1-2). A total of 17 subsurface soil samples were collected from 7 locations at depths ranging from 8 to 20 feet bgs. ABB's TerraProbe unit was used to collect samples from 6 locations at depths of 8, 10, and 14 feet bgs at two of the locations, and 10 and 14 feet at the other four locations. Another boring was installed using a drill rig to obtain soil samples from 10, 15 and 20 feet bgs. In addition, a groundwater sample was collected through a screened auger. Sample locations are shown in Figure 1-2. All soil samples were screened on site for total petroleum hydrocarbons (TPH) by infrared spectrophotometry (IR) and for volatile organic compounds (VOCs) in soil headspace using a portable photoionization detector (PID) instrument. TPH concentrations ranging from 1,500 to 9,800 mg/kg were observed in samples collected in the area of the former UST at depths from 10 to 14 feet bgs.

Two samples were submitted to an off-site laboratory and analyzed for TPH, VOCs and SVOCs. In general, the off-site TPH results support the TPH results generated on site. Trace concentrations of VOCs were observed both in the samples and in the laboratory blanks. Total SVOCs was quantified at 1.79 mg/kg, which included estimated values below the laboratory quantitation limit. The groundwater sample was also sent to an off-site laboratory for analysis of VOCs, SVOCs, and TPH. TPH was detected at a concentration of 0.3 mg/L, however no VOCs or SVOCs were detected with the exception of methylene chloride, which was also present in the laboratory method blank.

This investigation concluded that most of the petroleum-contaminated soil was removed by ATEC under a Short Term Remedial Measure. However, additional contaminated soil was still present below a depth of ten feet.



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS

FORT DEVENS, MASSACHUSETTS
CONTAMINATED SOIL REMOVAL, VARIOUS SITES
BLDG. 1435 LUST SITE (TANK 24)

SITE PLAN

FIGURE 1-2

7147-00 (a)

SECTION 2.0
PETROLEUM-CONTAMINATED SOIL REMOVAL

OHM was contracted by the USACE-NED to excavate the remaining petroleum-contaminated soil at AREE 63BC, coordinate disposal of the excavated material, and restore the site by backfilling and seeding.

2.1 Site Preparation Activities

OHM conducted pre-excavation activities at AREE 63BC to ensure that contaminants would be contained at the site and to prevent the general population from coming into contact with contaminants exposed through excavation activities. An exclusion zone was established using orange fencing, and staging cells were constructed for temporary storage of contaminated soils. Sand berms were constructed at the perimeter of each staging cell and the cells were double lined with polyethylene sheeting.

2.2 Excavation and Soil Screening Activities

Excavation at AREE 63BC began on September 29, 1994 in the area of the former UST location, where petroleum-contaminated soil was identified during the site investigation. Clean soil was removed and stockpiled separately prior to excavating contaminated material. The previous excavation had been lined with visqueen prior to backfilling in order to clearly mark the extent of this initial removal. Soil samples were collected and screened on-site in order to guide the excavation. All the samples collected during the excavation were screened for TPH by infrared spectroscopy (IR) to determine where additional excavation was necessary. The decision to proceed with the excavation was based on the site action level of 500 mg/kg for TPH in soil. The screening results are presented in Table 2-1 and the on-site analytical data are provided in Appendix A.

The first round of screening samples were collected on September 30, 1994 and results indicated several samples with TPH concentrations ranging from 1030 mg/kg to 11,300 mg/kg, which exceeded the 500 mg/kg action level. The samples were collected from the bottom, north sidewall and south sidewall of the excavation. A water main, located approximately 8 feet from and running parallel to Building 1435, was supported using an I-beam so that excavation could continue. The areas with TPH concentrations above the action level were resampled after additional excavation. OHM's protocol was to flag all sample locations upon collection to ensure that additional excavation was done at the appropriate location(s). In general, the excavation continued in the area between the building and the water main to an approximate depth of 20 feet bgs. On-site TPH screening results were used to guide excavation and to determine when the site was ready for confirmation sampling. Groundwater was not encountered during the excavation activities.

Samples collected from underneath the building foundation (north sidewall) indicated the presence of TPH above the site action level of 500 mg/kg, however this soil could not be removed without first backfilling the southern section of the excavation. As a result confirmation sampling was performed in two rounds.

Table 2-1
Soil Sample Screening Results
TPH by IR
Final Closure Report
AREE 63BC

Sample ID	Sample Location	Sample Date	Sample Depth (ft)	TPH Result (mg/kg)
SB1435W1	north sidewall	30-Sept-94	11.5	11,300
SB1435W2	north sidewall	30-Sept-94	12	461
SB1435W3	east sidewall	30-Sept-94	11	ND (42)
SB1435W4	east sidewall	30-Sept-94	10	ND (42)
SB1435W5	south sidewall	30-Sept-94	10.5	1,030
SB1435W6	south sidewall	30-Sept-94	12.4	5,207
SB1435W7	west sidewall	30-Sept-94	10.5	ND (42)
SB1435W8	west sidewall	30-Sept-94	10.5	ND (42)
SB1435W9	south sidewall	30-Sept-94	9.3	77
SB1435W10	south sidewall	30-Sept-94	10.6	4,517
SB1435W11	north sidewall	30-Sept-94	13	ND (42)
SB1435W12	north sidewall	30-Sept-94	10	ND (42)
SB1435W13	southwest corner - wall	30-Sept-94	9.5	35 J
SB1435W14	south sidewall	30-Sept-94	9.5	3,005
SB1435W15	south sidewall	30-Sept-94	9.5	2,149
SB1435W16	south sidewall	30-Sept-94	9.5	ND (42)
SB1435W17	north sidewall	30-Sept-94	12	ND (42)
SB1435W18	northwest corner - wall	30-Sept-94	12	ND (42)
SB1435W19	north sidewall	30-Sept-94	12	ND (42)
SB1435B1	northwest bottom	30-Sept-94	14	ND (42)
SB1435B2	northeast bottom	30-Sept-94	14	63
SB1435B3	center bottom	30-Sept-94	14	5,692
SB1435W20	east sidewall	03-Oct-94	13.5	ND (42)

Table 2-1 (continued)
Soil Sample Screening Results
TPH by IR
Final Closure Report
AREE 63BC

Sample ID	Sample Location	Sample Date	Sample Depth (ft)	TPH Result (mg/kg)
SB1435W21	east sidewall	03-Oct-94	13.5	ND (42)
SB1435W22	west sidewall	03-Oct-94	13.5	ND (42)
SB1435W23	west sidewall	03-Oct-94	13.5	2,880
SB1435W24	south of water main	03-Oct-94	7.5	ND (42)
SB1435W25	south of water main	03-Oct-94	7.5	ND (42)
SB1435W26	south of water main	03-Oct-94	7.5	ND (42)
SB1435W27	south of water main	03-Oct-94	7.5	ND (42)
SB1435W28	south of water main	03-Oct-94	4.5	ND (42)
SB1435B4	south of water main	03-Oct-94	8.5	ND (42)
SB1435B5	south of water main	03-Oct-94	8.5	ND (42)
SB1435B6	center bottom	03-Oct-94	15	7,086
SB1435B7	east center bottom	03-Oct-94	15	ND (42)
SB1435B8	west center bottom	03-Oct-94	15	43 J
SB1435B9	south bottom	03-Oct-94	15	1,035
SB1435W29	west sidewall	03-Oct-94	9	ND (42)
SB1435W30	west sidewall	03-Oct-94	11	ND (42)
SB1435W31	south sidewall	03-Oct-94	14.5	384
SB1435W32	west sidewall	03-Oct-94	14.5	ND (42)
SB1435W33	south sidewall	03-Oct-94	13	ND (42)
SB1435B10	south-center bottom	04-Oct-94	16	ND (42)
SB1435B11	west-center bottom	04-Oct-94	16	ND (42)
SB1435B12	north-center bottom	04-Oct-94	16	ND (42)
SB1435B13	east- center bottom	04-Oct-94	16	5,157

Table 2-1 (continued)
Soil Sample Screening Results
TPH by IR
Final Closure Report
AREE 63BC

Sample ID	Sample Location	Sample Date	Sample Depth (ft)	TPH Result (mg/kg)
SB1435B14	east-center bottom	04-Oct-94	19	395
SB1435B15	east-center bottom	04-Oct-94	18	1094
SB1435B16	east-center bottom	04-Oct-94	20	67
SB1435B17	east-center bottom	04-Oct-94	20	ND (42)
SB1435BC	bottom composite	05-Oct-94	20	23 J
SB1435WC	west sidewall composite	05-Oct-94	N/A	17 J
SB1435EC	east sidewall composite	05-Oct-94	N/A	ND (42)
SB1435SC	south sidewall composite	05-Oct-94	N/A	ND (42)
SB1435DUPC	west sidewall split	05-Oct-94	N/A	ND (42)
SB1435TRPC	west sidewall split	05-Oct-94	N/A	ND (42)
1435 clean pile	clean pile composite	12-Oct-94	N/A	ND (42)
SB1435W34	north sidewall	26-Oct-94	10.5	17 J
SB1435W35	north sidewall	26-Oct-94	10.5	ND (42)
SB1435NC	north sidewall composite	26-Oct-94	N/A	ND (42)

NOTES: TPH = total petroleum hydrocarbons
ND ( ) = indicates TPH was not detected at specified detection limit
J = Qualifier indicating estimated concentration below the practical quantitation limit
N/A = not applicable

Soil samples were relinquished to the on-site laboratory immediately following collection and screening results were generally provided to the site supervisor within two hours. Excavation would only continue in areas where screening results indicated concentrations of TPH in excess of the site action level. Confirmation sampling was initiated after screening results indicated that all contaminated material had been removed.

2.3 Confirmation Sample Results

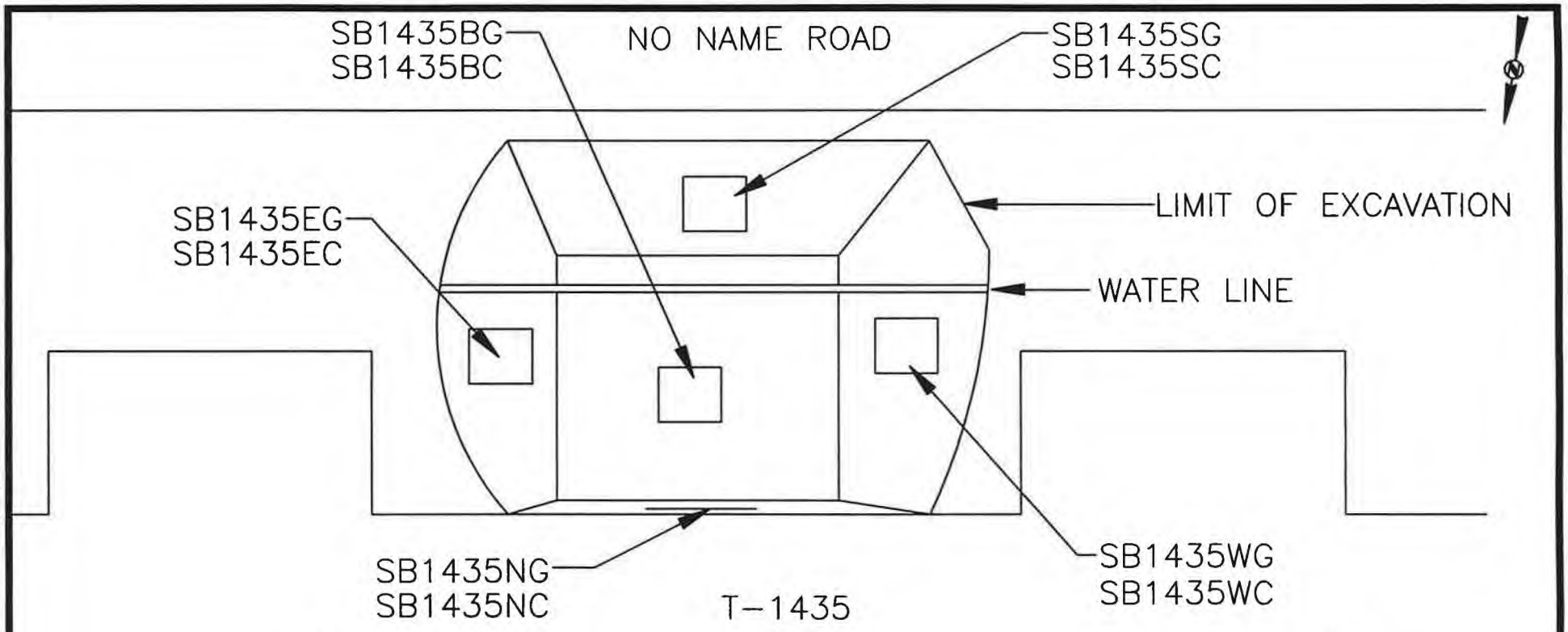
Confirmation samples were collected from the bottom of the excavation and three of the sidewalls on October 5, 1994. The north sidewall was not sampled at this time because the removal of petroleum-contaminated soil from underneath the building foundation was not complete. Upon receiving initial confirmation sample results

below applicable action levels, the excavation was partially backfilled to allow the excavator access to remove additional soil from below the building foundation. On October 26, 1994, a confirmation sample was collected from the north sidewall, after screening results indicated that residual contamination had been removed. Confirmation samples were collected using the excavator bucket due to the depth of the excavation and potential for cave-in. Figure 2-1 provides the confirmatory sample locations.

Discrete grab samples were collected from the four walls and bottom of the excavation for BTEX analysis and several subsamples were composited and analyzed for TPH and SVOCs. In addition to meeting the TPH action level of 500 mg/kg, OHM was required to meet action levels of 4 mg/kg, 0.7 mg/kg, and 700 mg/kg for naphthalene, 2- methylnaphthalene and phenanthrene, respectively. The PAHs selected for analysis were derived from the "Policy for the Investigation, Assessment, and Remediation of Petroleum Releases" Policy #WCS-401-91, and were part of the contract scope of work. The action levels for benzene, toluene, ethylbenzene, and xylenes are 10 mg/kg, 90 mg/kg, 80 mg/kg, 500 mg/kg, respectively. The TPH, PAH, and BTEX soil action levels were based on the most conservative soil classification (S-1) per the revised Massachusetts Contingency Plan (MCP) 310 CMR 40.0000, July 1993.

The samples were analyzed by ASC laboratory located in Findlay, Ohio. The composite sample and discrete sample from the west sidewall of the excavation were collected in triplicate. Two of the split samples were sent to the ASC and the third split was submitted to the USACE laboratory in Hubbardston, Massachusetts.

The results of the confirmation sample analyses are summarized in Tables 2-2a and 2-2b, and the ASC analytical report is presented as Appendix B. TPH analysis was performed by EPA method 418.1, BTEX by EPA method 8020 and SVOCs analysis by EPA method 8270. The confirmation composite soil samples were screened on-site for TPH prior to being sent to ASC to ensure that the samples were below the action level of 500 mg/kg.



NOTES

1. SAMPLES COLLECTED WITH EXCAVATOR BUCKET SINCE EXCAVATION WAS UNSAFE FOR ENTRY.
2. 3 BUCKETS COLLECTED FROM THE BOTTOM AND EACH SIDE WALL.
   A. SUBSAMPLES COLLECTED FROM EACH OF 3 BUCKETS TO FORM COMPOSITE SAMPLE FOR TPH AND SVOC ANALYSIS.
   B. DISCRETE GRAB SAMPLE WAS COLLECTED FROM 1 OF 3 BUCKETS AND ANALYZED FOR BTEX COMPOUNDS.

SCALE
1 INCH = 10 FEET

FIGURE 2-1

OHM Corporation

CONFIRMATION SOIL SAMPLE LOCATION MAP
BUILDING 1435 (AREE 63BC)
FT. DEVENS CONTAMINATED SOIL REMOVAL
FT. DEVENS, MASSACHUSETTS

PREPARED FOR
U.S. ARMY CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

DATE: 2-6-95	PREPARED BY: KJM	OHM JOB NO. 16208

Table 2-2a
Confirmation Composite Soil Sample Results
Final Closure Report
AREE 63BC

Sample ID	Sample Date	naphthalene (mg/kg)	2-methyl-naphthalene (mg/kg)	phenanthrene (mg/kg)	TPH (mg/kg)
SB1435BC	05-Oct-94	ND (0.352)	ND (0.352)	ND (0.352)	ND (7.07)
SB1435WC	05-Oct-94	ND (0.373)	ND (0.373)	ND (0.373)	ND (7.41)
SB1435SC	05-Oct-94	ND (0.356)	ND (0.356)	ND (0.356)	ND (7.18)
SB1435EC	05-Oct-94	ND (0.365)	ND (0.365)	ND (0.365)	ND (7.29)
SB1435DUPC	05-Oct-94	ND (0.369)	ND (0.369)	ND (0.369)	ND (7.34)
SB1435NC	26-Oct-94	ND (0.342)	ND (0.342)	ND (0.342)	ND (6.91)

Table 2-2b
Confirmation Discrete Soil Sample Results
Final Closure Report
AREE 63BC

Sample ID	Sample Date	benzene (mg/kg)	toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
SB1435BG	05-Oct-94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435WG	05-Oct-94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435SG	05-Oct-94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435EG	05-Oct-94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435DUPG	05-Oct-94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
SB1435NG	26-Oct-94	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)

NOTES: mg/kg = milligrams per kilogram
ND ( ) = indicates not detected at specified detection limit

The analytical results from the confirmation sampling conducted indicate that all the applicable action levels were attained during remediation at the site. No target analytes were detected during analysis of confirmation samples. Bis 2-ethylhexylphthalate, a common laboratory contaminant, was detected in all the confirmation samples collected on October 5, 1995.

2.4 Quality Assurance/Quality Control

Appropriate quality assurance/quality control (QA/QC) measures were taken to ensure the collection of representative soil samples and the generation of accurate and reproducible analytical data.

2.4.1 Sample Collection Quality Control

Soil samples were collected using either a stainless steel trowel, disposable polyethylene scoops, or using the bucket of the excavator. Composite samples were thoroughly homogenized in stainless steel sampling buckets and grab samples were collected for BTEX analysis. The sampling equipment was decontaminated using the following procedure:

1) Non-phosphate soap & water rinse;
2) tap water rinse;
3) distilled water rinse;
4) 10% nitric acid rinse;
5) distilled water rinse;
6) methanol rinse; and
7) distilled water rinse.

Sample integrity was also maintained by changing gloves between each sample location. The composite and grab sample from the western sidewall of the excavation were collected in triplicate for QA/QC purposes. A comparison of the results of the confirmation samples from the west sidewall, SB1435WC and SB1435WG, with their respective duplicate samples indicates a good correlation. A statistical correlation could not be assessed due to the fact that no target compounds were detected.

All samples collected on site were entered on a chain of custody and documented on a sample collection log and a permanent logbook. Samples sent off site were properly preserved, packaged and overnight shipped to the proper laboratory.

2.4.2 Laboratory Quality Control

Quality control measures were taken in the on-site laboratory to ensure the accuracy and precision of the analytical data. TPH concentration was determined by infrared spectrometer using a modification of EPA Method 418.1 A calibration curve was developed for the IR instrument, prior to the start up of sampling activities, to establish detection limits and document linearity of the detector. A single calibration point was run in triplicate to demonstrate measurement precision. Continuing calibrations were also performed on a daily basis thereafter to provide a check on instrument response.

In general, a comparison of TPH results from on-site and off-site confirmation sample analyses indicates a good correlation. The on-site laboratory provided estimated concentrations of TPH below the practical quantitation limits for samples SB1435BC and SB1435WC. These were the only detections of TPH in confirmation samples by either the on-site or off-site laboratory. The off-site laboratory took the proper quality control measures as specified in the methods used. Samples were properly preserved upon receipt by the laboratory and sample extraction and analysis were performed within the holding times specified in the methods. Blank and spike samples associated with the AREE 63BC samples were all within acceptable QC limits. Laboratory quality control for the waste characterization samples is discussed in Section 2.6.

The USACE laboratory prepared a Chemical Quality Assurance Report (CQAR) comparing the contract laboratory results with their own. The CQAR is included in Appendix C of this report. The results of the primary (contract lab) and QC samples agreed overall in 142 (99%) of the 143 comparisons, with one minor discrepancy.

2.5 Backfilling and Site Restoration

The area of the final excavation was approximately 23 by 26 feet. The depth of the excavation between the water main and the building (former tank location) ranged between 16 and 20 feet bgs. The excavation was partially backfilled after receiving results of the initial round of confirmation sampling in order to access the north wall of the excavation under the foundation of building 1435. Clean soil, that was removed from the hole and stockpiled separately, was used to backfill the excavation prior to using fill material from off-site sources. A composite sample was collected from the stockpiled "clean" material and screened on site for TPH before using as backfill. Additional fill material was provided by Lagasse Trucking to backfill the rest of the excavation (approximately 140 yards). After removing additional contaminated soil from under the building foundation, and confirming the north sidewall clean, backfilling operations were completed. Backfill material was installed in 12 inch lifts and compacted between lifts using either the bucket of the excavator or a walk-behind plate compactor. Once the excavation was backfilled, 14 yards of topsoil were applied, the area was graded, seeded and mulched. The pH of the contractor's topsoil was sampled at the source and tested for determination of pH. The pH was 6.4 as indicated in ASC's analytical report provided in Appendix D.

2.6 Waste Characterization & Disposal

Composite samples were collected from the stockpile of contaminated soil in order to characterize the soil for disposal. Samples were collected at a frequency of one sample for every 100 cy of petroleum-contaminated soil stockpiled at the site and analyzed for the following parameters: TPH, TCLP metals, TCLP organics, RCRA characteristics (ignitability, corrosivity, & reactivity), BTEX compounds, and PAHs. In addition, one sample was collected and analyzed for RCRA metals, pesticides and PCBs. The results of these tests indicate that the material can be reused or disposed of at a non-CERCLA (subtitle D) landfill. All TCLP results were below regulatory levels and the RCRA characteristic tests indicated negative results for ignitability, corrosivity, and reactive sulfide. Reactive cyanide was quantified in one sample at a concentration of 86.2 mg/kg, which is below the regulatory guideline of 250 mg/kg. TPH concentrations were 87.1 mg/kg and 1230 mg/kg. Several PAH compounds were detected, in one of the two composites, at concentrations ranging from 0.04 mg/kg to 1.11 mg/kg. It is interesting to note that PAHs were detected in the sample with a corresponding TPH concentration of 87.1 mg/kg, and were not detected in the sample which had the 1230 mg/kg TPH concentration. The PAHs were detected using method 8100, which utilizes a GC with a flame ionization detector (FID), and the alternate method used was 8270 which utilizes a GC with confirmation by mass spectrometry (MS). The latter method is considered more reliable due to the confirmation by MS. Bis 2-ethylhexylphthalate was the only SVOC detected in the sample with the 1230 mg/kg TPH concentration. The analytical reports for the waste characterizations are located in Appendix E. Refer to the narrative in the analytical report for additional QC information.

The 216.5 tons (an estimated 144 cy) of contaminated soil removed from AREE 63BC have been transferred to a temporary storage facility on site pending reuse as cover material in the proposed Consolidation Landfill. The contaminated soil stockpile was properly maintained and surrounded by orange fencing, which was appropriately labeled, until it was transported to the temporary storage facility. A Material Shipping Record (MSR) was used to document the shipment of soils to the storage facility. Transportation and disposal documentation is included as Appendix F.

SECTION 3.0
CONCLUSIONS

SA 34 is located in the northeast portion of the Main Post on Carey Street. The study area includes Buildings 245 and 246, which were formerly used in support of basewide entomology operations at Fort Devens. Building 245 is identified by the 1992 MEP and the 1992 Enhanced Preliminary Assessment (PA) as a former DEH Entomology shop where chemical storage and mixing were conducted. Building 246 was added to SA 34 after records reviewed during the Main Post SI indicated that bulk pesticides and herbicides, as well as applicator equipment, were stored at this location. Previous investigations at SA 34 were conducted by ADL as part of the Main Post SI. The objective of the investigation was to evaluate the presence of environmental contamination associated with historical pesticide storage and mixing operations in Building 245 and 246. Soil samples were collected from around Building 245 and 246, and wipe samples were collected from the interior walls and floors of Building 245. Analytical results of the soil samples indicated pesticide, specifically chlordane, contamination primarily in the surface soils on the east side of Building 245 and on the west and north side of Building 246. Chlordane, which is a chlorinated pesticide, was detected in surface soil samples collected near each of the buildings, at concentrations exceeding the site action level of 1 mg/kg.

The NED of the USACE contracted OHM to address the pesticide contaminated soil on the east side of Building 245, and the western end of building 246, which includes the west side of the building and the western end of the north side. Site photographs documenting removal activities are included as Appendix I. On-site screening, for chlordane and DDT, was performed to guide the excavation and minimize removal of non-contaminated material. Elevated concentrations of chlordane (up to 3,320 mg/kg) were detected down to approximately 18 feet below grade in the area of the drainpipe on the east side of Building 245. During soil removal operations at Building 246, chlordane and the pesticide, DDT, were detected in subsurface soil samples at concentrations exceeding the respective action levels of 1 and 2 mg/kg. OHM removed approximately 268 and 75 cubic yards (cy) of contaminated soil at Buildings 245 and 246, respectively. Confirmation soil samples were collected from each excavation and analyzed by ASC Laboratory for pesticides to verify that action levels had been met. The stockpiled soil from the respective excavations was characterized for disposal by collecting representative composite soil samples at a frequency of one sample for every 100 cubic yards. The stockpiled material at Building 245 was characterized as non-hazardous, low level pesticide contaminated soil and was disposed off site at the BFI facility in East Bridgewater, Massachusetts. The soil stockpiled at Building 246 was characterized as a hazardous waste because the chlordane concentration in the TCLP extract of the composite soil sample exceeded the regulatory guideline of 0.03 mg/L. Eighty-seven (87) tons of this material was shipped to Chemical Waste Management's Subtitle C landfill in Model City, New York for direct landfill prior to the land ban deadline of December 19, 1994. The balance of 31 tons was shipped to Envotech Management Services in Belleville, Michigan and landfilled after stabilization.

The analytical results of the screening and confirmatory samples collected from the excavation in SA 34 verify that the pesticide-contaminated soil has been removed, and the applicable site action levels have been attained. Proper QA/QC measures were taken to ensure the collection of accurate and reproducible data and the site was properly restored through backfilling. The future use of this building and property is unknown at this time. Based upon previous investigations and the results of remedial activities described herein, no further action is recommended at this site.

Appendix A
On-site Laboratory Soil Screening Data

Soil Sample Collection Log
Fort Devens - Project #16208

Pg. 1 of 4

Date: 09-30-94 Site Name: Bldg. B1435

Weather: Sunny & Warm Samplers: BD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435 W1	1250	G	11'6"			Brown sandy soil	1x40mL Amb. Glass
W2	1252		12'			" " "	
W3	1253		11'			" " "	
W4	1255		10'			" " "	
W5	1256		10'6"			" " "	
W6	1258		12'5			" " "	
W7	1300		10'6"			" " "	
W8	1301		10'6"			" " "	

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

Relinquished by(dd/tt): Michael H Smith 09/30/94 1345 Received by (dd/tt): M H Smith 09/30/94 1345

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 9-30-94 Site Name: Bldg. 1435

Weather: Sunny & warm Samplers: BD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
W1	1303	G	9'4"			Brown sandy soil	1 x 40 mL Amb. Glass
W2	1305		10'7"			" "	
W1	1306		13'			" "	
W2	1309		10'			" "	
W3	1311		9'6"			" "	
W4	1314		9'6"			Brown sandy soil w/ odor	
W5 *	1316		9'6"			" "	
W6 *	1319		9'6"			" "	

Ref. Pt.___: _____ * d = 2 10.3 ft NNW

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 09-30-94 Site Name: Bldg. 1435

Weather: Sunny & warm Samplers: BD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
WI7 *	1320	G	12'			Brown sandy soil w/odor	1 x 40ml Amb. Glass
WI8	1323		12'			Brown sandy soil	
WI9 *	1324		12'			Brown sandy soil w/odor	
B1	1325		14'			Brown sandy soil	
B2	1327		14'			" " "	
B3	1329	↓	14'			" " "	↓

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

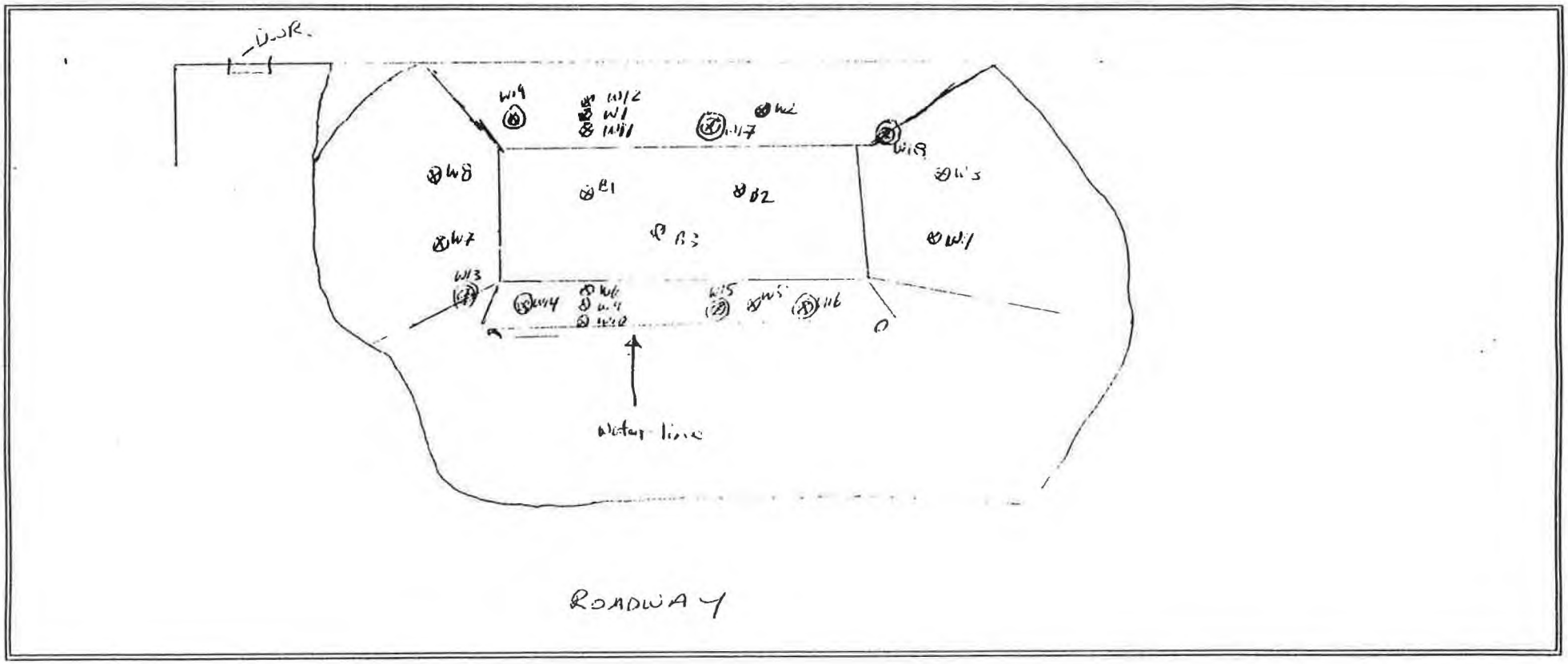
Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 09-30-94

Site Name: Bldg. 1435



Comments/Observations:

Note: ⊗ symbol indicated sample was collected from a depth of 1-1.5 ft in from excavation wall surface

Prepared by: M. Dunlap

UST 2627 / Bldg 1435

Site: Ft. Devens, MA Location No.: Date: 7 30.94 GC Analyst: TPH Analyst: MRB

Method 8080

Concentration (mg/kg)	Action Level	Sample ID																		
Aroclor 1260	2 ppm																			
chlordane	1 ppm																			
Percent Recovery																				
2,4,5,6-tcmx																				
decachlorobiphenyl																				

Method 418.1

Concentration (mg/kg)	Action Level	Sample ID	UST 2627											Bldg 1435						
		B1	B2	W1	W2	W3	W4	W5	W6	W7	W8	W9	X	B1	B2	B3	W1	W2	W3	W4
TRPH	500 ppm	111	15J	ND	ND	ND	ND	ND	ND	744	35J	ND		ND	63	5692	11,300	461	ND	ND
		1312 & 1435 W5	W6	W7	W8	W13	W18													
TRPH	500 ppm	1030	5207	ND	ND	35J	ND													
	500 ppm																			

Soil Sample Collection Log
Fort Devens - Project #16208

Pg. 1 of 2

Date: 10-3-94 Site Name: BD6 1435

Weather: COLD, PARTLY CLOUDY Samplers: BC

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435 W20	940	G	13'6"			Gold sand clay	1x40-1 voa
W21	945	G	13'6"			Gold sand clay	"
W22	950	G	13'6"			Gold sand clay slight odor	"
W23	955	G	13'6"			Gold sand clay strong odor	"

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

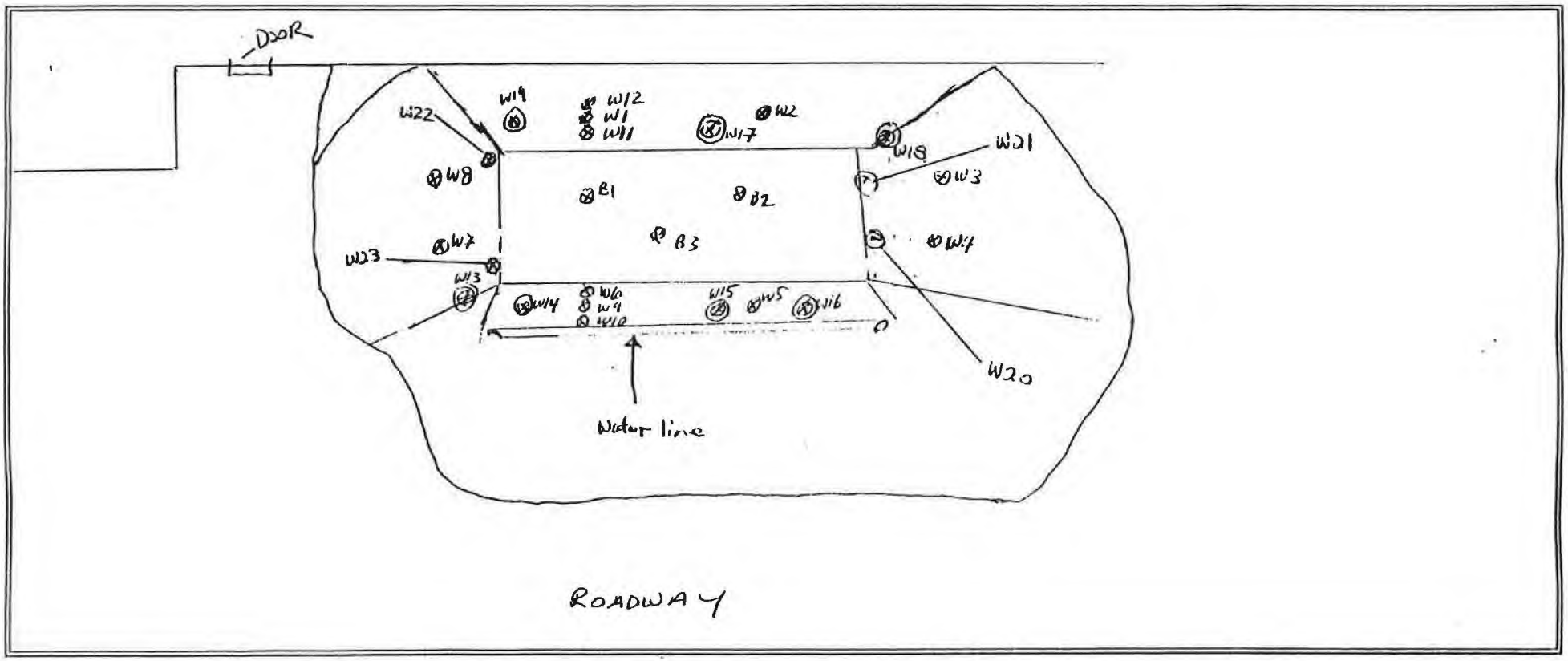
Relinquished by(dd/tt): [signature] 10-3-94 911 Received by (dd/tt): [signature] 911 10-3-

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10-3-94

Site Name: Bldg. 1435



Comments/Observations:

Note: ⊗ symbol indicated sample was collected from a depth of 1-1.5 ft in from excavation wall surface

Prepared by: M. Quinlan

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-3-94 Site Name: BLDG 1435 Pg.__of__

Weather: COOL, CLEAR Samplers: BD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB102<W24	1030	G	7'0"			golden brown sand	1x 40 ml VOA
W25	1036	G	7'0"			golden brown sand	"
W26	1038	G	7'0"			golden brown sand	"
W27	1040	G	7'6"			golden brown sand	"
W28	1045	G	4'6"			golden brown sand	"
B4	1053	G	5'0"			golden brown sand	"
B5	1100	G	3'0"			golden brown sand	"

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

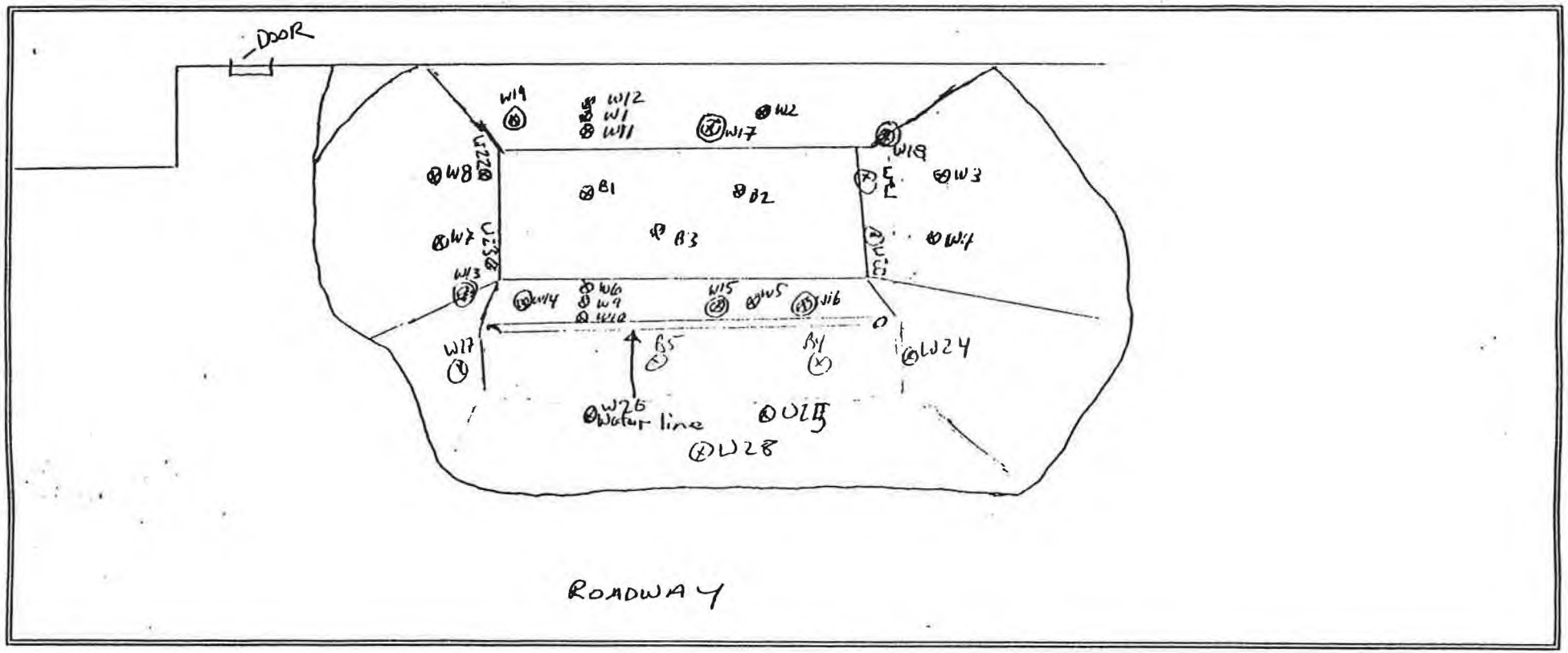
Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

Relinquished by(dd/tt): [signature] 10-3-94 11:03 Received by (dd/tt): [signature] 10-3-94 1123

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 09-30-94 **Site Name:** Bldg. 1435



Comments/Observations:

Note: ⊗ symbol indicated sample was collected from a depth of 1-1.5 ft in from excavation wall surface

Prepared by: M. Quinlan

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-3-94 Site Name: Bldg 1435

Weather: Sunny & cool Samplers: BD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
~~SB~~ B6	1330	G	15'			Brownish gold sand	1 x 40ml VOA vial
B7	1333	"	15'			" " "	"
B8	1335	"	15'			" " "	"
B9	1340	"	15'			" " "	"
W31	1315	"	9'			" " "	"
W30	1313	"	11'			" " "	"
W37	1338	"	14'6"			" " "	"
W32	1345	"	14'6"			" " "	"
W33	1350	"	13'			" " "	"

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

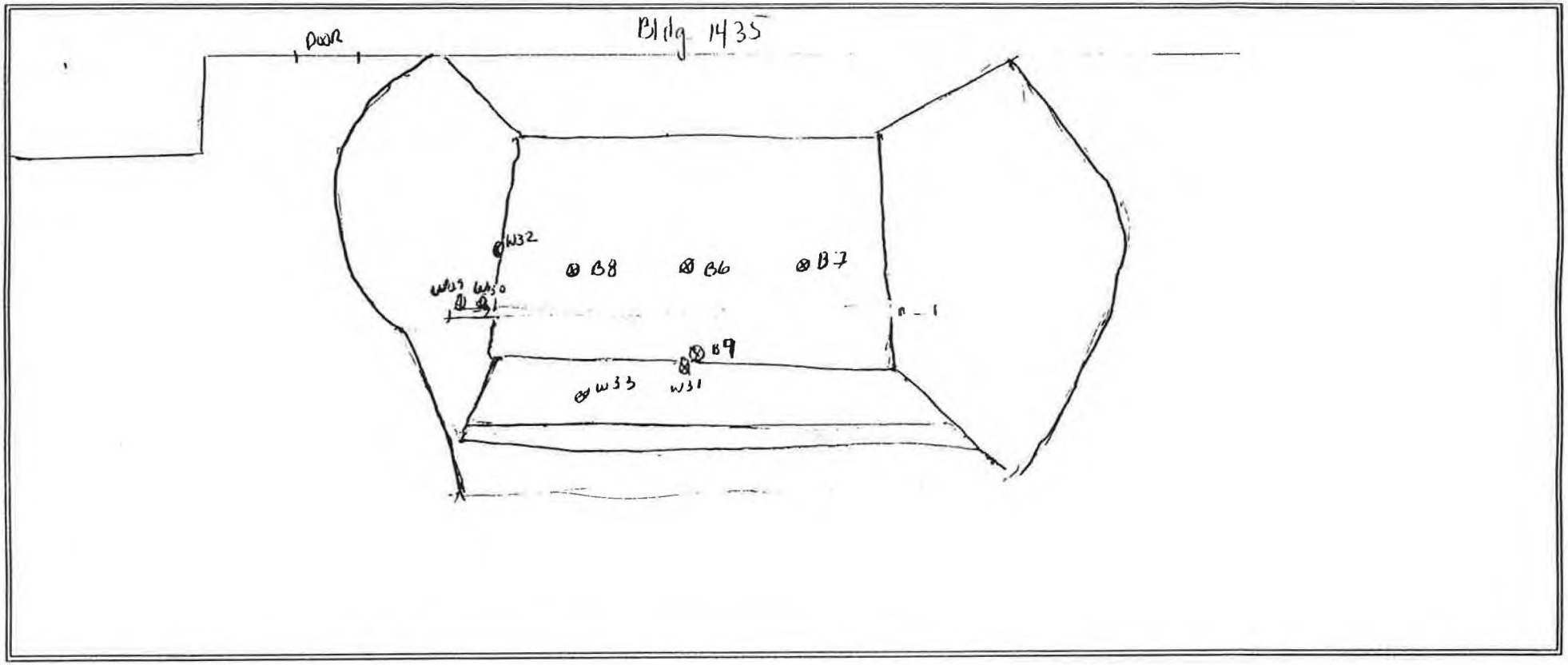
Relinquished by(dd/tt): [signature] 10/3/94 1410 Received by (dd/tt): [signature] 10/3/94 1410

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10/03/94

Site Name: Bldg. 1435



Comments/Observations:

Prepared by: M. Quinlan

Bldg 1435
SA56

Site: Ft. Devens, MA Location No.: Date: 10.3.94 GC Analyst: TPH Analyst: MRB

Method 8080

Concentration (mg/kg)	Action Level	Sample ID																	
Aroclor 1260	2 ppm																		
chlordane	1 ppm																		
Percent Recovery																			
2,4,5,6-tcmx																			
decachlorobiphenyl																			

Method 418.1

Sample ID: Bldg 1435

Concentration (mg/kg)	Action Level	W9	W10	W11	W12	W14	W15	W16	W17	W19	W20	W21	W22	W23	B4	B5	W24	W25	W26	W27
TRPH	500 ppm	77	4517	ND	ND	3405	2149	ND	ND	ND	ND	ND	ND	2850	ND	ND	ND	ND	ND	ND
		W28	B6	B7	B8	B9	W29	W30	W31	W32	W33	SB SEC2	SA5 A-B2	C TRB2	SE4	SE5	SE6			
TRPH	500 ppm	ND	7086	ND	43J	1035	ND	ND	384	ND	ND	31J	414	39J	69	ND	82			
	500 ppm																			

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-4-94 Site Name: BLDG 1435

Weather: COLD, PARTLY CLOUDY Samplers: GD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435 B10	0830	G	16'			Brown Soil Sand	1 VOA
B11	0832	G	16'			" "	" "
B12	0835	G	16'			" "	" "
B13	0838	G	16'			" "	" "

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

Relinquished by(dd/tt): [signature] 10-4-94 0930 Received by (dd/tt): [signature] 10-4-94 0930

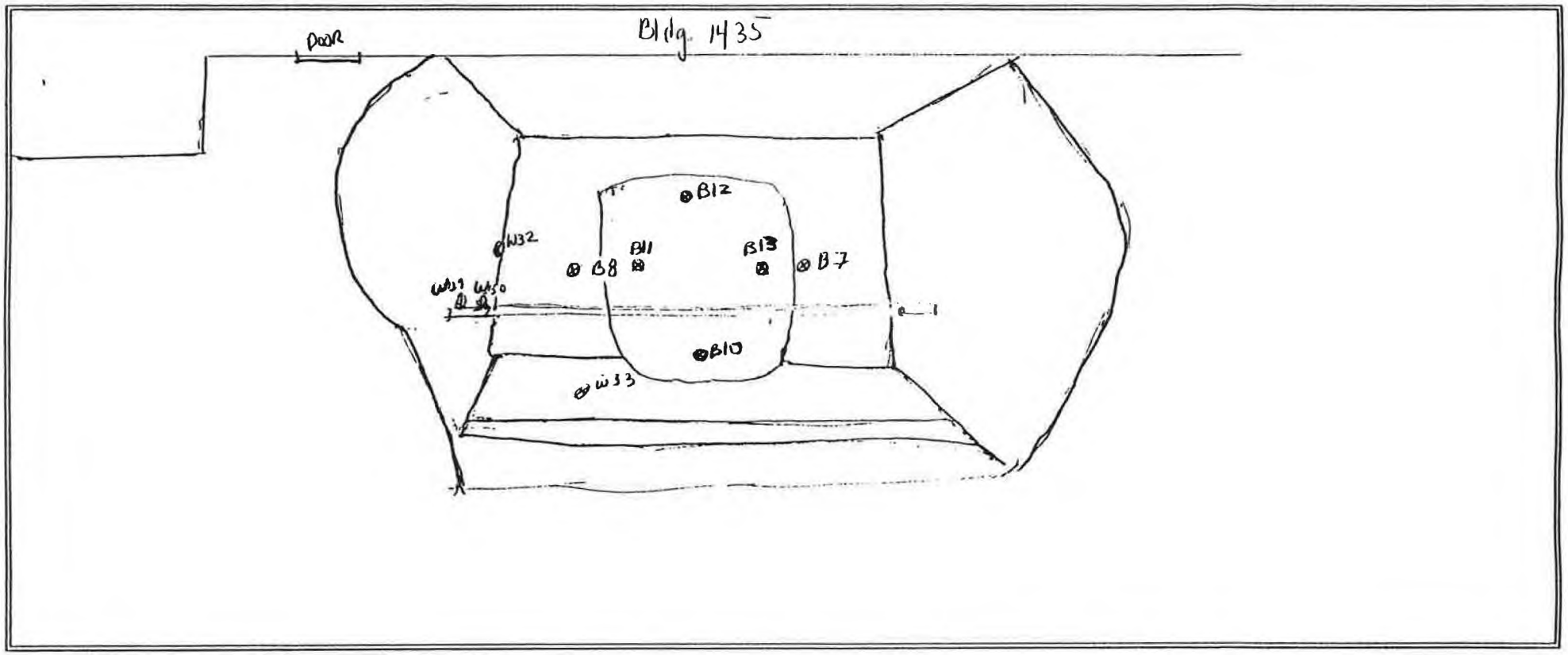
Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Pg. 2 of 2

Date: 10/04/94

Site Name: Bldg. 1435



Comments/Observations:

Prepared by: M. Robinson

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-4-94 Site Name: 1435

Weather: COOL - CLOUDY Samplers: SD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435 B14	1141	G	19'			Gold brown soil	1 EnCore 1 VOA
" B15	1148	G	18'			Gold brown soil	

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

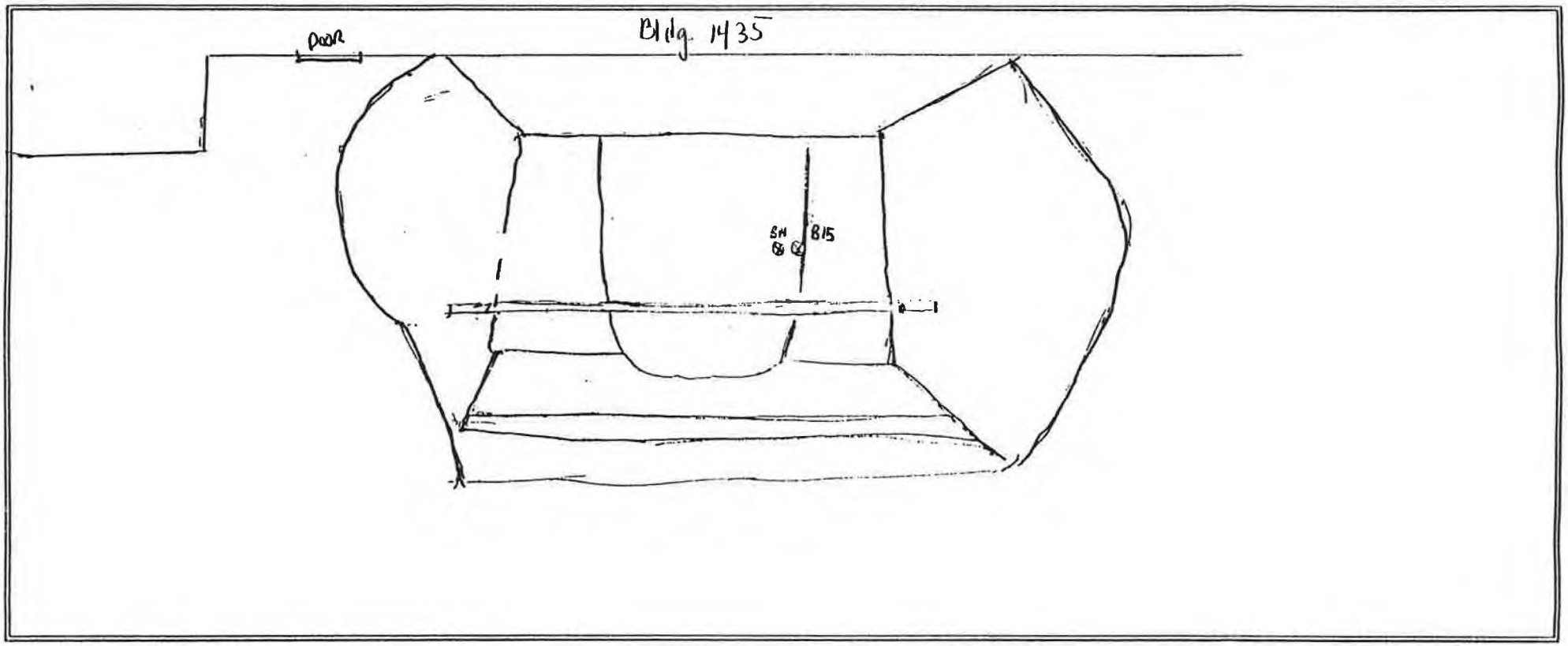
Relinquished by(dd/tt): [illegible] 10-4-94 1200 Received by (dd/tt): [illegible] 10.4.94/1200

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10/04/94

Site Name: Bldg. 1435



Comments/Observations:

Prepared by: M. Rinfret

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-4-94 Site Name: BLOC 1435

Weather: COOL, PARTLY CLOUDY Samplers: BB

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435 B17	1400	G	20'			Gold Sand	1 x VOA
" B16	1417	G	20'			Gold Sand	"

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

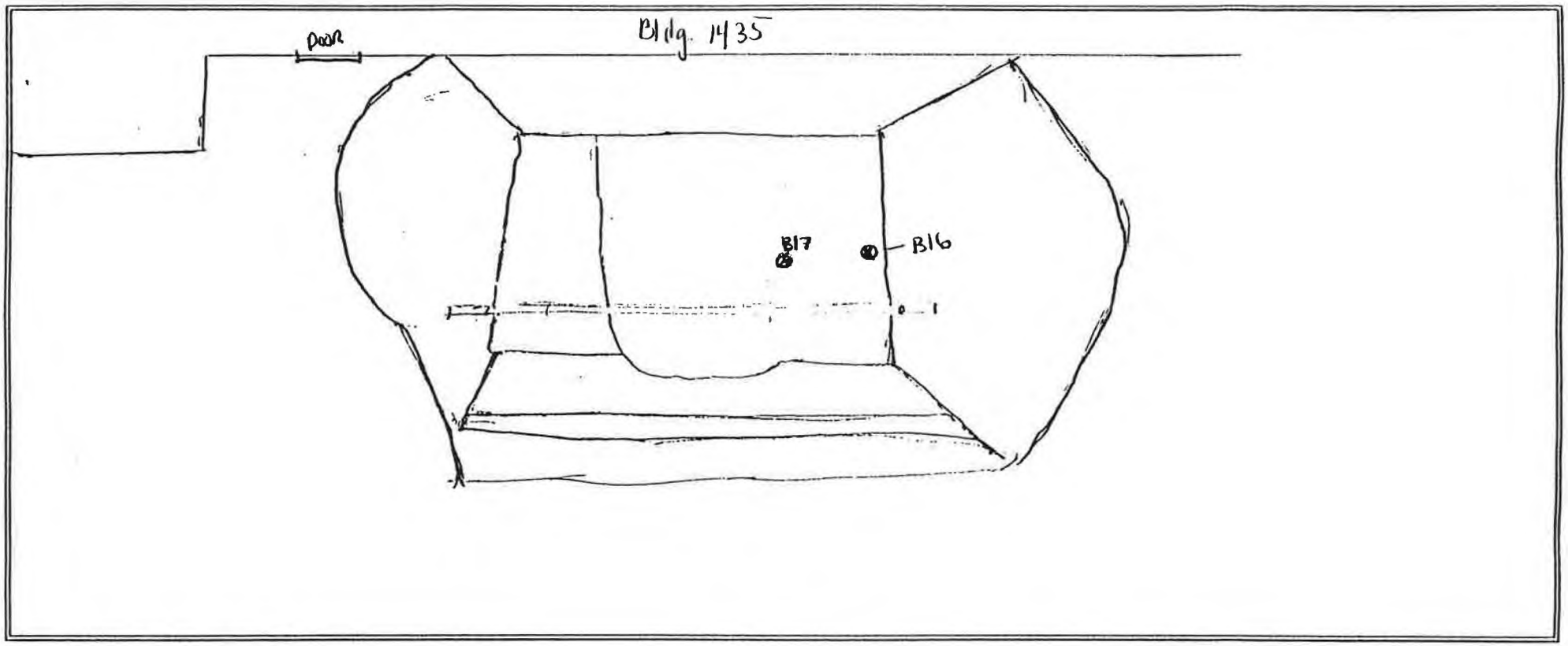
Relinquished by(dd/tt): [signature] 10-4-94 1430 Received by (dd/tt): [signature] 10.4.94 1430

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10/04/94

Site Name: Bldg. 1435



Comments/Observations:

Excavated to ~ 20 ft.

Prepared by: M. Rinfon

Site: Ft. Devens, MA Location No.: Bldg 1435 & SA56 Date: 10.4.94 GC Analyst: TPH Analyst: mvcs

Method 8080

Concentration (mg/kg)	Action Level	Sample ID																		
Aroclor 1260	2 ppm																			
chlordane	1 ppm																			

Percent Recovery																				
2,4,5,6-tcmx																				
decachlorobiphenyl																				

Method 418.1

Sample ID: Bldg 1435 / SB SA56

Concentration (mg/kg)	Action Level	B10	B11	B12	B13	B14	B15	B16	B17	W51	W52	W53	W54	W55	W56	MW1	MW2	MW3		
TRPH	500 ppm	ND	ND	ND	5157	395	1094	67	ND	289	ND	ND	ND	ND	325	ND	ND	ND		
	500 ppm																			
	500 ppm																			

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-5-94 Site Name: Bldg. 1435

Weather: Overcast & cool Samplers: BD/NQ

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435BG	1140	G	20'			Brown sand	2 x 40 ml Amb. Glass Vials
BC	1145	C	20'			" "	2 x 40 ml Amb. Glass
WG	1150	G	ENTIRE WALL			" "	2 x 40 ml Amb. Glass vials
DUPG	1150	G				" "	
TRPG	1150	G				" "	
WC	1155	C				" "	2 x 40 ml Amb. Glass
DUPC	1155	C				" "	
TRPC	1155	C				" "	

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: Screening (Confirmation) Disposal/Characterization

Laboratory Destination: Onsite Lab ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

Relinquished by(dd/tt): Michael N. Zenk 10-5-94 1330 Received by (dd/tt):_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-5-94 Site Name: Bldg. 1435

Weather: Overcast + cool Samplers: BD/MGQ

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435SG	1200	G	Entire wall			Brown sand	2 x 40ml Amb. Glass Vials
SC	1205	C				" "	2 x 4oz Amb. Glass
EG	1210	G				" "	2 x 40ml Amb. Glass Vials
EC	1215	C				" "	2 x 4oz Amb. Glass

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: Screening (Confirmation) Disposal/Characterization

Laboratory Destination: Onsite Lab ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Chlordane PCBs Other_____

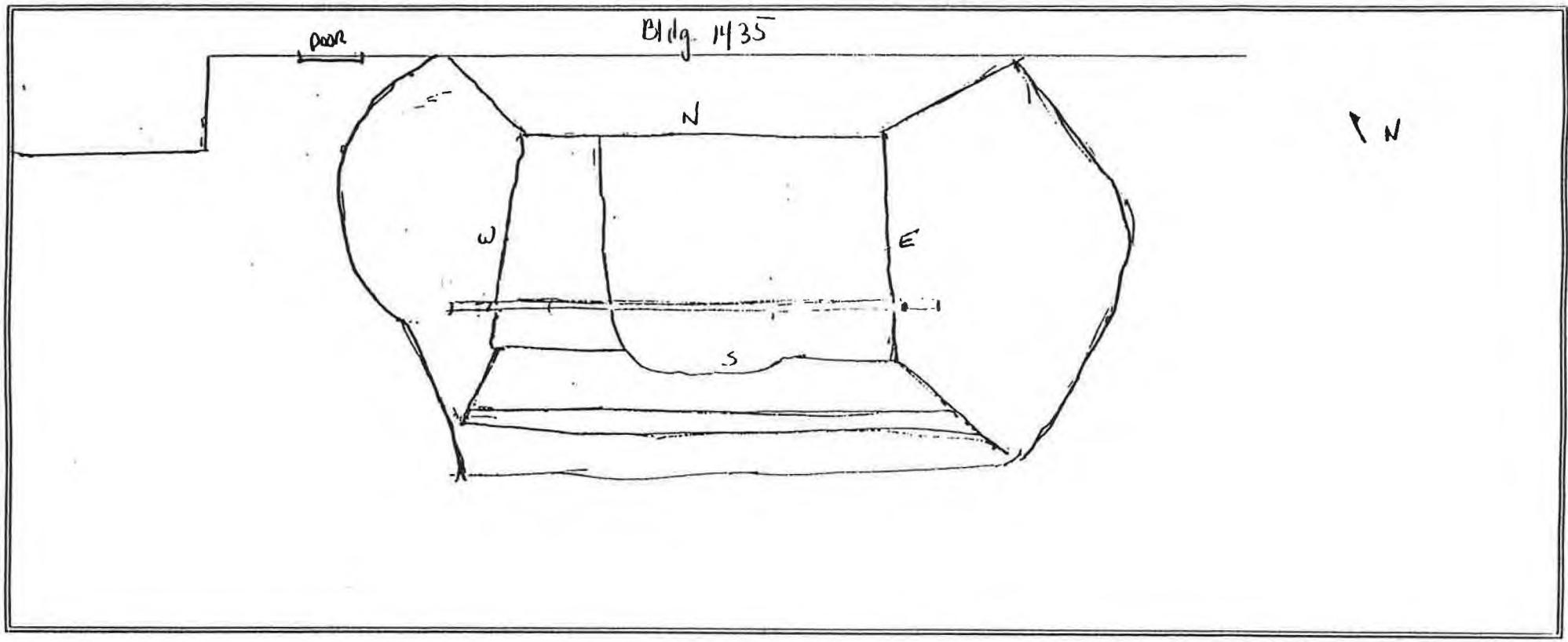
Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10/05/94

Site Name: Bldg. 1435



Comments/Observations:

Excavated to ~ 20 ft.

Note: Due to the depth of the excavation samples were collected with the excavator bucket.

Prepared by: M. Quinlan

Site: Ft. Devens, MA Location No.: Bldg 1435 Date: 10.5.94 GC Analyst: NA TPH Analyst: MRB

Method 8080

Concentration (mg/kg)	Action Level	Sample ID																	
Aroclor 1260	2 ppm																		
chlordane	1 ppm																		
Percent Recovery																			
2,4,5,6-tcmx																			
decachlorobiphenyl																			

Method 418.1

Concentration (mg/kg)	Action Level	Sample ID SB1435																	
		BC	EC	SC	WC	DUP	TRIP												
TRPH	500 ppm	23 J	ND	ND	17 J	ND	ND												
	500 ppm																		
	500 ppm																		

ND - indicates compound(s) not detected

J = " estimated concentration below practical quantitation limit

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-12-94 Site Name: Bldg. 1435

Weather: Sunny & cool Samplers: MGQ

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
1435 Clean Pile	1045	C	6-12"			Brown Sand & Cobble	1 x 40z

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

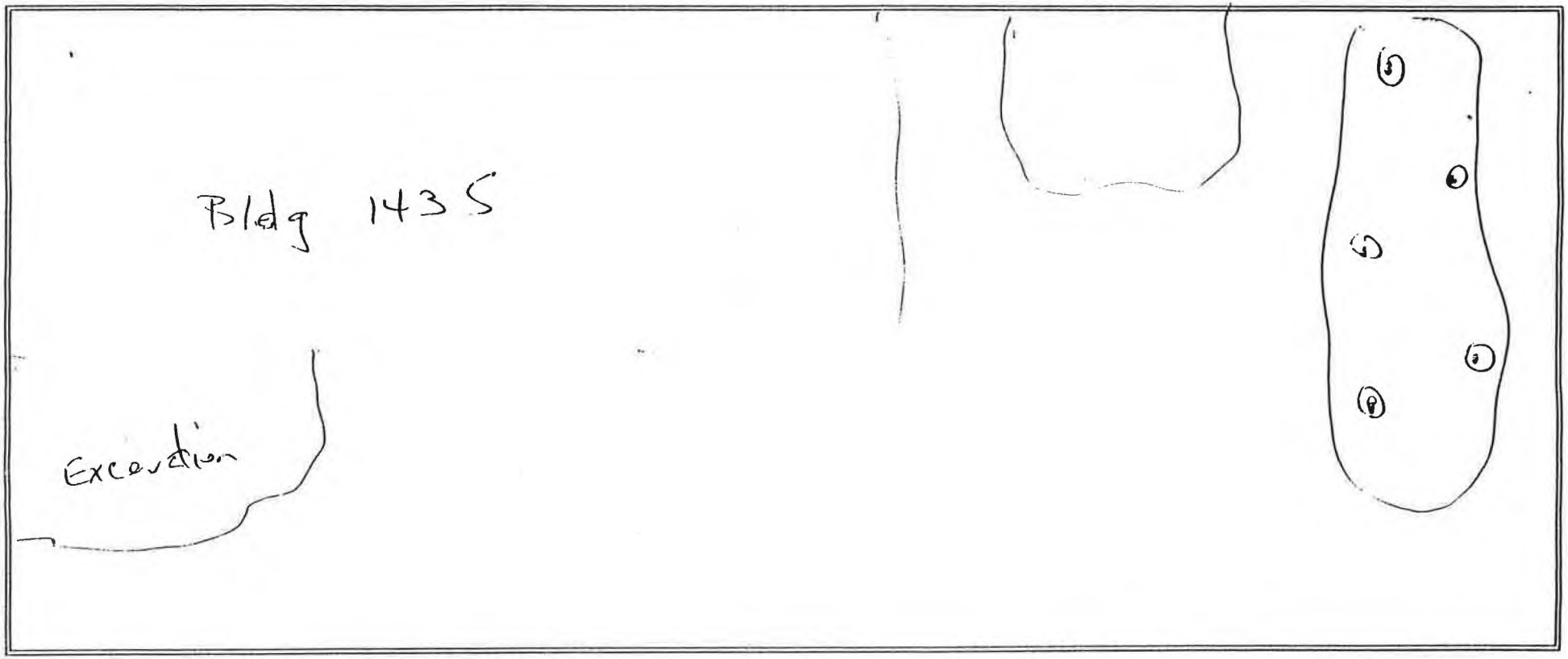
Relinquished by(dd/tt): M. Quirk 10/12/94 1055 Received by (dd/tt): M. Quirk 10/12/94 1055

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10-12-94

Site Name: Bldg. 1435



Comments/Observations: ① sample pt.

Prepared by: M. Quinlan

Site: Ft. Devens, MA Location No.: SA56 4 Date: 10-12-94 GC Analyst: TPH Analyst: MGQ

Method 8080

Concentration (mg/kg)	Action Level	Sample ID																		
Aroclor 1260	2 ppm																			
chlordane	1 ppm																			

Percent Recovery

2,4,5,6-tcmx																				
decachlorobiphenyl																				

Method 418.1

Concentration (mg/kg)	Action Level	Sample ID																		
		SA56 clean Pile		1475 clean Pile																
TRPH	500 ppm	70		ND																
	500 ppm																			
	500 ppm																			

Soil Sample Collection Log
Fort Devens - Project #16208

Bldg. 1435

Pg. 1 of 2

Date: 10-20-94 Site Name: ~~SA 58~~

Weather: COOL, OVERCAST Samplers: BD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Ref. Pt.	Sample Description	# of Bottles
Ex 1435C	1100	C	1'6"	SEE	MAP	Gold sand w/odor	5x40z Amber
Ex1435G	1115	G	1'6"	"	"	Gold Sand w/mixed grains	2x40ml VOA
Ex1435CS	1100	C	1'6"	"	"	Gold sand w/odor	5x40z Amber
Ex1435GS	1115	G	1'6"	"	"	Gold sand w/mixed grains	2x40 ml VOA

Ref. Pt.___: SEE ATTACHED MAP FOR SAMALE LOCATIONS

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: Screening Confirmation (Disposal/Characterization)

Laboratory Destination: Onsite Lab (ASC - coc # 107207 USACE- coc # 107710)

Duplicate Taken: Yes No Rinsate Taken: Yes No

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Chlordane PCBs Other_____

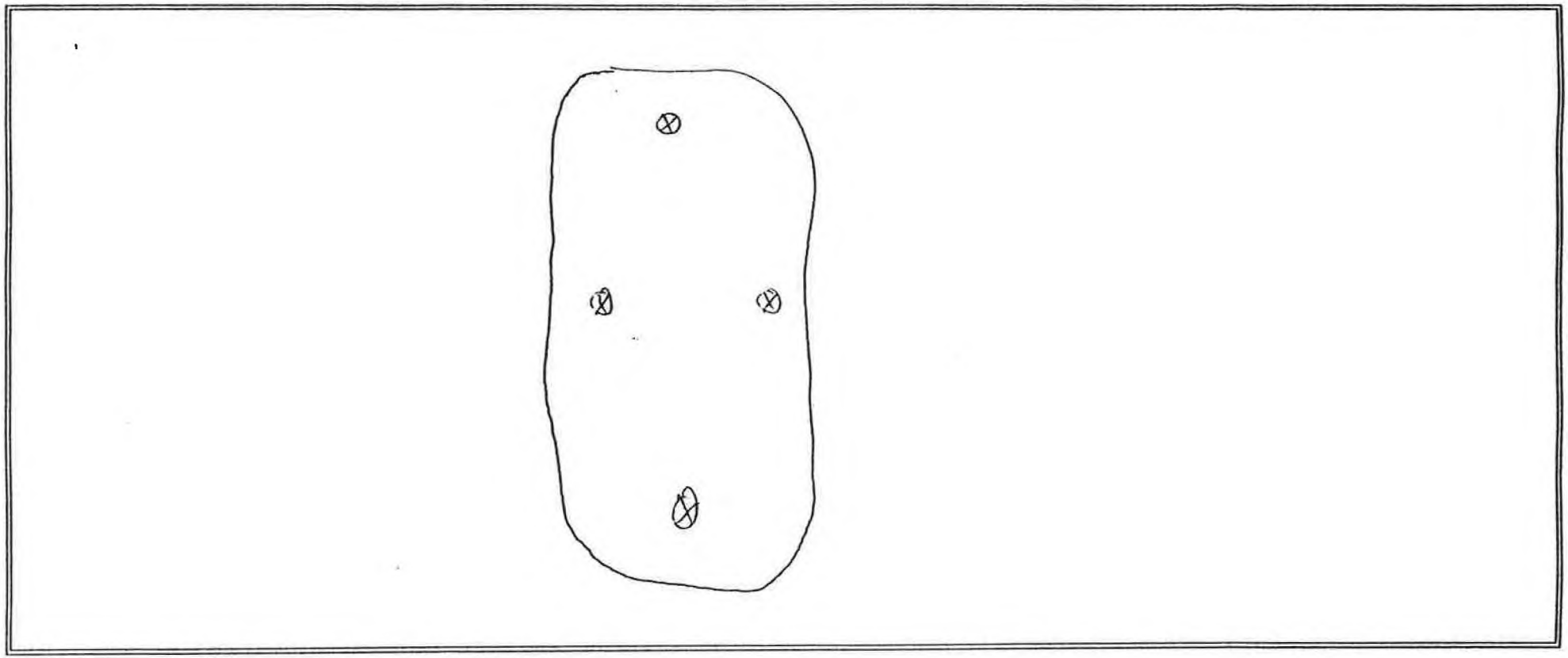
Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10-20-94

Site Name: Bldg. 1435



Comments/Observations:

Prepared by: B. Dale

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-26-94 Site Name: 1435

Weather: Cool, Partly Cloudy Samplers: BD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435-34	1400	G	10'6"			Gold Brown Sand	1
SB1435-35	1405	G	10'6"			"	1

Ref. Pt___: _____

Ref. Pt___: _____

Map Attached: (Yes) No

Sample Type: (Screening) Confirmation Disposal/Characterization

Laboratory Destination: (Onsite Lab) ASC - coc # _____ USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: (TPH) BTEX Chlordane PCBs Other_____

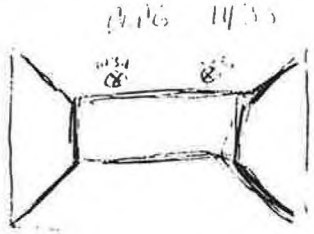
Relinquished by(dd/tt): _____ 1430 10-26-94 Received by (dd/tt): _____ 1430 10 26 94

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10-26-04

Site Name: 1435



Comments/Observations:

Prepared by: Bill DL

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 10-26-94 Site Name: 1435

Weather: COOL, OVERCAST Samplers: SD

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
SB1435VC	1515	C				Brown sandy Silt "moist	2x40z
SB1435VG	1500	G				Brown sandy Silt "moist"	2x40z

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: (Screening) (Confirmation) Disposal/Characterization

10-26-94

Laboratory Destination: Onsite Lab (ASC - coc # 107721) USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

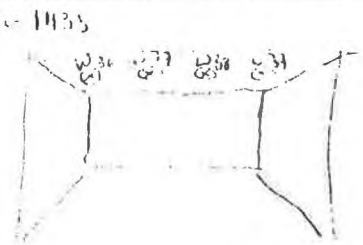
Requested Testing: TPH BTEX Chlordane PCBs Other_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 10-26-94 Site Name: 1435



Comments/Observations:

* Samples taken w/ excavator bucket from depth of 10' & down

Prepared by: Bill Dale

Site: Ft. Devens, MA Location No.: Bldg 1435 Date: 10-26-94 GC Analyst: MRB TPH Analyst: BD

Method 8080

Concentration (mg/kg)	Action Level	Sample ID																	
Aroclor 1260	2 ppm																		
chlordane	1 ppm																		

Percent Recovery	Sample ID																		
2,4,5,6-tcmx																			
decachlorobiphenyl																			

Method 418.1

Concentration (mg/kg)	Action Level	Sample ID																	
		BDG 1435 W34	BLK 1435 D35	BLK 1435 NC															
TRPH	500 ppm	17	ND	ND															
		ND	ND	ND															
	500 ppm																		
	500 ppm																		

Soil Sample Collection Log
Fort Devens - Project #16208

Date: 11.29.94 Site Name: UST 1435

Weather: Sunny, windy cold Samplers: MEQ

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
EX1435AG	1300	G	2'			grab sample, light tan sand, some cobble	2x4oz
EX1435AC	1312	C	1'-2'			5 pt. composite from ex pile for UST 1435 tan sand, some cobble	2x4oz

Ref. Pt.___: _____

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: Screening Confirmation (Disposal/Characterization)

Laboratory Destination: Onsite Lab ASC - coc # 107193 USACE- coc #_____

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

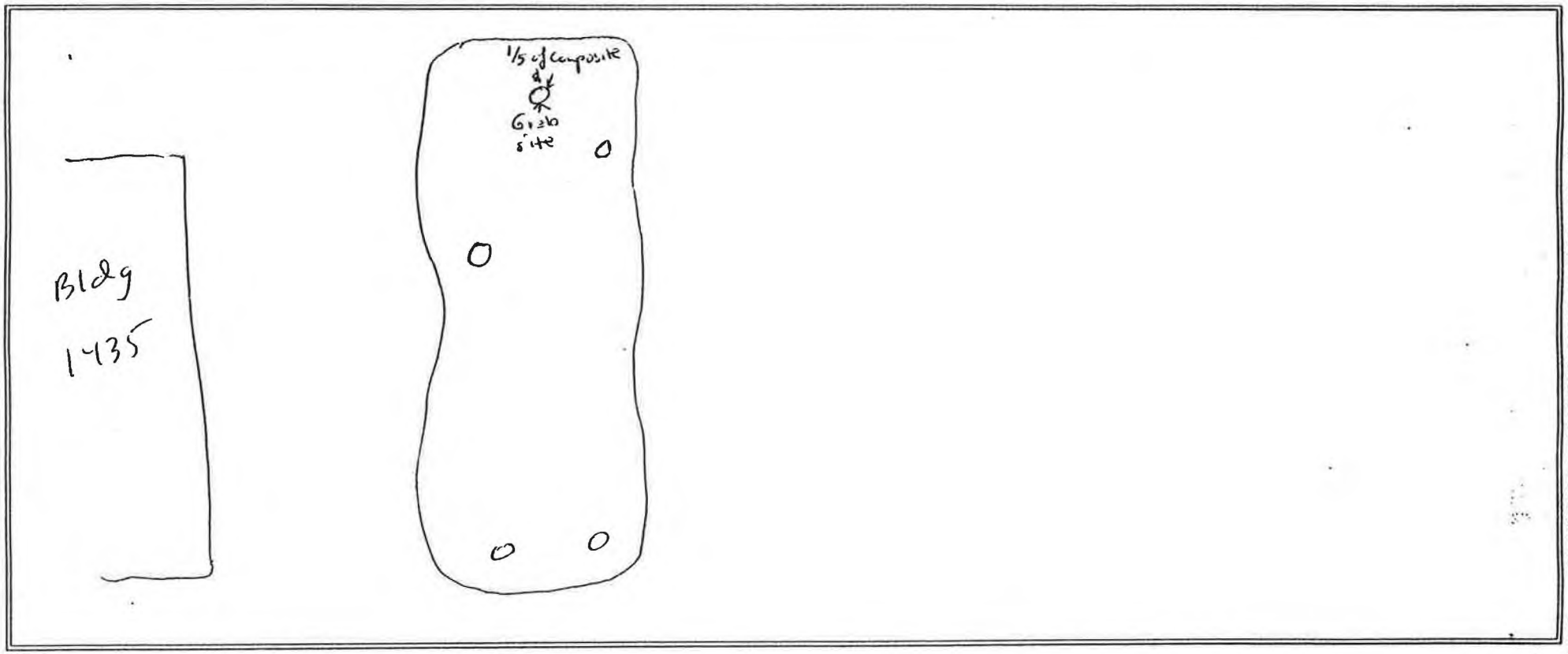
Requested Testing: (TPH) (BTEX) Chlordane PCBs Other PAH

Relinquished by(dd/tt): 11.29.94 1324 Received by (dd/tt): 11.29.94 1324

Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Date: 11.29.94 Site Name: UST 1435



Comments/Observations:

not to scale

Prepared by: MRB

Soil Sample Collection Log
Fort Devens - Project #16208

Pg. 1 of 2

Date: 12.15-94 Site Name: Bldg 1435 excavation pile

Weather: Sunny, cool Samplers: MRB

Sample ID Number	Time	Comp/ Grab	Sample Depth (ft)	Coordinates Ref. Pt.	Coordinates Ref. Pt.	Sample Description	# of Bottles
EX 1435-1C	1015	C	12"-18"	N/A	N/A	6 pt composite, Lt brown sand, slight cobble	1x1L 1x402
EX 1435-2C	1030	C	↓			4 pt composite LT brown sand, some cobble	↓

Ref. Pt.___: N/A

Ref. Pt.___: _____

Map Attached: (Yes) No

Sample Type: Screening Confirmation (Disposal/Characterization)

Laboratory Destination: Onsite Lab ASC - coc # 107748 USACE- coc # N/A

Duplicate Taken: Yes (No) Rinsate Taken: Yes (No)

On-site Laboratory Chain of Custody/Request for Analysis

Requested Testing: TPH BTEX Chlordane PCBs Other Full TCLP, RCRA Characteristics

Relinquished by(dd/tt): SU Blair 12.15.94 1045 Received by (dd/tt): SU Blair 12.15.94 1045

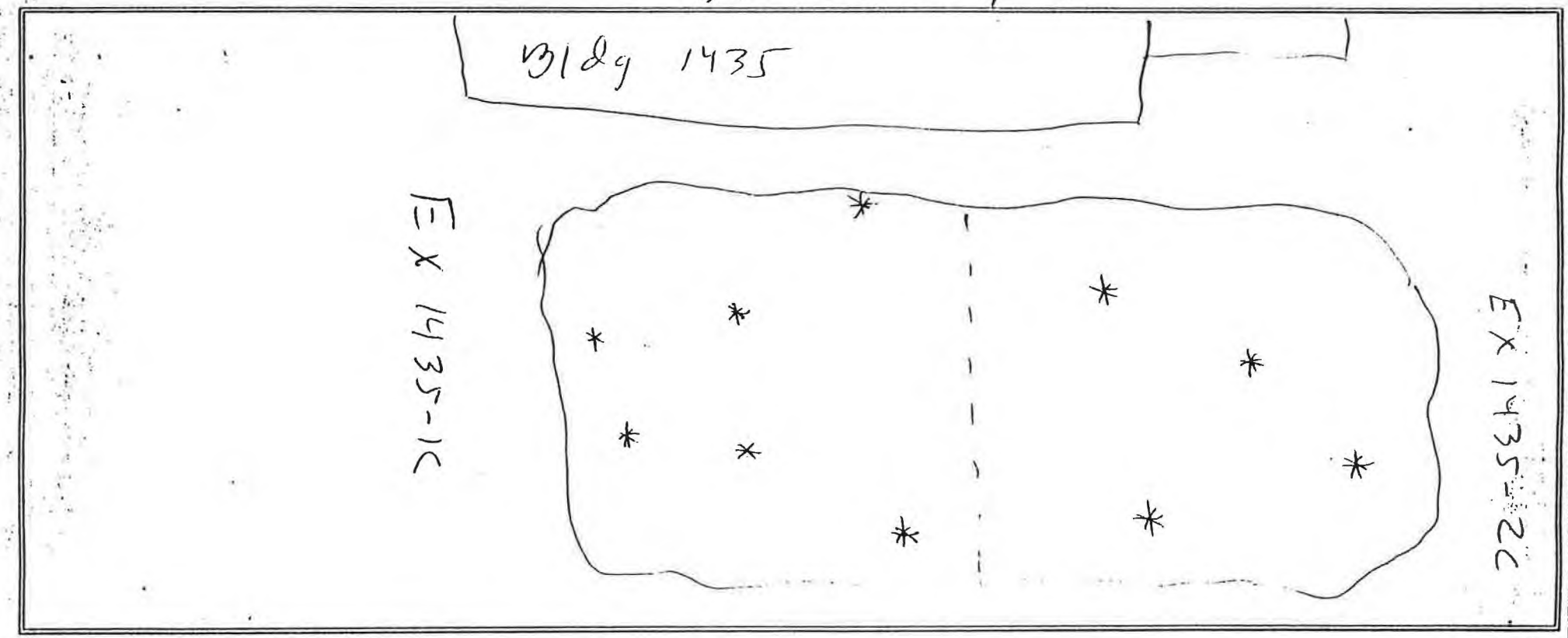
Relinquished by(dd/tt):_____ Received by (dd/tt):_____

Sample Location Map
Fort Devens - Project #16208

Pg. 3 of 7

Date: 12.15.94

Site Name: Bldg 1435 excavation pile



Comments/Observations:

not to scale

Prepared by: MRB

Appendix B
ASC Analytical Report - Confirmation Soil Sample Results

Analytical Services Corp.

ANALYTICAL REPORT

Client: OHM Remediation Services Corporation
Eastern Region (Hopkinton, MA)

Attn: William Snow
Ron Kenyon
Mike Quinlan

Project: 16208C - USACE; Fort Devens, MA

Sample Type(s): Solid

Analysis Performed: Conventional and Organics

Date Sample Received: October 7, 1994

Date Order Received: October 7, 1994

Joblink(s): 616802

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. Analytical Services Corporation assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: T E Gran *Date:* October 14, 1994

Thomas E. Gran, Ph.D., Vice President

16406 U.S. Route 224 East ■ P.O. Box 1404 ■ Findlay, Ohio 45839-1404 ■ 419-423-3526

PROJECT NARRATIVE

The following items relate to the samples and analytical data contained in this report.

- All solid sample results are reported on a "dry weight" basis.
- Note any and all comments at the bottom of the tables in Appendix B and/or Appendix C.
- **ASC** will retain samples for a maximum of thirty (30) days after completion of the analysis, samples will be held for a longer period of time, if appropriate arrangements are made in advance. A nominal disposal charge of $5.00/ sample will be imposed for unreturned samples.

APPENDIX A

DATA SUMMARY REPORT

NOTE: The Tentatively Identified Volatile (GC/MS) Screen result(s), if applicable, is included in Appendix B.

DATA SUMMARY REPORT

DATE: 10/13/94

PAGE: 1

Company: OHM REMEDIATION SERVICES CORPORATION

Parameters	Units	SB1435BC	SB1435WC	SB1435SC	SB1435EC	SB1435DUPC
Sample Point ID:		SB1435BC	SB1435WC	SB1435SC	SB1435EC	SB1435DUPC
ASC Sample Number:		JN3117	JN3118	JN3119	JN3120	JN3121
Sample Date:		941005	941005	941005	941005	941005
Facility Code:		016208C	016208C	016208C	016208C	016208C
Conventional Data (CV10)						
Solids, Total	%	94.2	89.1	92.8	90.9	89.8
Total Petroleum Hydrocarbon Analysis, IR (IR00)						
Petroleum Hydrocarbons (IR)	mg/kg	<7.07	<7.41	<7.18	<7.29	<7.34
Total Base/Neutral/Acid Analysis, MS, (MS02)						
Acenaphthene	mg/kg	<.352	<.373	<.356	<.365	<.369
Acenaphthylene	mg/kg	<.352	<.373	<.356	<.365	<.369
Anthracene	mg/kg	<.352	<.373	<.356	<.365	<.369
Benzidine	mg/kg	<.352	<.373	<.356	<.365	<.369
Benzo(a)anthracene	mg/kg	<.352	<.373	<.356	<.365	<.369
Benzo(b)fluoranthene	mg/kg	<.352	<.373	<.356	<.365	<.369
Benzo(k)fluoranthene	mg/kg	<.352	<.373	<.356	<.365	<.369
Benzo(ghi)perylene	mg/kg	<.352	<.373	<.356	<.365	<.369
Benzo(a)pyrene	mg/kg	<.352	<.373	<.356	<.365	<.369
bis(2-Chloroethyl) ether	mg/kg	<.352	<.373	<.356	<.365	<.369
bis(2-Chloroethoxy)methane	mg/kg	<.352	<.373	<.356	<.365	<.369
bis(2-Chloroisopropyl)ether	mg/kg	<.352	<.373	<.356	<.365	<.369
bis(2-Ethylhexyl)phthalate	mg/kg	.366	.951	.527	.584	1.10
4-Bromophenyl phenyl ether	mg/kg	<.352	<.373	<.356	<.365	<.369
Butyl benzyl phthalate	mg/kg	<.352	<.373	<.356	<.365	<.369
Carbazole	mg/kg	<.352	<.373	<.356	<.365	<.369
4-Chloroaniline	mg/kg	<.352	<.373	<.356	<.365	<.369
p-Chloro-m-cresol	mg/kg	<.352	<.373	<.356	<.365	<.369
2-Chloronaphthalene	mg/kg	<.352	<.373	<.356	<.365	<.369
2-Chlorophenol	mg/kg	<.352	<.373	<.356	<.365	<.369
4-Chlorophenyl phenyl ether	mg/kg	<.352	<.373	<.356	<.365	<.369
Chrysene	mg/kg	<.352	<.373	<.356	<.365	<.369
Dibenzo(a,h)anthracene	mg/kg	<.352	<.373	<.356	<.365	<.369
Dibenzofuran	mg/kg	<.352	<.373	<.356	<.365	<.369
Di-n-butyl phthalate	mg/kg	<.352	<.373	<.356	<.365	<.369
1,2-Dichlorobenzene	mg/kg	<.352	<.373	<.356	<.365	<.369
1,3-Dichlorobenzene	mg/kg	<.352	<.373	<.356	<.365	<.369
1,4-Dichlorobenzene	mg/kg	<.352	<.373	<.356	<.365	<.369
3,3'-Dichlorobenzidine	mg/kg	<.352	<.373	<.356	<.365	<.369

14.5 RPD

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Parameters	Units	SB1435BC	SB1435WC	SB1435SC	SB1435EC	SB1435DUPC
Sample Point ID:		SB1435BC	SB1435WC	SB1435SC	SB1435EC	SB1435DUPC
ASC Sample Number:		JN3117	JN3118	JN3119	JN3120	JN3121
Sample Date:		941005	941005	941005	941005	941005
Facility Code:		016208C	016208C	016208C	016208C	016208C
Total Base/Neutral/Acid Analysis, MS, (MS02)						
2,4-Dichlorophenol	mg/kg	<.352	<.373	<.356	<.365	<.369
Diethyl phthalate	mg/kg	<.352	<.373	<.356	<.365	<.369
Dimethyl phthalate	mg/kg	<.352	<.373	<.356	<.365	<.369
2,4-Dimethylphenol	mg/kg	<.352	<.373	<.356	<.365	<.369
4,6-Dinitro-o-cresol	mg/kg	<.880	<.933	<.890	<.912	<.923
2,4-Dinitrophenol	mg/kg	<1.76	<1.87	<1.78	<1.82	<1.85
2,4-Dinitrotoluene	mg/kg	<.352	<.373	<.356	<.365	<.369
2,6-Dinitrotoluene	mg/kg	<.352	<.373	<.356	<.365	<.369
Di-n-octyl phthalate	mg/kg	<.352	<.373	<.356	<.365	<.369
Fluoranthene	mg/kg	<.352	<.373	<.356	<.365	<.369
Fluorene	mg/kg	<.352	<.373	<.356	<.365	<.369
Hexachlorobenzene	mg/kg	<.352	<.373	<.356	<.365	<.369
Hexachlorobutadiene	mg/kg	<.352	<.373	<.356	<.365	<.369
Hexachlorocyclopentadiene	mg/kg	<.352	<.373	<.356	<.365	<.369
Hexachloroethane	mg/kg	<.352	<.373	<.356	<.365	<.369
Indeno(1,2,3-cd)pyrene	mg/kg	<.352	<.373	<.356	<.365	<.369
Isophorone	mg/kg	<.352	<.373	<.356	<.365	<.369
2-Methylnaphthalene	mg/kg	<.352	<.373	<.356	<.365	<.369
2-Methylphenol	mg/kg	<.352	<.373	<.356	<.365	<.369
4-Methylphenol	mg/kg	<.352	<.373	<.356	<.365	<.369
N-Nitrosodimethylamine	mg/kg	<.352	<.373	<.356	<.365	<.369
N-Nitrosodi-n-propylamine	mg/kg	<.352	<.373	<.356	<.365	<.369
N-Nitrosodiphenylamine	mg/kg	<.352	<.373	<.356	<.365	<.369
Naphthalene	mg/kg	<.352	<.373	<.356	<.365	<.369
2-Nitroaniline	mg/kg	<.352	<.373	<.356	<.365	<.369
3-Nitroaniline	mg/kg	<.352	<.373	<.356	<.365	<.369
4-Nitroaniline	mg/kg	<.352	<.373	<.356	<.365	<.369
Nitrobenzene	mg/kg	<.352	<.373	<.356	<.365	<.369
2-Nitrophenol	mg/kg	<.352	<.373	<.356	<.365	<.369
4-Nitrophenol	mg/kg	<1.76	<1.87	<1.78	<1.82	<1.85
Pentachlorophenol	mg/kg	<.352	<.373	<.356	<.365	<.369
Phenanthrene	mg/kg	<.352	<.373	<.356	<.365	<.369
Phenol	mg/kg	<.352	<.373	<.356	<.365	<.369
Pyrene	mg/kg	<.352	<.373	<.356	<.365	<.369
Pyridine	mg/kg	<.352	<.373	<.356	<.365	<.369

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID:		**SB1435BC**	**SB1435WC**	**SB1435SC**	**SB1435EC**	**SB1435DUPC**
ASC Sample Number:		JN3117	JN3118	JN3119	JN3120	JN3121
Sample Date:		941005	941005	941005	941005	941005
Facility Code:		016208C	016208C	016208C	016208C	016208C
Parameters	**Units**					
otal Base/Neutral/Acid Analysis, MS, (MS02)						
1,2,4-Trichlorobenzene	mg/kg	<.352	<.373	<.356	<.365	<.369
2,4,5-Trichlorophenol	mg/kg	<.352	<.373	<.356	<.365	<.369
2,4,6-Trichlorophenol	mg/kg	<.352	<.373	<.356	<.365	<.369

DATA SUMMARY REPORT

DATE: 10/13/94

PAGE: 1

Company: OHM REMEDIATION SERVICES CORPORATION

Parameters	Units	SB1435BG	SB1435WG	SB1435SG	SB1435EG	SB1435DUPG
Sample Point ID:		**SB1435BG**	**SB1435WG**	**SB1435SG**	**SB1435EG**	**SB1435DUPG**
ASC Sample Number:		JN3122	JN3123	JN3124	JN3125	JN3126
Sample Date:		941005	941005	941005	941005	941005
Facility Code:		016208C	016208C	016208C	016208C	016208C
Conventional Data (CV10)						
Solids, Total	%	94.0	95.5	93.7	88.6	95.4
BTXE Volatile Analysis, GC, (GV33)						
Benzene	mg/kg	<.001	<.001	<.001	<.001	<.001
Ethylbenzene	mg/kg	<.001	<.001	<.001	<.001	<.001
Toluene	mg/kg	<.001	<.001	<.001	<.001	<.001
Xylenes	mg/kg	<.001	<.001	<.001	<.001	<.001

APPENDIX B

QUANTITATIVE RESULTS

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435BC	JN3117

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	94.2	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435WC	JN3118

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	89.1	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435SC	JN3119

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	92.8	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435EC	JN3120

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	90.9	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435DUPC	JN3121

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	89.8	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435BG	JN3122

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	94.0	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435WG	JN3123

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	95.5	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435SG	JN3124

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	93.7	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435EG	JN3125

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	88.6	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435DUPG	JN3126

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	95.4	.100	-	

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435BG	JN3122

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W3918
Ethylbenzene	ND	.001	ND	Q2W3918
Toluene	ND	.001	ND	Q2W3918
Xylenes	ND	.001	ND	Q2W3918

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435WG	JN3123

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W3918
Ethylbenzene	ND	.001	ND	Q2W3918
Toluene	ND	.001	ND	Q2W3918
Xylenes	ND	.001	ND	Q2W3918

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435SG	JN3124

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W3918
Ethylbenzene	ND	.001	ND	Q2W3918
Toluene	ND	.001	ND	Q2W3918
Xylenes	ND	.001	ND	Q2W3918

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435EG	JN3125

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W3918
Ethylbenzene	ND	.001	ND	Q2W3918
Toluene	ND	.001	ND	Q2W3918
Xylenes	ND	.001	ND	Q2W3918

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435DUPG	JN3126

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W3918
Ethylbenzene	ND	.001	ND	Q2W3918
Toluene	ND	.001	ND	Q2W3918
Xylenes	ND	.001	ND	Q2W3918

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435BC	JN3117

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	ND	7.07	ND	Q2T41453

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435WC	JN3118

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	ND	7.41	ND	Q2T41453

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435SC	JN3119

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	ND	7.18	ND	Q2T41453

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435EC	JN3120

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	ND	7.29	ND	Q2T41453

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435DUPC	JN3121

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	ND	7.34	ND	Q2T41453

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435BC	JN3117

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.352	ND	Q2C41451
Acenaphthylene	ND	.352	ND	Q2C41451
Anthracene	ND	.352	ND	Q2C41451
Benzidine	ND	.352	ND	Q2C41451
Benzo(a)anthracene	ND	.352	ND	Q2C41451
Benzo(b)fluoranthene	ND	.352	ND	Q2C41451
Benzo(k)fluoranthene	ND	.352	ND	Q2C41451
Benzo(ghi)perylene	ND	.352	ND	Q2C41451
Benzo(a)pyrene	ND	.352	ND	Q2C41451
bis(2-Chloroethyl) ether	ND	.352	ND	Q2C41451
bis(2-Chloroethoxy)methane	ND	.352	ND	Q2C41451
bis(2-Chloroisopropyl)ether	ND	.352	ND	Q2C41451
bis(2-Ethylhexyl)phthalate	.366	.352	ND	Q2C41451
4-Bromophenyl phenyl ether	ND	.352	ND	Q2C41451
Butyl benzyl phthalate	ND	.352	ND	Q2C41451
Carbazole	ND	.352	ND	Q2C41451
4-Chloroaniline	ND	.352	ND	Q2C41451
p-Chloro-m-cresol	ND	.352	ND	Q2C41451
2-Chloronaphthalene	ND	.352	ND	Q2C41451
2-Chlorophenol	ND	.352	ND	Q2C41451
4-Chlorophenyl phenyl ether	ND	.352	ND	Q2C41451
Chrysene	ND	.352	ND	Q2C41451
Dibenzo(a,h)anthracene	ND	.352	ND	Q2C41451
Dibenzofuran	ND	.352	ND	Q2C41451
Di-n-butyl phthalate	ND	.352	ND	Q2C41451
1,2-Dichlorobenzene	ND	.352	ND	Q2C41451
1,3-Dichlorobenzene	ND	.352	ND	Q2C41451
1,4-Dichlorobenzene	ND	.352	ND	Q2C41451
3,3'-Dichlorobenzidine	ND	.352	ND	Q2C41451
2,4-Dichlorophenol	ND	.352	ND	Q2C41451
Diethyl phthalate	ND	.352	ND	Q2C41451
Dimethyl phthalate	ND	.352	ND	Q2C41451
2,4-Dimethylphenol	ND	.352	ND	Q2C41451
4,6-Dinitro-o-cresol	ND	.880	ND	Q2C41451
2,4-Dinitrophenol	ND	1.76	ND	Q2C41451
2,4-Dinitrotoluene	ND	.352	ND	Q2C41451
2,6-Dinitrotoluene	ND	.352	ND	Q2C41451
Di-n-octyl phthalate	ND	.352	ND	Q2C41451
Fluoranthene	ND	.352	ND	Q2C41451
Fluorene	ND	.352	ND	Q2C41451
Hexachlorobenzene	ND	.352	ND	Q2C41451
Hexachlorobutadiene	ND	.352	ND	Q2C41451
Hexachlorocyclopentadiene	ND	.352	ND	Q2C41451
Hexachloroethane	ND	.352	ND	Q2C41451
Indeno(1,2,3-cd)pyrene	ND	.352	ND	Q2C41451
Isophorone	ND	.352	ND	Q2C41451
2-Methylnaphthalene	ND	.352	ND	Q2C41451
2-Methylphenol	ND	.352	ND	Q2C41451
4-Methylphenol	ND	.352	ND	Q2C41451
N-Nitrosodimethylamine	ND	.352	ND	Q2C41451

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435BC	JN3117

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
N-Nitrosodi-n-propylamine	ND	.352	ND	Q2C41451
N-Nitrosodiphenylamine	ND	.352	ND	Q2C41451
Naphthalene	ND	.352	ND	Q2C41451
2-Nitroaniline	ND	.352	ND	Q2C41451
3-Nitroaniline	ND	.352	ND	Q2C41451
4-Nitroaniline	ND	.352	ND	Q2C41451
Nitrobenzene	ND	.352	ND	Q2C41451
2-Nitrophenol	ND	.352	ND	Q2C41451
4-Nitrophenol	ND	1.76	ND	Q2C41451
Pentachlorophenol	ND	.352	ND	Q2C41451
Phenanthrene	ND	.352	ND	Q2C41451
Phenol	ND	.352	ND	Q2C41451
Pyrene	ND	.352	ND	Q2C41451
Pyridine	ND	.352	ND	Q2C41451
1,2,4-Trichlorobenzene	ND	.352	ND	Q2C41451
2,4,5-Trichlorophenol	ND	.352	ND	Q2C41451
2,4,6-Trichlorophenol	ND	.352	ND	Q2C41451

3-Methyl- and 4-Methylphenol coelute and are reported as the total

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435WC	JN3118

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.373	ND	Q2C41451
Acenaphthylene	ND	.373	ND	Q2C41451
Anthracene	ND	.373	ND	Q2C41451
Benzidine	ND	.373	ND	Q2C41451
Benzo(a)anthracene	ND	.373	ND	Q2C41451
Benzo(b)fluoranthene	ND	.373	ND	Q2C41451
Benzo(k)fluoranthene	ND	.373	ND	Q2C41451
Benzo(ghi)perylene	ND	.373	ND	Q2C41451
Benzo(a)pyrene	ND	.373	ND	Q2C41451
bis(2-Chloroethyl) ether	ND	.373	ND	Q2C41451
bis(2-Chloroethoxy)methane	ND	.373	ND	Q2C41451
bis(2-Chloroisopropyl)ether	ND	.373	ND	Q2C41451
bis(2-Ethylhexyl)phthalate	.951	.373	ND	Q2C41451
4-Bromophenyl phenyl ether	ND	.373	ND	Q2C41451
Butyl benzyl phthalate	ND	.373	ND	Q2C41451
Carbazole	ND	.373	ND	Q2C41451
4-Chloroaniline	ND	.373	ND	Q2C41451
p-Chloro-m-cresol	ND	.373	ND	Q2C41451
2-Chloronaphthalene	ND	.373	ND	Q2C41451
2-Chlorophenol	ND	.373	ND	Q2C41451
4-Chlorophenyl phenyl ether	ND	.373	ND	Q2C41451
Chrysene	ND	.373	ND	Q2C41451
Dibenzo(a,h)anthracene	ND	.373	ND	Q2C41451
Dibenzofuran	ND	.373	ND	Q2C41451
Di-n-butyl phthalate	ND	.373	ND	Q2C41451
1,2-Dichlorobenzene	ND	.373	ND	Q2C41451
1,3-Dichlorobenzene	ND	.373	ND	Q2C41451
1,4-Dichlorobenzene	ND	.373	ND	Q2C41451
3,3'-Dichlorobenzidine	ND	.373	ND	Q2C41451
2,4-Dichlorophenol	ND	.373	ND	Q2C41451
Diethyl phthalate	ND	.373	ND	Q2C41451
Dimethyl phthalate	ND	.373	ND	Q2C41451
2,4-Dimethylphenol	ND	.373	ND	Q2C41451
4,6-Dinitro-o-cresol	ND	.933	ND	Q2C41451
2,4-Dinitrophenol	ND	1.87	ND	Q2C41451
2,4-Dinitrotoluene	ND	.373	ND	Q2C41451
2,6-Dinitrotoluene	ND	.373	ND	Q2C41451
Di-n-octyl phthalate	ND	.373	ND	Q2C41451
Fluoranthene	ND	.373	ND	Q2C41451
Fluorene	ND	.373	ND	Q2C41451
Hexachlorobenzene	ND	.373	ND	Q2C41451
Hexachlorobutadiene	ND	.373	ND	Q2C41451
Hexachlorocyclopentadiene	ND	.373	ND	Q2C41451
Hexachloroethane	ND	.373	ND	Q2C41451
Indeno(1,2,3-cd)pyrene	ND	.373	ND	Q2C41451
Isophorone	ND	.373	ND	Q2C41451
2-Methylnaphthalene	ND	.373	ND	Q2C41451
2-Methylphenol	ND	.373	ND	Q2C41451
4-Methylphenol	ND	.373	ND	Q2C41451
N-Nitrosodimethylamine	ND	.373	ND	Q2C41451

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435WC	JN3118

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
N-Nitrosodi-n-propylamine	ND	.373	ND	Q2C41451
N-Nitrosodiphenylamine	ND	.373	ND	Q2C41451
Naphthalene	ND	.373	ND	Q2C41451
2-Nitroaniline	ND	.373	ND	Q2C41451
3-Nitroaniline	ND	.373	ND	Q2C41451
4-Nitroaniline	ND	.373	ND	Q2C41451
Nitrobenzene	ND	.373	ND	Q2C41451
2-Nitrophenol	ND	.373	ND	Q2C41451
4-Nitrophenol	ND	1.87	ND	Q2C41451
Pentachlorophenol	ND	.373	ND	Q2C41451
Phenanthrene	ND	.373	ND	Q2C41451
Phenol	ND	.373	ND	Q2C41451
Pyrene	ND	.373	ND	Q2C41451
Pyridine	ND	.373	ND	Q2C41451
1,2,4-Trichlorobenzene	ND	.373	ND	Q2C41451
2,4,5-Trichlorophenol	ND	.373	ND	Q2C41451
2,4,6-Trichlorophenol	ND	.373	ND	Q2C41451

3-Methyl- and 4-Methylphenol coelute and are reported as the total

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435SC	JN3119

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.356	ND	Q2C41451
Acenaphthylene	ND	.356	ND	Q2C41451
Anthracene	ND	.356	ND	Q2C41451
Benzidine	ND	.356	ND	Q2C41451
Benzo(a)anthracene	ND	.356	ND	Q2C41451
Benzo(b)fluoranthene	ND	.356	ND	Q2C41451
Benzo(k)fluoranthene	ND	.356	ND	Q2C41451
Benzo(ghi)perylene	ND	.356	ND	Q2C41451
Benzo(a)pyrene	ND	.356	ND	Q2C41451
bis(2-Chloroethyl) ether	ND	.356	ND	Q2C41451
bis(2-Chloroethoxy)methane	ND	.356	ND	Q2C41451
bis(2-Chloroisopropyl)ether	ND	.356	ND	Q2C41451
bis(2-Ethylhexyl)phthalate	.527	.356	ND	Q2C41451
4-Bromophenyl phenyl ether	ND	.356	ND	Q2C41451
Butyl benzyl phthalate	ND	.356	ND	Q2C41451
Carbazole	ND	.356	ND	Q2C41451
4-Chloroaniline	ND	.356	ND	Q2C41451
p-Chloro-m-cresol	ND	.356	ND	Q2C41451
2-Chloronaphthalene	ND	.356	ND	Q2C41451
2-Chlorophenol	ND	.356	ND	Q2C41451
4-Chlorophenyl phenyl ether	ND	.356	ND	Q2C41451
Chrysene	ND	.356	ND	Q2C41451
Dibenzo(a,h)anthracene	ND	.356	ND	Q2C41451
Dibenzofuran	ND	.356	ND	Q2C41451
Di-n-butyl phthalate	ND	.356	ND	Q2C41451
1,2-Dichlorobenzene	ND	.356	ND	Q2C41451
1,3-Dichlorobenzene	ND	.356	ND	Q2C41451
1,4-Dichlorobenzene	ND	.356	ND	Q2C41451
3,3'-Dichlorobenzidine	ND	.356	ND	Q2C41451
2,4-Dichlorophenol	ND	.356	ND	Q2C41451
Diethyl phthalate	ND	.356	ND	Q2C41451
Dimethyl phthalate	ND	.356	ND	Q2C41451
2,4-Dimethylphenol	ND	.356	ND	Q2C41451
4,6-Dinitro-o-cresol	ND	.890	ND	Q2C41451
2,4-Dinitrophenol	ND	1.78	ND	Q2C41451
2,4-Dinitrotoluene	ND	.356	ND	Q2C41451
2,6-Dinitrotoluene	ND	.356	ND	Q2C41451
Di-n-octyl phthalate	ND	.356	ND	Q2C41451
Fluoranthene	ND	.356	ND	Q2C41451
Fluorene	ND	.356	ND	Q2C41451
Hexachlorobenzene	ND	.356	ND	Q2C41451
Hexachlorobutadiene	ND	.356	ND	Q2C41451
Hexachlorocyclopentadiene	ND	.356	ND	Q2C41451
Hexachloroethane	ND	.356	ND	Q2C41451
Indeno(1,2,3-cd)pyrene	ND	.356	ND	Q2C41451
Isophorone	ND	.356	ND	Q2C41451
2-Methylnaphthalene	ND	.356	ND	Q2C41451
2-Methylphenol	ND	.356	ND	Q2C41451
4-Methylphenol	ND	.356	ND	Q2C41451
N-Nitrosodimethylamine	ND	.356	ND	Q2C41451

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435SC	JN3119

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
N-Nitrosodi-n-propylamine	ND	.356	ND	Q2C41451
N-Nitrosodiphenylamine	ND	.356	ND	Q2C41451
Naphthalene	ND	.356	ND	Q2C41451
2-Nitroaniline	ND	.356	ND	Q2C41451
3-Nitroaniline	ND	.356	ND	Q2C41451
4-Nitroaniline	ND	.356	ND	Q2C41451
Nitrobenzene	ND	.356	ND	Q2C41451
2-Nitrophenol	ND	.356	ND	Q2C41451
4-Nitrophenol	ND	1.78	ND	Q2C41451
Pentachlorophenol	ND	.356	ND	Q2C41451
Phenanthrene	ND	.356	ND	Q2C41451
Phenol	ND	.356	ND	Q2C41451
Pyrene	ND	.356	ND	Q2C41451
Pyridine	ND	.356	ND	Q2C41451
1,2,4-Trichlorobenzene	ND	.356	ND	Q2C41451
2,4,5-Trichlorophenol	ND	.356	ND	Q2C41451
2,4,6-Trichlorophenol	ND	.356	ND	Q2C41451

3-Methyl- and 4-Methylphenol coelute and are reported as the total

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435EC	JN3120

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.365	ND	Q2C41451
Acenaphthylene	ND	.365	ND	Q2C41451
Anthracene	ND	.365	ND	Q2C41451
Benzidine	ND	.365	ND	Q2C41451
Benzo(a)anthracene	ND	.365	ND	Q2C41451
Benzo(b)fluoranthene	ND	.365	ND	Q2C41451
Benzo(k)fluoranthene	ND	.365	ND	Q2C41451
Benzo(ghi)perylene	ND	.365	ND	Q2C41451
Benzo(a)pyrene	ND	.365	ND	Q2C41451
bis(2-Chloroethyl) ether	ND	.365	ND	Q2C41451
bis(2-Chloroethoxy)methane	ND	.365	ND	Q2C41451
bis(2-Chloroisopropyl)ether	ND	.365	ND	Q2C41451
bis(2-Ethylhexyl)phthalate	.584	.365	ND	Q2C41451
4-Bromophenyl phenyl ether	ND	.365	ND	Q2C41451
Butyl benzyl phthalate	ND	.365	ND	Q2C41451
Carbazole	ND	.365	ND	Q2C41451
4-Chloroaniline	ND	.365	ND	Q2C41451
p-Chloro-m-cresol	ND	.365	ND	Q2C41451
2-Chloronaphthalene	ND	.365	ND	Q2C41451
2-Chlorophenol	ND	.365	ND	Q2C41451
4-Chlorophenyl phenyl ether	ND	.365	ND	Q2C41451
Chrysene	ND	.365	ND	Q2C41451
Dibenzo(a,h)anthracene	ND	.365	ND	Q2C41451
)ibenzofuran	ND	.365	ND	Q2C41451
Di-n-butyl phthalate	ND	.365	ND	Q2C41451
1,2-Dichlorobenzene	ND	.365	ND	Q2C41451
1,3-Dichlorobenzene	ND	.365	ND	Q2C41451
1,4-Dichlorobenzene	ND	.365	ND	Q2C41451
3,3'-Dichlorobenzidine	ND	.365	ND	Q2C41451
2,4-Dichlorophenol	ND	.365	ND	Q2C41451
Diethyl phthalate	ND	.365	ND	Q2C41451
Dimethyl phthalate	ND	.365	ND	Q2C41451
2,4-Dimethylphenol	ND	.365	ND	Q2C41451
4,6-Dinitro-o-cresol	ND	.912	ND	Q2C41451
2,4-Dinitrophenol	ND	1.82	ND	Q2C41451
2,4-Dinitrotoluene	ND	.365	ND	Q2C41451
2,6-Dinitrotoluene	ND	.365	ND	Q2C41451
Di-n-octyl phthalate	ND	.365	ND	Q2C41451
Fluoranthene	ND	.365	ND	Q2C41451
Fluorene	ND	.365	ND	Q2C41451
Hexachlorobenzene	ND	.365	ND	Q2C41451
Hexachlorobutadiene	ND	.365	ND	Q2C41451
Hexachlorocyclopentadiene	ND	.365	ND	Q2C41451
Hexachloroethane	ND	.365	ND	Q2C41451
Indeno(1,2,3-cd)pyrene	ND	.365	ND	Q2C41451
Isophorone	ND	.365	ND	Q2C41451
2-Methylnaphthalene	ND	.365	ND	Q2C41451
2-Methylphenol	ND	.365	ND	Q2C41451
4-Methylphenol	ND	.365	ND	Q2C41451
N-Nitrosodimethylamine	ND	.365	ND	Q2C41451

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435EC	JN3120

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
N-Nitrosodi-n-propylamine	ND	.365	ND	Q2C41451
N-Nitrosodiphenylamine	ND	.365	ND	Q2C41451
Naphthalene	ND	.365	ND	Q2C41451
2-Nitroaniline	ND	.365	ND	Q2C41451
3-Nitroaniline	ND	.365	ND	Q2C41451
4-Nitroaniline	ND	.365	ND	Q2C41451
Nitrobenzene	ND	.365	ND	Q2C41451
2-Nitrophenol	ND	.365	ND	Q2C41451
4-Nitrophenol	ND	1.82	ND	Q2C41451
Pentachlorophenol	ND	.365	ND	Q2C41451
Phenanthrene	ND	.365	ND	Q2C41451
Phenol	ND	.365	ND	Q2C41451
Pyrene	ND	.365	ND	Q2C41451
Pyridine	ND	.365	ND	Q2C41451
1,2,4-Trichlorobenzene	ND	.365	ND	Q2C41451
2,4,5-Trichlorophenol	ND	.365	ND	Q2C41451
2,4,6-Trichlorophenol	ND	.365	ND	Q2C41451

3-Methyl- and 4-Methylphenol coelute and are reported as the total

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435DUPC	JN3121

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.369	ND	Q2C41451
Acenaphthylene	ND	.369	ND	Q2C41451
Anthracene	ND	.369	ND	Q2C41451
Benzidine	ND	.369	ND	Q2C41451
Benzo(a)anthracene	ND	.369	ND	Q2C41451
Benzo(b)fluoranthene	ND	.369	ND	Q2C41451
Benzo(k)fluoranthene	ND	.369	ND	Q2C41451
Benzo(ghi)perylene	ND	.369	ND	Q2C41451
Benzo(a)pyrene	ND	.369	ND	Q2C41451
bis(2-Chloroethyl) ether	ND	.369	ND	Q2C41451
bis(2-Chloroethoxy)methane	ND	.369	ND	Q2C41451
bis(2-Chloroisopropyl)ether	ND	.369	ND	Q2C41451
bis(2-Ethylhexyl)phthalate	1.10	.369	ND	Q2C41451
4-Bromophenyl phenyl ether	ND	.369	ND	Q2C41451
Butyl benzyl phthalate	ND	.369	ND	Q2C41451
Carbazole	ND	.369	ND	Q2C41451
4-Chloroaniline	ND	.369	ND	Q2C41451
p-Chloro-m-cresol	ND	.369	ND	Q2C41451
2-Chloronaphthalene	ND	.369	ND	Q2C41451
2-Chlorophenol	ND	.369	ND	Q2C41451
4-Chlorophenyl phenyl ether	ND	.369	ND	Q2C41451
Chrysene	ND	.369	ND	Q2C41451
Dibenzo(a,h)anthracene	ND	.369	ND	Q2C41451
Dibenzofuran	ND	.369	ND	Q2C41451
Di-n-butyl phthalate	ND	.369	ND	Q2C41451
1,2-Dichlorobenzene	ND	.369	ND	Q2C41451
1,3-Dichlorobenzene	ND	.369	ND	Q2C41451
1,4-Dichlorobenzene	ND	.369	ND	Q2C41451
3,3'-Dichlorobenzidine	ND	.369	ND	Q2C41451
2,4-Dichlorophenol	ND	.369	ND	Q2C41451
Diethyl phthalate	ND	.369	ND	Q2C41451
Dimethyl phthalate	ND	.369	ND	Q2C41451
2,4-Dimethylphenol	ND	.369	ND	Q2C41451
4,6-Dinitro-o-cresol	ND	.923	ND	Q2C41451
2,4-Dinitrophenol	ND	1.85	ND	Q2C41451
2,4-Dinitrotoluene	ND	.369	ND	Q2C41451
2,6-Dinitrotoluene	ND	.369	ND	Q2C41451
Di-n-octyl phthalate	ND	.369	ND	Q2C41451
Fluoranthene	ND	.369	ND	Q2C41451
Fluorene	ND	.369	ND	Q2C41451
Hexachlorobenzene	ND	.369	ND	Q2C41451
Hexachlorobutadiene	ND	.369	ND	Q2C41451
Hexachlorocyclopentadiene	ND	.369	ND	Q2C41451
Hexachloroethane	ND	.369	ND	Q2C41451
Indeno(1,2,3-cd)pyrene	ND	.369	ND	Q2C41451
Isophorone	ND	.369	ND	Q2C41451
2-Methylnaphthalene	ND	.369	ND	Q2C41451
2-Methylphenol	ND	.369	ND	Q2C41451
4-Methylphenol	ND	.369	ND	Q2C41451
N-Nitrosodimethylamine	ND	.369	ND	Q2C41451

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435DUPC	JN3121

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
N-Nitrosodi-n-propylamine	ND	.369	ND	Q2C41451
N-Nitrosodiphenylamine	ND	.369	ND	Q2C41451
Naphthalene	ND	.369	ND	Q2C41451
2-Nitroaniline	ND	.369	ND	Q2C41451
3-Nitroaniline	ND	.369	ND	Q2C41451
4-Nitroaniline	ND	.369	ND	Q2C41451
Nitrobenzene	ND	.369	ND	Q2C41451
2-Nitrophenol	ND	.369	ND	Q2C41451
4-Nitrophenol	ND	1.85	ND	Q2C41451
Pentachlorophenol	ND	.369	ND	Q2C41451
Phenanthrene	ND	.369	ND	Q2C41451
Phenol	ND	.369	ND	Q2C41451
Pyrene	ND	.369	ND	Q2C41451
Pyridine	ND	.369	ND	Q2C41451
1,2,4-Trichlorobenzene	ND	.369	ND	Q2C41451
2,4,5-Trichlorophenol	ND	.369	ND	Q2C41451
2,4,6-Trichlorophenol	ND	.369	ND	Q2C41451

3-Methyl- and 4-Methylphenol coelute and are reported as the total

APPENDIX C

QUALITY ASSURANCE DATA

SUMMARY OF ANALYTICAL METHODOLOGY

ASC Joblink # 616802

REFERENCE		TITLE
160.3	CAWW	Residue, Total, Gravimetric, Dried at 103-105 C
418.1	MCAWW	Petroleum Hydrocarbons, Total Recoverable
8020	SW-846	Aromatic Volatile Organics by GC
8270	SW-846	GC/MS for Semivolatile Organics: Capillary Column Technique

METHODOLOGY REFERENCES

ASTM	*American Society for Testing and Materials*, 1985 edition.
CAWW	*Methods for Chemical Analysis of Water and Wastes*, April 1979 and Updated #1 March 1983.
CLP	*USEPA Contract Laboratory Program*, Document #OLMO1.0, updates December 1990 #OLMO1.1 and February 1991 #OLMO1.1.1.
EPA-500	*USEPA Methods for the Determination of Organic Compounds in Drinking Water,* EPA-600/4-88/039 December 1988.
EPA-600	*USEPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057 July 1982.
NIOSH	*National Institute for Occupational Safety and Health*, 3rd edition, 1984.
SMEWW	*Standard Methods for the Examination of Water and Wastewater*, 17th edition, 1989.
STOA	*Spot Tests In Organic Analysis*, 7th edition, 1966.
SW-846	*Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, 3rd edition, September 1986 and Update #1 July 1992.
(1)	This method was modified to incorporate the use of Boron Trifluoride (BF3) as the derivatizing reagent according to Method 6640 in *SMEWW*, 17th edition, 1989.
Title 22	*Waste Extraction Test*, Title 22, Section 66261.126 Appendix 2 of the California Administrative Code, May 1991.

ASC Certifications

State	Agency	Certification #
Alabama	ADEM	40830
California	CADOH	1178
Colorado	CODOH	OH113
Delaware	DEHSS	OH113
Kansas	KSDHE	E-202 & E-1173
Louisiana	LADOHH	92-10
Maryland	MDDHMH	210
Massachusetts	MADEP	M-OH113
New Jersey	NJDEPE	74603
New York	NYDOH	10712
North Carolina	NCDEM	392
Ohio	OHEPA	OH113
Oklahoma	OKDEQ	9216
Pennsylvania	PADER	68-450
South Carolina	SCDEHNR	92002
Tennessee	TNDOH/TNDEC	2978
Virginia	VADGS	00011
Washington	WADOE	C154
Wisconsin	WIDNR	999037160

Validated by:

- o US Army Corps of Engineers ..... Chemical Analysis in Various Matrices

Approvals:

- o Chemical Waste Management ..... Waste Characterization Analysis
- o Envirosafe ..... Waste Characterization Analysis
- o USDA ..... Permit for Importing Soils
- o Florida DEP ..... Quality Assurance Plan #930034G
- o Naval Facilities Engineering Service Center ..... Chemical Analysis in Various Matrices

REPORT KEY

mg/kg	=	milligram per kilogram (ppm)
Mg/m^3	=	milligram per cubic meter
ug/kg	=	microgram per kilogram (ppb)
mg/L	=	milligram per liter (ppm)
ug/L	=	microgram per liter (ppb)
mg/W	=	milligram per wipe
ug/W	=	microgram per wipe
mg/SMP	=	milligram per sample
ug/SMP	=	microgram per sample (Tedlar Bag)
ug/smp	=	microgram per sample
um/cm	=	microMho per centimeter
pCi/l	=	picocurie per liter
gm/cc	=	grams per cubic centimeter
ppm	=	parts per million
ppb	=	parts per billion
ND	=	Not detected at or above stated detection limit
<	=	less than
>	=	greater than
%	=	percent
BTU/lb	=	British Thermal Units per pound
Deg. C	=	Degrees Celsius
n/a	=	not applicable
Unk	=	unknown
std	=	result is relative to standard pH units
CV	=	Conventionals
IR	=	Infrared Spectrophotometric
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
GRO	=	Gasoline Range Organics
DRO	=	Diesel Range Organics
PCB	=	Polychlorinated Biphenyls (PCBs)
EP TOX	=	Extraction Procedure Toxicity
TCLP	=	Toxicity Characteristic Leaching Procedure
RCRA	=	Resource Conservation and Recovery Act
SOW	=	Statement of Work

Quality Assurance Data

BTXE Volatile Analysis, GC, (GV33)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Benzene	ND	98	ND	100	4	Q2W3918
Ethylbenzene	ND	96	ND	97	5	Q2W3918
Toluene	ND	97	ND	98	4	Q2W3918
Xylenes	ND	97	ND	96	5	Q2W3918

Quality Assurance Data

Total Petroleum Hydrocarbon Analysis, IR (IR00)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Petroleum Hydrocarbons (IR)	ND	91	ND	85	28	Q2T41453

Quality Assurance Data

Total Base/Neutral/Acid Analysis, MS, (MS02)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Acenaphthene	ND	66	ND	69	9	Q2C41451
Acenaphthylene	ND	72	ND	75	11	Q2C41451
Anthracene	ND	71	ND	78	4	Q2C41451
Benzidine	ND	22	ND	11	22	Q2C41451
Benzo(a)anthracene	ND	69	ND	77	1	Q2C41451
Benzo(b)fluoranthene	ND	61	ND	75	5	Q2C41451
Benzo(k)fluoranthene	ND	80	ND	89	6	Q2C41451
Benzo(ghi)perylene	ND	68	ND	75	1	Q2C41451
Benzo(a)pyrene	ND	67	ND	79	2	Q2C41451
bis(2-Chloroethyl) ether	ND	64	ND	71	9	Q2C41451
bis(2-Chloroethoxy)methane	ND	69	ND	75	8	Q2C41451
bis(2-Chloroisopropyl)ether	ND	67	ND	73	8	Q2C41451
bis(2-Ethylhexyl)phthalate	ND	70	.366	71	6	Q2C41451
4-Bromophenyl phenyl ether	ND	68	ND	79	4	Q2C41451
Butyl benzyl phthalate	ND	72	ND	79	1	Q2C41451
Carbazole	ND	72	ND	78	4	Q2C41451
4-Chloroaniline	ND	50	ND	54	31	Q2C41451
p-Chloro-m-cresol	ND	68	ND	71	9	Q2C41451
2-Chloronaphthalene	ND	68	ND	72	10	Q2C41451
2-Chlorophenol	ND	63	ND	66	8	Q2C41451
4-Chlorophenyl phenyl ether	ND	73	ND	78	8	Q2C41451
Chrysene	ND	70	ND	77	1	Q2C41451
Dibenzo(a,h)anthracene	ND	69	ND	76	1	Q2C41451
Dibenzofuran	ND	71	ND	73	10	Q2C41451
Di-n-butyl phthalate	ND	74	ND	86	8	Q2C41451
2-Dichlorobenzene	ND	64	ND	69	8	Q2C41451
1,3-Dichlorobenzene	ND	67	ND	72	7	Q2C41451
1,4-Dichlorobenzene	ND	67	ND	71	9	Q2C41451
3,3'-Dichlorobenzidine	ND	43	ND	43	13	Q2C41451
2,4-Dichlorophenol	ND	67	ND	72	9	Q2C41451
Diethyl phthalate	ND	76	ND	79	4	Q2C41451
Dimethyl phthalate	ND	76	ND	78	6	Q2C41451
2,4-Dimethylphenol	ND	42	ND	45	31	Q2C41451
4,6-Dinitro-o-cresol	ND	83	ND	97	3	Q2C41451
2,4-Dinitrophenol	ND	99	ND	123	15	Q2C41451
2,4-Dinitrotoluene	ND	78	ND	80	3	Q2C41451
2,6-Dinitrotoluene	ND	75	ND	78	6	Q2C41451
Di-n-octyl phthalate	ND	70	ND	82	1	Q2C41451
Fluoranthene	ND	74	ND	83	1	Q2C41451
Fluorene	ND	73	ND	77	8	Q2C41451
Hexachlorobenzene	ND	68	ND	79	2	Q2C41451
Hexachlorobutadiene	ND	65	ND	71	12	Q2C41451
Hexachloroethane	ND	61	ND	66	7	Q2C41451
Indeno(1,2,3-cd)pyrene	ND	69	ND	77	1	Q2C41451
Isophorone	ND	69	ND	73	9	Q2C41451
2-Methylnaphthalene	ND	68	ND	73	8	Q2C41451
2-Methylphenol	ND	62	ND	67	10	Q2C41451
4-Methylphenol	ND	72	ND	75	11	Q2C41451
N-Nitrosodimethylamine	ND	59	ND	61	23	Q2C41451
N-Nitrosodi-n-propylamine	ND	74	ND	81	8	Q2C41451

QUALITY ASSURANCE DATA

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
N-Nitrosodiphenylamine	ND	67	ND	76	6	Q2C41451
Naphthalene	ND	66	ND	72	10	Q2C41451
3-Nitroaniline	ND	61	ND	60	12	Q2C41451
4-Nitroaniline	ND	75	ND	76	0	Q2C41451
Nitrobenzene	ND	67	ND	72	9	Q2C41451
2-Nitrophenol	ND	64	ND	68	11	Q2C41451
4-Nitrophenol	ND	83	ND	93	6	Q2C41451
Pentachlorophenol	ND	61	ND	71	11	Q2C41451
Phenanthrene	ND	69	ND	78	1	Q2C41451
Phenol	ND	58	ND	61	7	Q2C41451
Pyrene	ND	68	ND	74	1	Q2C41451
Pyridine	ND	46	ND	49	4	Q2C41451
1,2,4-Trichlorobenzene	ND	68	ND	73	10	Q2C41451
2,4,5-Trichlorophenol	ND	74	ND	77	11	Q2C41451
2,4,6-Trichlorophenol	ND	70	ND	75	8	Q2C41451

3-Methyl- and 4-Methylphenol coelute and are reported as the total

QUALITY ASSURANCE DATA
SURROGATE SUMMARY REPORT

SURROGATE ID	A159	B732	A121	A884	A158	B142	# OUT
QC BATCH: Q2C41451 Solid (Semi-Volatile organics by MS)							
SAMPLE ID							
BLANK	67	76	72	75	76	73	0
BLANK SPIKE	65	70	78	67	65	64	0
SB1435BC	67	76	77	75	75	76	0
SB1435BC MD	80	80	100	83	80	73	0
SB1435BC MS	70	74	91	73	70	70	0
SB1435DUPC	68	76	66	73	70	72	0
SB1435EC	59	67	55	61	61	63	0
SB1435SC	64	73	60	67	67	71	0
SB1435WC	67	74	71	69	70	70	0
QC LIMITS	(25-121)	(24-113)	(19-122)	(23-120)	(30-115)	(18-137)	

SURROGATE ID	A228	# OUT
QC BATCH: Q2W3918 Solid (Volatile organics by GC)		
SAMPLE ID		
BLANK	93	0
BLANK SPIKE	95	0
SB1435BG	92	0
SB1435DUPG	100	0
SB1435DUPG MD	96	0
SB1435DUPG MS	103	0
SB1435EG	90	0
SB1435SG	97	0
SB1435WG	99	0
QC LIMITS	(30-130)	

SURROGATE ID

A159 = 2-Fluorophenol
B732 = Phenol-D6
A121 = 2,4,6-Tribromophenol
A884 = Nitrobenzene-D5
A158 = 2-Fluorobiphenyl
B142 = Terphenyl-D14
A228 = a,a,a-Trifluorotoluene

* Values outside of method quality control limits
D Sample was diluted, however, some surrogates may be reported if results were observed.

It is ASC's laboratory policy to allow one surrogate per sample fraction (acid, base-neutral or pesticide) to exceed the stated QC limits. This policy is based upon the USEPA SOW for the Contract Laboratory Program (CLP).

APPENDIX D

CHAIN-OF-CUSTODY RECORD(S)

ЭНМ Corporation

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/89

No. 107687

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	PROJECT LOCATION
Ft Devens	Ayer, MA

PROJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO.
16208	Mike Quinlan	(508) 772-2610

CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
Don Best - USACE	Bill Snow

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) TPH (4oz Amber Glass)	BNA (TOTAL) (4 oz Amber Glass)	BTEX (2 x 40ml Amb. Glass Vials)	REMARKS
1	SB1435 BG	10.05.94	1140		X	Bottom grab - Brown sandy soil	2x40ml			X	
2	BC		1145	X		Bottom composite - Brown sandy soil	2x4oz	X	X		
3	WG		1150		X	West side wall grab - Brown sandy soil	2x40ml			X	
4	WC		1155	X		West ~~dam~~ wall composite - Brown sandy soil MB2 10/6/94	2x4oz	X	X		
5	SG		1200		X	South ~~wall composite~~ grab - Brown sandy soil	2x40ml			X	
6	SC		1205	X		South wall composite - Brown sandy soil	2x4oz	X	X		
7	EG		1210		X	East wall grab - Brown sandy soil	2x40ml			X	
8	EC		1215	X		East wall composite - Brown sandy soil	2x4oz	X	X		
9	DUPG		1150		X	Duplicate grab sample - Brown sandy soil	2x40ml			X	
10	DUPC		1155	X		Duplicate composite sample - Brown sandy soil	2x4oz	X	X		

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-10	[signature]	FedEx Airbill 2989734368	10.5.94	1530
2	1-10	FedEx	[signature]	10-7-94	1010
3					
4					

REMARKS
- 4 °C
- Temp Blank included
- 3 day TAT

Temp 4°C

SAMPLER'S SIGNATURE: Michael D. Quinlan

LAB COPY

Analytical Services Corp.

ANALYTICAL REPORT

Client: OHM Remediation Services Corporation
Eastern Region (Hopkinton, MA)

Attn: William Snow
Ron Kenyon
Mike Quinlan

Project: 16208C - USACE; Fort Devens, MA

Sample Type(s): Solid

Analysis Performed: Conventional and Organics

Date Sample Received: October 27, 1994

Date Order Received: October 27, 1994

Joblink(s): 616931

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. Analytical Services Corporation assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: _____ *Date:* November 7, 1994

Thomas E. Gran, Ph.D., Vice President

16406 U.S. Route 224 East ■ P.O. Box 1404 ■ Findlay, Ohio 45839-1404 ■ 419-423-3526

PROJECT NARRATIVE

The following items relate to the samples and analytical data contained in this report.

- All sample results are reported on a "dry weight" basis.
- Note any and all comments at the bottom of the tables in Appendix B and/or Appendix C.
- **ASC** will retain samples for a maximum of thirty (30) days after completion of the analysis, samples will be held for a longer period of time, if appropriate arrangements are made in advance. A nominal disposal charge of $5.00/ sample will be imposed for unreturned samples.

APPENDIX A

DATA SUMMARY REPORT

NOTE: The Tentatively Identified Volatile (GC/MS) Screen result(s), if applicable, is included in Appendix B.

DATA SUMMARY REPORT

DATE: 11/02/94

Company: OHM REMEDIATION SERVICES CORPORATION

	Sample Point ID:	**SB1435NC**	**SB1435NG**
	ASC Sample Number:	JN3817	JN3818
	Sample Date:	941026	941026
	Facility Code:	016208C	016208C
Parameters	Units		
Conventional Data (CV10)			
Solids, Total	%	94.8	92.0

Sample Point ID:	**SB1435NG**	
ASC Sample Number:	JN3818	
Sample Date:	941026	
Facility Code:	016208C	
Parameters	Units	
BTXE Volatile Analysis, GC, (GV33)		
Benzene	mg/kg	<.001
Ethylbenzene	mg/kg	<.001
Toluene	mg/kg	<.001
Xylenes	mg/kg	<.001

Sample Point ID:	**SB1435NC**	
ASC Sample Number:	JN3817	
Sample Date:	941026	
Facility Code:	016208C	
Parameters	Units	
Total Petroleum Hydrocarbon Analysis, IR (IR00)		
Petroleum Hydrocarbons (IR)	mg/kg	<6.91
Total Base/Neutral/Acid Analysis, MS, (MS02)		
Acenaphthene	mg/kg	<.342
Acenaphthylene	mg/kg	<.342
Anthracene	mg/kg	<.342
Benzidine	mg/kg	<.342
Benzo(a)anthracene	mg/kg	<.342
Benzo(b)fluoranthene	mg/kg	<.342

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID: **SB1435NC**
ASC Sample Number: JN3817
Sample Date: 941026
Facility Code: 016208C

Parameters	Units	
Total Base/Neutral/Acid Analysis, MS, (MS02)		
Benzo(k)fluoranthene	mg/kg	<.342
Benzo(ghi)perylene	mg/kg	<.342
Benzo(a)pyrene	mg/kg	<.342
bis(2-Chloroethyl) ether	mg/kg	<.342
bis(2-Chloroethoxy)methane	mg/kg	<.342
bis(2-Chloroisopropyl)ether	mg/kg	<.342
bis(2-Ethylhexyl)phthalate	mg/kg	<.342
4-Bromophenyl phenyl ether	mg/kg	<.342
Butyl benzyl phthalate	mg/kg	<.342
Carbazole	mg/kg	<.342
4-Chloroaniline	mg/kg	<.342
p-Chloro-m-cresol	mg/kg	<.342
2-Chloronaphthalene	mg/kg	<.342
2-Chlorophenol	mg/kg	<.342
4-Chlorophenyl phenyl ether	mg/kg	<.342
Chrysene	mg/kg	<.342
Dibenzo(a,h)anthracene	mg/kg	<.342
Dibenzofuran	mg/kg	<.342
Di-n-butyl phthalate	mg/kg	<.342
1,2-Dichlorobenzene	mg/kg	<.342
1,3-Dichlorobenzene	mg/kg	<.342
1,4-Dichlorobenzene	mg/kg	<.342
3,3'-Dichlorobenzidine	mg/kg	<.342
2,4-Dichlorophenol	mg/kg	<.342
Diethyl phthalate	mg/kg	<.342
Dimethyl phthalate	mg/kg	<.342
2,4-Dimethylphenol	mg/kg	<.342
4,6-Dinitro-o-cresol	mg/kg	<.856
2,4-Dinitrophenol	mg/kg	<1.71
2,4-Dinitrotoluene	mg/kg	<.342
2,6-Dinitrotoluene	mg/kg	<.342
Di-n-octyl phthalate	mg/kg	<.342
Fluoranthene	mg/kg	<.342
Fluorene	mg/kg	<.342
Hexachlorobenzene	mg/kg	<.342

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID: **SB1435NC**
ASC Sample Number: JN3817
Sample Date: 941026
Facility Code: 016208C

Parameters	Units	
Total Base/Neutral/Acid Analysis, MS, (MS02)		
Hexachlorobutadiene	mg/kg	<.342
Hexachlorocyclopentadiene	mg/kg	<.342
Hexachloroethane	mg/kg	<.342
Indeno(1,2,3-cd)pyrene	mg/kg	<.342
Isophorone	mg/kg	<.342
2-Methylnaphthalene	mg/kg	<.342
2-Methylphenol	mg/kg	<.342
4-Methylphenol	mg/kg	<.342
N-Nitrosodimethylamine	mg/kg	<.342
N-Nitrosodi-n-propylamine	mg/kg	<.342
N-Nitrosodiphenylamine	mg/kg	<.342
Naphthalene	mg/kg	<.342
2-Nitroaniline	mg/kg	<.342
3-Nitroaniline	mg/kg	<.342
4-Nitroaniline	mg/kg	<.342
Nitrobenzene	mg/kg	<.342
2-Nitrophenol	mg/kg	<.342
4-Nitrophenol	mg/kg	<1.71
Pentachlorophenol	mg/kg	<.342
Phenanthrene	mg/kg	<.342
Phenol	mg/kg	<.342
Pyrene	mg/kg	<.342
Pyridine	mg/kg	<.342
1,2,4-Trichlorobenzene	mg/kg	<.342
2,4,5-Trichlorophenol	mg/kg	<.342
2,4,6-Trichlorophenol	mg/kg	<.342

APPENDIX B

QUANTITATIVE RESULTS

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435NC	JN3817

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Solids, Total	%	94.8	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435NG	JN3818

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Solids, Total	%	92.0	.100	-	

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435NG	JN3818

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W3983
Ethylbenzene	ND	.001	ND	Q2W3983
Toluene	ND	.001	ND	Q2W3983
Xylenes	ND	.001	ND	Q2W3983

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435NC	JN3817

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	ND	6.91	ND	Q2T41581

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435NC	JN3817

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.342	ND	Q2C41576
Acenaphthylene	ND	.342	ND	Q2C41576
Anthracene	ND	.342	ND	Q2C41576
Benzidine	ND	.342	ND	Q2C41576
Benzo(a)anthracene	ND	.342	ND	Q2C41576
Benzo(b)fluoranthene	ND	.342	ND	Q2C41576
Benzo(k)fluoranthene	ND	.342	ND	Q2C41576
Benzo(ghi)perylene	ND	.342	ND	Q2C41576
Benzo(a)pyrene	ND	.342	ND	Q2C41576
bis(2-Chloroethyl) ether	ND	.342	ND	Q2C41576
bis(2-Chloroethoxy)methane	ND	.342	ND	Q2C41576
bis(2-Chloroisopropyl)ether	ND	.342	ND	Q2C41576
bis(2-Ethylhexyl)phthalate	ND	.342	ND	Q2C41576
4-Bromophenyl phenyl ether	ND	.342	ND	Q2C41576
Butyl benzyl phthalate	ND	.342	ND	Q2C41576
Carbazole	ND	.342	ND	Q2C41576
4-Chloroaniline	ND	.342	ND	Q2C41576
p-Chloro-m-cresol	ND	.342	ND	Q2C41576
2-Chloronaphthalene	ND	.342	ND	Q2C41576
2-Chlorophenol	ND	.342	ND	Q2C41576
4-Chlorophenyl phenyl ether	ND	.342	ND	Q2C41576
Chrysene	ND	.342	ND	Q2C41576
Dibenzo(a,h)anthracene	ND	.342	ND	Q2C41576
Dibenzofuran	ND	.342	ND	Q2C41576
Di-n-butyl phthalate	ND	.342	ND	Q2C41576
1,2-Dichlorobenzene	ND	.342	ND	Q2C41576
1,3-Dichlorobenzene	ND	.342	ND	Q2C41576
1,4-Dichlorobenzene	ND	.342	ND	Q2C41576
3,3'-Dichlorobenzidine	ND	.342	ND	Q2C41576
2,4-Dichlorophenol	ND	.342	ND	Q2C41576
Diethyl phthalate	ND	.342	ND	Q2C41576
Dimethyl phthalate	ND	.342	ND	Q2C41576
2,4-Dimethylphenol	ND	.342	ND	Q2C41576
4,6-Dinitro-o-cresol	ND	.856	ND	Q2C41576
2,4-Dinitrophenol	ND	1.71	ND	Q2C41576
2,4-Dinitrotoluene	ND	.342	ND	Q2C41576
2,6-Dinitrotoluene	ND	.342	ND	Q2C41576
Di-n-octyl phthalate	ND	.342	ND	Q2C41576
Fluoranthene	ND	.342	ND	Q2C41576
Fluorene	ND	.342	ND	Q2C41576
Hexachlorobenzene	ND	.342	ND	Q2C41576
Hexachlorobutadiene	ND	.342	ND	Q2C41576
Hexachlorocyclopentadiene	ND	.342	ND	Q2C41576
Hexachloroethane	ND	.342	ND	Q2C41576
Indeno(1,2,3-cd)pyrene	ND	.342	ND	Q2C41576
Isophorone	ND	.342	ND	Q2C41576
2-Methylnaphthalene	ND	.342	ND	Q2C41576
2-Methylphenol	ND	.342	ND	Q2C41576
4-Methylphenol	ND	.342	ND	Q2C41576
N-Nitrosodimethylamine	ND	.342	ND	Q2C41576

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	SB1435NC	JN3817

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
N-Nitrosodi-n-propylamine	ND	.342	ND	Q2C41576
N-Nitrosodiphenylamine	ND	.342	ND	Q2C41576
Naphthalene	ND	.342	ND	Q2C41576
2-Nitroaniline	ND	.342	ND	Q2C41576
3-Nitroaniline	ND	.342	ND	Q2C41576
4-Nitroaniline	ND	.342	ND	Q2C41576
Nitrobenzene	ND	.342	ND	Q2C41576
2-Nitrophenol	ND	.342	ND	Q2C41576
4-Nitrophenol	ND	1.71	ND	Q2C41576
Pentachlorophenol	ND	.342	ND	Q2C41576
Phenanthrene	ND	.342	ND	Q2C41576
Phenol	ND	.342	ND	Q2C41576
Pyrene	ND	.342	ND	Q2C41576
Pyridine	ND	.342	ND	Q2C41576
1,2,4-Trichlorobenzene	ND	.342	ND	Q2C41576
2,4,5-Trichlorophenol	ND	.342	ND	Q2C41576
2,4,6-Trichlorophenol	ND	.342	ND	Q2C41576

3-Methyl- and 4-Methylphenol coelute and are reported as the total

APPENDIX C

QUALITY ASSURANCE DATA

SUMMARY OF ANALYTICAL METHODOLOGY

ASC Joblink # 616931

REFERENCE		TITLE
160.3	CAWW	Residue, Total, Gravimetric, Dried at 103-105 C
418.1	MCAWW	Petroleum Hydrocarbons, Total Recoverable
8020	SW-846	Aromatic Volatile Organics by GC
8270	SW-846	GC/MS for Semivolatile Organics: Capillary Column Technique

METHODOLOGY REFERENCES

ASTM	*American Society for Testing and Materials*, 1985 edition.
CAWW	*Methods for Chemical Analysis of Water and Wastes*, April 1979 and Updated #1 March 1983.
CLP	*USEPA Contract Laboratory Program*, Document #OLMO1.0, updates December 1990 #OLMO1.1 and February 1991 #OLMO1.1.1.
EPA-500	*USEPA Methods for the Determination of Organic Compounds in Drinking Water,* EPA-600/4-88/039 December 1988.
EPA-600	*USEPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057 July 1982.
NIOSH	*National Institute for Occupational Safety and Health*, 3rd edition, 1984.
SMEWW	*Standard Methods for the Examination of Water and Wastewater*, 17th edition, 1989.
STOA	*Spot Tests In Organic Analysis*, 7th edition, 1966.
SW-846	*Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, 3rd edition, September 1986 and Update #1 July 1992.
(1)	This method was modified to incorporate the use of Boron Trifluoride (BF3) as the derivatizing reagent according to Method 6640 in *SMEWW*, 17th edition, 1989.
Title 22	*Waste Extraction Test*, Title 22, Section 66261.126 Appendix 2 of the California Administrative Code, May 1991.

ASC Certifications

State	Agency	Certification #
Alabama	ADEM	40830
California	CADOH	1178
Colorado	CODOH	OH113
Delaware	DEHSS	OH113
Kansas	KSDHE	E-202 & E-1173
Louisiana	LADOHH	92-10
Maryland	MDDHMH	210
Massachusetts	MADEP	M-OH113
New Jersey	NJDEPE	74603
New York	NYDOH	10712
North Carolina	NCDEM	392
Ohio	OHEPA	OH113
Oklahoma	OKDEQ	9216
Pennsylvania	PADER	68-450
South Carolina	SCDEHNR	92002
Tennessee	TNDOH/TNDEC	2978
Virginia	VADGS	00011
Washington	WADOE	C154
Wisconsin	WIDNR	999037160

Validated by:

- o US Army Corps of Engineers ..... Chemical Analysis in Various Matrices

Approvals:

- o Chemical Waste Management ..... Waste Characterization Analysis
- o Envirosafe ..... Waste Characterization Analysis
- o USDA ..... Permit for Importing Soils
- o Florida DEP ..... Quality Assurance Plan #930034G
- o Naval Facilities Engineering Service Center ..... Chemical Analysis in Various Matrices

REPORT KEY

mg/kg	=	milligram per kilogram (ppm)
Mg/m^3	=	milligram per cubic meter
ug/kg	=	microgram per kilogram (ppb)
mg/L	=	milligram per liter (ppm)
ug/L	=	microgram per liter (ppb)
mg/W	=	milligram per wipe
ug/W	=	microgram per wipe
mg/SMP	=	milligram per sample
ug/SMP	=	microgram per sample (Tedlar Bag)
ug/smp	=	microgram per sample
um/cm	=	microMho per centimeter
pCi/l	=	picocurie per liter
gm/cc	=	grams per cubic centimeter
ppm	=	parts per million
ppb	=	parts per billion
ND	=	Not detected at or above stated detection limit
<	=	less than
>	=	greater than
%	=	percent
BTU/lb	=	British Thermal Units per pound
Deg. C	=	Degrees Celsius
n/a	=	not applicable
Unk	=	unknown
std	=	result is relative to standard pH units
CV	=	Conventionals
IR	=	Infrared Spectrophotometric
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
GRO	=	Gasoline Range Organics
DRO	=	Diesel Range Organics
PCB	=	Polychlorinated Biphenyls (PCBs)
EP TOX	=	Extraction Procedure Toxicity
TCLP	=	Toxicity Characteristic Leaching Procedure
RCRA	=	Resource Conservation and Recovery Act
SOW	=	Statement of Work

Quality Assurance Data

BTXE Volatile Analysis, GC, (GV33)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Benzene	ND	97	ND	90	4	Q2W3983
Ethylbenzene	ND	96	ND	91	6	Q2W3983
Toluene	ND	98	ND	91	4	Q2W3983
Xylenes	ND	97	ND	90	6	Q2W3983

Quality Assurance Data

Total Petroleum Hydrocarbon Analysis, IR (IR00)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Petroleum Hydrocarbons (IR)	ND	95	ND	83	2	Q2T41581

Quality Assurance Data

Total Base/Neutral/Acid Analysis, MS, (MS02)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Acenaphthene	ND	70	ND	82	10	Q2C41576
Acenaphthylene	ND	72	ND	86	10	Q2C41576
Anthracene	ND	82	ND	95	12	Q2C41576
Benzo(a)anthracene	ND	74	ND	87	10	Q2C41576
Benzo(b)fluoranthene	ND	71	ND	89	14	Q2C41576
Benzo(k)fluoranthene	ND	89	ND	90	14	Q2C41576
Benzo(ghi)perylene	ND	75	ND	80	9	Q2C41576
Benzo(a)pyrene	ND	73	ND	84	4	Q2C41576
bis(2-Chloroethyl) ether	ND	86	ND	100	12	Q2C41576
bis(2-Chloroethoxy)methane	ND	76	ND	86	9	Q2C41576
bis(2-Chloroisopropyl)ether	ND	68	ND	76	8	Q2C41576
bis(2-Ethylhexyl)phthalate	ND	76	ND	79	9	Q2C41576
4-Bromophenyl phenyl ether	ND	83	ND	97	12	Q2C41576
Butyl benzyl phthalate	ND	78	ND	85	9	Q2C41576
Carbazole	ND	78	ND	91	10	Q2C41576
4-Chloroaniline	ND	22	ND	25	16	Q2C41576
p-Chloro-m-cresol	ND	68	ND	82	9	Q2C41576
2-Chloronaphthalene	ND	74	ND	83	6	Q2C41576
2-Chlorophenol	ND	69	ND	76	7	Q2C41576
4-Chlorophenyl phenyl ether	ND	80	ND	88	4	Q2C41576
Chrysene	ND	76	ND	88	12	Q2C41576
Dibenzo(a,h)anthracene	ND	73	ND	79	7	Q2C41576
Dibenzofuran	ND	75	ND	87	9	Q2C41576
Di-n-butyl phthalate	ND	80	ND	94	15	Q2C41576
1,2-Dichlorobenzene	ND	75	ND	82	10	Q2C41576
1,3-Dichlorobenzene	ND	70	ND	81	9	Q2C41576
1,4-Dichlorobenzene	ND	70	ND	80	12	Q2C41576
3,3'-Dichlorobenzidine	ND	24	ND	34	12	Q2C41576
2,4-Dichlorophenol	ND	73	ND	85	12	Q2C41576
Diethyl phthalate	ND	76	ND	86	5	Q2C41576
Dimethyl phthalate	ND	77	ND	92	13	Q2C41576
2,4-Dimethylphenol	ND	43	ND	50	4	Q2C41576
4,6-Dinitro-o-cresol	ND	78	ND	94	10	Q2C41576
2,4-Dinitrophenol	ND	74	ND	94	8	Q2C41576
2,4-Dinitrotoluene	ND	77	ND	85	6	Q2C41576
2,6-Dinitrotoluene	ND	78	ND	86	5	Q2C41576
Di-n-octyl phthalate	ND	77	ND	87	2	Q2C41576
Fluoranthene	ND	84	ND	92	10	Q2C41576
Fluorene	ND	73	ND	84	5	Q2C41576
Hexachlorobenzene	ND	80	ND	98	13	Q2C41576
Hexachlorobutadiene	ND	70	ND	84	13	Q2C41576
Hexachloroethane	ND	73	ND	81	10	Q2C41576
Indeno(1,2,3-cd)pyrene	ND	74	ND	79	8	Q2C41576
Isophorone	ND	73	ND	87	11	Q2C41576
2-Methylnaphthalene	ND	71	ND	84	12	Q2C41576
2-Methylphenol	ND	64	ND	73	9	Q2C41576
4-Methylphenol	ND	71	ND	74	6	Q2C41576
N-Nitrosodimethylamine	ND	63	ND	67	1	Q2C41576
N-Nitrosodi-n-propylamine	ND	78	ND	88	10	Q2C41576
N-Nitrosodiphenylamine	ND	78	ND	93	11	Q2C41576

Quality Assurance Data

Total Base/Neutral/Acid Analysis, MS, (MS02)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Naphthalene	ND	73	ND	85	15	Q2C41576
3-Nitroaniline	ND	44	ND	55	12	Q2C41576
4-Nitroaniline	ND	65	ND	80	6	Q2C41576
Nitrobenzene	ND	68	ND	80	13	Q2C41576
2-Nitrophenol	ND	66	ND	78	13	Q2C41576
4-Nitrophenol	ND	80	ND	93	12	Q2C41576
Pentachlorophenol	ND	93	ND	99	8	Q2C41576
Phenanthrene	ND	77	ND	94	13	Q2C41576
Phenol	ND	67	ND	76	10	Q2C41576
Pyrene	ND	76	ND	87	11	Q2C41576
Pyridine	ND	49	ND	49	4	Q2C41576
1,2,4-Trichlorobenzene	ND	75	ND	86	8	Q2C41576
2,4,5-Trichlorophenol	ND	75	ND	92	8	Q2C41576
2,4,6-Trichlorophenol	ND	70	ND	83	6	Q2C41576

3-Methyl- and 4-Methylphenol coelute and are reported as the total

QUALITY ASSURANCE DATA
SURROGATE SUMMARY REPORT

SURROGATE ID	A159	B732	A121	A884	A158	B142	# OUT
QC BATCH: Q2C41576 **Solid (Semi-Volatile organics by MS)**							
SAMPLE ID							
BLANK	74	79	79	81	84	79	0
BLANK SPIKE	67	68	76	68	65	70	0
SB1435NC	59	65	75	63	73	68	0
SB1435NC MD	73	71	90	74	74	70	0
SB1435NC MS	76	74	90	82	78	77	0
QC LIMITS	(25-121)	(24-113)	(19-122)	(23-120)	(30-115)	(18-137)	

SURROGATE ID	A228	# OUT
QC BATCH: Q2W3983 **Solid (Volatile organics by GC)**		
SAMPLE ID		
BLANK	110	0
BLANK SPIKE	106	0
SB1435NG	106	0
SB1435NG MD	101	0
SB1435NG MS	98	0
QC LIMITS	(30-130)	

SURROGATE ID

A159 = 2-Fluorophenol
B732 = Phenol-D6
A121 = 2,4,6-Tribromophenol
A884 = Nitrobenzene-D5
A158 = 2-Fluorobiphenyl
B142 = Terphenyl-D14
A228 = a,a,a-Trifluorotoluene

* Values outside of method quality control limits
D Sample was diluted, however, some surrogates may be reported if results were observed.

It is ASC's laboratory policy to allow one surrogate per sample fraction (acid, base-neutral or pesticide) to exceed the stated QC limits. This policy is based upon the USEPA SOW for the Contract Laboratory Program (CLP).

APPENDIX D

CHAIN-OF-CUSTODY RECORD(S)

OHM Corporation

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/89

No. 107721

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	PROJECT LOCATION
FORT DEVENS	AYER MA

PROJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO.
16208	MIKE QUINLAN	(508) - 772 - 2019

CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
TOM BEST / TIM COLEMAN	BILL SNOW

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) BTEX	TRPH	BNA (TOTAL)	REMARKS
1	SB1435 NC	10-26 94	1575	✓		Brown gold sand "moist"	2x40z AMBER		✓	✓	
2	SB1435 NG	10-26 94	1500		✓	Brown gold sand "Moist"	2x40ml VOA	✓			
3											
4											
5											
6											
7											
8											
9											
10											

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-2	Will Dal	1944570283 Federal Express Airbill #	10-26 94	1700
2	1-2	FedX 1944570283	M. Radabaugh	10/27/94	0947
3					
4					

REMARKS

* Preserved at 4°C
* TEMP BLANK INCLUDED
* 3 DAY TAT

1°C

SAMPLER'S SIGNATURE

Will Dal

LAB COPY

Appendix C
Chemical Quality Assurance Report (CQAR)

RECORD OF TRANSMITTAL

CENED-ED-GL 24 February 1995

FOR Project Engineer, Mr. Mark Applebee
U.S. Army Corps of Engineer,
New England Division
424 Trapelo Rd.
Waltham, MA 02254-9149

SUBJECT: Fort Devens - Area 63BC, Chemical Quality Assurance Report (CQAR)

1. References:

a. Project No. E0251

b. Contractor Data Report, Dated January 5, 1995.

c. Memorandum, CEMRD-ED-GC, 16 Aug 1989, Subject: Minimum Chemistry Data Reporting Requirements for DERP and Superfund HTW Projects.

2. Four QA samples were analyzed, resulting in a total of 143 target analyte determinations. Results from analysis of QA samples were compared with results from analysis of the corresponding primary samples (ref 1b). Results of the comparison are as follows:

a. The contractor's laboratory was Analytical Services Corporation, Findlay, OH, (ASC).

b. Results from the primary and QA samples agreed overall in 142 (99%) of the comparisons.

c. Results from the primary and QA samples agreed quantitatively in 12 (92%) of the comparisons.

d. There were 0 (0%) major discrepancies between results from the primary and QA laboratory samples.

e. There was 1 (1%) minor discrepancy between results from the primary and QA samples.

3. QA analyses were mostly performed in-house at the Environmental Laboratory. QA analyses were also performed at E3I, Sommerville, MA.

4. The CENED-ED-GL POC is Gary S. Rogowski, 508-928-4238.

Encl

CF (w/encl):
CEMP-RT Larry Becker
CEMRD-ED-EC Anand Mudambi

QA Findings

(Ft. Devens AREE63 BC)

1. QA sample shipping and chain-of-custody deficiencies.

Two sample shipments of QA samples were received on October 6 and October 21, 1994. Proper sample handling protocols were mostly followed with the following exception, 10/6/94 the project was not identifiable from the custody papers and the samples were not in separate plastic bags. The chain-of-custody documents and cooler receipt form are appended to this report for reference. All shipment information was faxed to Mr. Mark Applebee within 24 hours of receipt.

2. Data comparison for BTEX.

There were four determinations. In 1 of these determinations BTEX was detected by the QA lab. There was an overall agreement in 3 (75%) and 0 (0%) quantitative agreement of the cases. There was 1 (25%) minor discrepancy between the QA and contractor's laboratory. No major discrepancies were noted.

3. Data comparison for TPH.

There were 4 determinations. In 2 of these determinations TPH was detected by both the QA lab and contractor's lab. There was 100% agreement. There were no major or minor discrepancies noted.

4. Data comparison for BNA.

There were 114 determinations. In 9 of these determinations BNA's were detected by the QA lab or contractor's laboratory. There was 100% agreement. No major or minor discrepancies were noted.

5. Data comparison for PCB.

There was 1 determination. In this determination PCB's were detected by the QA lab. There was 100% agreement. There were no major or minor discrepancies noted.

6. Data comparison for Pesticides.

There were 20 determinations. In 0 of these determinations metals were detected by the QA lab or contractor's laboratory. There was 100% agreement. No major or minor discrepancies were noted.

7. Comments.

Contractor's data package was not in full compliance with Minimum Chemistry Data Reporting Requirements as sample receiving information, method numbers were not provided and surrogate recoveries for the organics were not provided.

Quality Assurance Split Sample
Data Comparison Summary

Project: Ft. Devens - AR63BC

Test Parameter	Overall Agreement (1)		Quantitative Agreement (2)	
	Number	Percent	Number	Percent
BTEX	3/4	75	0/1	0
TPH	4/4	100	2/2	100
BNA	114/114	100	9/9	100
PCB	1/1	100	1/1	100
Pesticides	20/20	100	0/0	N/A
Total	142/143	99	12/13	92

NOTES:

(1) Represents the number and percentage agreement of all determinations including analytes not detected by either laboratory.

(2) Represents the number and percentage agreement of only those determinations where an analyte was detected by at least one laboratory.

APPENDIX B
KEY TO COMMENTS ON DATA COMPARISON TABLES

0 - Data agrees if any one of the following apply:

- both values are less than respective detection limit (N<MDL)
- N_1<MDL_1 and N_2>MDL_2 but <MDL_1
- both values are above respective detection limit (N>MDL) and difference between two values satisfies conditions below

Metals	<2x difference for waters, TCLP extracts <3x difference for airs <10x difference for solids and oils
Semivolatiles Volatiles TPH, BTEX	<5x difference for all matrices
Pesticides Herbicides PCB's	<5x difference for liquids <10x difference for solids
Alkalinity Hardness, Ammonia (water quality, etc.)	<2x difference for all matrices

1 - Minor contamination by laboratory contaminant
2 - Not tested by both laboratories
3 - Minor data discrepancy, disagreement not serious, if any one of the following apply:

- N_1<MDL_1 and N_2>MDL_2 and the difference between values N_2 and MDL_1 does not exceed the upper limit (described below) defining a minor data discrepancy
- both values are above respective detection limit (N>MDL) and conditions described below apply to the difference between the two values

Metals	2x<difference<5x for waters,TCLP extracts 10x<difference<20x for solids, oils 3x<difference<5x for airs
Semivolatiles, VOA, TPH, BTEX	5x<difference<10x for all matrices
Pesticide/PCB Herbicides	5x<difference<10x for liquids 10x<difference<20x for solids
Alkalinity Hardness,Ammonia (water quality, etc.)	2x<difference<5x for all matrices

4 - Major data discrepancy, disagreement serious, if any one of the following apply:

- $N_1 < MDL_1$ and $N_2 > MDL_2$ and the difference between values N_2 and MDL_1 exceeds the limit (described below) defining a major data discrepancy
- both values are above respective detection limit (N>MDL) and conditions described below apply to the difference between the two values

Metals	>5x difference for waters, TCLP extracts, airs >20x difference for solids, oils
Semivolatiles, VOA, TPH, BTEX	>10x difference for all matrices
Pesticide/PCB Herbicides	>10x difference for liquids >20x difference for solids
Alkalinity Hardness,Ammonia (water quality, etc.)	>5x difference for all matrices

MDL = Method Detection Limit
N = Analytical result

Key to data qualifiers:

B - detected in method blank
J - estimated value, above MDL but below practical quantitation limit
NR - Not reported

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: FORT DEVENS

QA SAMPLE NO.:	27754	CONTRACTOR'S SAMPLE NO.:	JN3123
QA FIELD ID:	SB1435TRPG	CONTRACTOR'S FIELD ID:	SB1435WG
QA ANALYSIS DATE:	10/19/94	CONTRACTOR'S ANALYSIS DATE:	10/13/94

MATERIAL DESCRIPTION: SOLID
DATE SAMPLED: 10/05/94
UNITS: ng/g

PARAMETER	QA LAB MDL	RESULTS QA LAB	CONTRACTOR MDL	RESULTS CONTRACTOR	COMPARISON CODE
Benzene	< 0.8		< 1		0
Toluene	< 0.7		< 1		0
Ethylbenzene	< 0.7		< 1		0
o/m/p-Xylenes	< 0.9	J 4.7	< 1		3

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
1,2-Dichloroethane D4 (76-114)	114	NR
Toluene D8 (88-110)	91	NR
4-Bromofluorobenzene (86-115)	83	NR

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA AND CONTRACTOR RESULTS

PROJECT: FORT DEVENS

ANALYSIS PERFORMED: TOTAL PETROLEUM HYDRCARBONS
UNITS: mg/kg

SAMPLE DATE	SAMPLE MATRIX	CONTRACTOR SAMPLE NO.	CONTRACTOR FIELD ID	ENV. LAB NO.	QA FIELD ID	CONTRACTOR RESULTS	QA LAB RESULTS	C
10/13/94	SOIL	JN3330	UST5W1A	C-27853	USTTRP01	32	< 26	3
10/13/94	SOIL	JN3334	UST12W3A	C-27854	USTTRP02	7.7	< 26	0
10/19/94	SOIL	JN3485	SBAR61MBC	C-27957	SBARG1MTRP	< 6.8	< 27	0
10/20/94	SOIL	JN3553	EXSA56AC	C-27958	EXSA56ACS	100	110	0
10/20/94	SOIL	JN3555	EX1435C	C-27960	EX1435LS	1200	1000	0
10/25/94	SOIL	JN3801	UST3B4AG	C-28035	UST3B4AGS	21	< 27	0
10/27/94	SOIL	JN3967	EXSA57P02A	C-28092	EXSA57TRPA	793	< 28	4
10/27/94	SOIL	JN3966	EXSA57P01A	C-28093	EXSA57TRPB	1600	1400	0

COMPARISON OF QA AND CONTRACTOR RESULTS

PROJECT: FORT DEVENS

ANALYSIS PERFORMED: TOTAL PETROLEUM HYDRCARBONS
UNITS: mg/kg

SAMPLE DATE	SAMPLE MATRIX	CONTRACTOR SAMPLE NO.	CONTRACTOR FIELD ID	ENV. LAB NO.	QA FIELD ID	CONTRACTOR RESULTS	QA LAB RESULTS	C
7/28/94	SOIL	JN0813	EXAR61K001	C-26672	EXAR61KTRP	2390	2800	0
8/02/94	SOIL	JN0909	SBSA49ASC	C-26771	SBSA49ATRP2	< 13	< 32	0
8/03/94	SOIL	JN0908	SBAR69ANC	C-26806	SBAR69ATRP	128	41	0
8/17/94	SOIL	JN1455	SBAREE69SC	C-26979	SBAREE69TRP	410	450	0
10/03/94	SOIL			C-27658	SBSA56TRP2		< 28	
9/22/94	SOIL	JN2580	SBSA56SEC	C-27708	SBSA56TRPC	997	120	3
10/05/94	SOIL	JN3118	SB1435WC	C-27755	S21435TRPC	< 7.4	< 28	0

PROJECT: FORT DEVENS

QA SAMPLE NO.: 27755 CONTRACTOR'S SAMPLE NO.: JN3118
QA FIELD ID: SB1435TRPC CONTRACTOR'S FIELD ID: SB1435WC
QA ANALYSIS DATE: 11/09/94 CONTRACTOR'S ANALYSIS DATE: 10/13/94

MATERIAL DESCRIPTION: SOIL
DATE SAMPLED: 10/05/94
UNITS: ug/g

PARAMETER	QA LAB MDL	RESULTS QA LAB	CONTRACTOR MDL	RESULTS CONTRACTOR	COMPARISON CODE
Aniline	< 0.1		NR	NA	2
Phenol	< 0.1		< 0.373		0
Bis(2-chloroethyl)ether	< 0.0		< 0.373		0
2-Chlorophenol	< 0.0		< 0.373		0
1,3-Dichlorobenzene	< 0.0		< 0.373		0
1,4-Dichlorobenzene	< 0.0		< 0.373		0
1,2-Dichlorobenzene	< 0.0		< 0.373		0
Benzyl alcohol	< 0.5		NR	NA	2
2-Methylphenol	< 0.1		< 0.373		0
Bis(2-chloroisopropyl)ether	< 0.0		< 0.373		0
4-Methylphenol	< 0.1		< 0.373		0
N-Nitroso-di-n-propylamine	< 0.0		< 0.373		0
Hexachloroethane	< 0.0		< 0.373		0
Nitrobenzene	< 0.0		< 0.373		0
Isophorone	< 0.0		< 0.373		0
2-Nitrophenol	< 0.0		< 0.373		0
2,4-Dimethylphenol	< 0.2		< 0.373		0
Benzoic acid	< 7		NR	NA	2
Bis(2-chloroethoxy)methane	< 0.0		< 0.373		0
2,4-Dichlorophenol	< 0.2		< 0.373		0
1,2,4-Trichlorobenzene	< 0.0		< 0.373		0
Napthalene	< 0.0		< 0.373		0
4-Chloroaniline	< 0.2		NR	NA	2
Hexachlorobutadiene	< 0.0		< 0.373		0
4-Chloro-3-methylphenol	< 0.1		< 0.373		0
2-Methylnapthalene	< 0.0		NR	NA	2
Hexachlorocyclopentadiene	< 0.1		< 0.373		0
2,4,6-Trichlorophenol	< 0.2		< 0.373		0
2,4,5-Trichlorophenol	< 0.1		< 0.373		0
2-Chloronaphthalene	< 0.0		< 0.373		0
2-Nitroaniline	< 0.1		NR	NA	2
Dimethylphthalate	< 0.0		< 0.373		0
Acenaphthylene	< 0.0		< 0.373		0
3-Nitroaniline	< 0.9		NR	NA	2
Acenaphthene	< 0.0		< 0.373		0
2,4-Dinitrophenol	< 6		< 1.87		0
4-Nitrophenol	< 3		< 1.87		0
Dibenzofuran	< 0.0		NR	NA	2
2,6-Dinitrotoluene	< 0.0		< 0.373		0

QA SAMPLE NO.: 27755 CONTRACTOR'S SAMPLE NO.: JN3118

PARAMETER		QA LAB MDL	RESULTS QA LAB	CONTRACTOR MDL	RESULTS CONTRACTOR	COMPARISON CODE
2,4-Dinitrotoluene	<	0.1		< 0.373		0
Diethylphthalate	<	0.0		< 0.373		0
4-Chlorophenyl-phenylether	<	0.0	B 0.076	< 0.373		1
Fluorene	<	0.0		< 0.373		0
4-Nitroaniline	<	0.2		NR	NA	2
4,6-Dinitro-2-methylphenol	<	3		< 0.933		0
N-Nitrosodiphenylamine	<	0.0		< 0.373		0
4-Bromophenyl-phenylether	<	0.0		< 0.373		0
Hexachlorobenzene	<	0.0		< 0.373		0
Pentachlorophenol	<	3		< 0.373		0
Phenanthrene	<	0.0		< 0.373		0
Anthracene	<	0.0		< 0.373		0
Di-n-butylphthalate	<	0.0	J 0.11	< 0.373		0
Fluoranthene	<	0.0		< 0.373		0
Pyrene	<	0.0		< 0.373		0
Butylbenzylphthalate	<	0.0	J 0.11	< 0.373		0
3,3-Dichlorobenzidine	<	0.1		< 0.373		0
Benzo(a)anthracene	<	0.0		< 0.373		0
Bis(2ethylhexyl)phthalate	<	0.1	1.3	< 0.373	0.951	0
Chrysene	<	0.0		< 0.373		0
Di-n-octyl phthalate	<	0.2		< 0.373		0
Benzo(b)fluoranthene	<	0.0		< 0.373		0
Benzo(k)fluoranthene	<	0.0		< 0.373		0
Benzo(a)pyrene	<	0.0		< 0.373		0
Indeno(1,2,3-cd)pyrene	<	0.0		< 0.373		0
Dibenz(a,h)anthracene	<	0.0		< 0.373		0
Benzo(g,h,i)perylene	<	0.0		< 0.373		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
2-Fluorophenol	99	NR
Phenol-d6	111	NR
Nitrobenzene-d5	99	NR
2-Fluorobiphenyl	109	NR
2,4,6-Tribromophenol	102	NR
Terphenyl-d14	97	NR

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

PROJECT: FORT DEVENS

QA SAMPLE NO.: 27960
QA FIELD ID: EX1435LS
QA ANALYSIS DATE: 11/09/94

CONTRACTOR'S SAMPLE NO.: JN3555
CONTRACTOR'S FIELD ID: EX1435C
CONTRACTOR'S ANALYSIS DATE: 10/26/94

MATERIAL DESCRIPTION: SOIL
DATE SAMPLED: 10/20/94
UNITS: ug/g

PARAMETER	QA LAB MDL	RESULTS QA LAB	CONTRACTOR MDL	RESULTS CONTRACTOR	COMPARISON CODE
Aniline	< 0.092		NR	NA	2
Phenol	< 0.073		< 0.348		0
Bis(2-chloroethyl)ether	< 0.027		< 0.348		0
2-Chlorophenol	< 0.019		< 0.348		0
1,3-Dichlorobenzene	< 0.015		< 0.348		0
1,4-Dichlorobenzene	< 0.009		< 0.348		0
1,2-Dichlorobenzene	< 0.016		< 0.348		0
Benzyl alcohol	< 0.538		NR	NA	2
2-Methylphenol	< 0.148		< 0.348		0
Bis(2-chloroisopropyl)ether	< 0.044		< 0.348		0
4-Methylphenol	< 0.102		< 0.348		0
N-Nitroso-di-n-propylamine	< 0.028		< 0.348		0
Hexachloroethane	< 0.016		< 0.348		0
Nitrobenzene	< 0.034		< 0.348		0
Isophorone	< 0.034		< 0.348		0
2-Nitrophenol	< 0.034		< 0.348		0
2,4-Dimethylphenol	< 0.200		< 0.348		0
Benzoic acid	< 7.541		NR	NA	2
Bis(2-chloroethoxy)methane	< 0.025		< 0.348		0
2,4-Dichlorophenol	< 0.234		< 0.348		0
1,2,4-Trichlorobenzene	< 0.011		< 0.348		0
Napthalene	< 0.008		< 0.348		0
4-Chloroaniline	< 0.185		NR	NA	2
Hexachlorobutadiene	< 0.012		< 0.348		0
4-Chloro-3-methylphenol	< 0.160		< 0.348		0
2-Methylnapthalene	< 0.015		NR	NA	2
Hexachlorocyclopentadiene	< 0.102		< 0.348		0
2,4,6-Trichlorophenol	< 0.162		< 0.348		0
2,4,5-Trichlorophenol	< 0.143		< 0.348		0
2-Chloronaphthalene	< 0.019		< 0.348		0
2-Nitroaniline	< 0.125		NR	NA	2
Dimethylphthalate	< 0.018	J 0.027	< 0.348		0
Acenaphthylene	< 0.012		< 0.348		0
3-Nitroaniline	< 0.968		NR	NA	2
Acenaphthene	< 0.014		< 0.348		0
2,4-Dinitrophenol	< 6.880		< 1.74		0
4-Nitrophenol	< 3.730		< 1.74		0
Dibenzofuran	< 0.012		NR	NA	2
2,6-Dinitrotoluene	< 0.040		< 0.348		0

QA SAMPLE NO.: 27960 CONTRACTOR'S SAMPLE NO.: JN3555

PARAMETER	QA LAB MDL	RESULTS QA LAB	CONTRACTOR MDL	RESULTS CONTRACTOR	COMPARISON CODE
2,4-Dinitrotoluene	< 0.082		< 0.348		0
Diethylphthalate	< 0.013	B 0.080	< 0.348		1
4-Chlorophenyl-phenylether	< 0.020		< 0.348		0
Fluorene	< 0.017		< 0.348		0
4-Nitroaniline	< 0.204		NR	NA	2
4,6-Dinitro-2-methylphenol	< 3.298		< 0.871		0
N-Nitrosodiphenylamine	< 0.025		< 0.348		0
4-Bromophenyl-phenylether	< 0.017		< 0.348		0
Hexachlorobenzene	< 0.014		< 0.348		0
Pentachlorophenol	< 3.243		< 0.348		0
Phenanthrene	< 0.015		< 0.348		0
Anthracene	< 0.026		< 0.348		0
Di-n-butylphthalate	< 0.044	J 0.10	< 0.348		0
Fluoranthene	< 0.017		< 0.348		0
Pyrene	< 0.015	0.075	< 0.348		0
Butylbenzylphthalate	< 0.042		< 0.348		0
3,3-Dichlorobenzidine	< 0.055		< 0.348		0
Benzo(a)anthracene	< 0.014		< 0.348		0
Bis(2ethylhexyl)phthalate	< 0.068	1.6	< 0.348	1.39	0
Chrysene	< 0.014		< 0.348		0
Di-n-octyl phthalate	< 0.167		< 0.348		0
Benzo(b)/(k)fluoranthene	< 0.039		< 0.348		0
Benzo(a)pyrene	< 0.043		< 0.348		0
Indeno(1,2,3-cd)pyrene	< 0.014		< 0.348		0
Dibenz(a,h)anthracene	< 0.014		< 0.348		0
Benzo(g,h,i)perylene	< 0.014		< 0.348		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
2-Fluorophenol	90	NR
Phenol-d6	102	NR
Nitrobenzene-d5	96	NR
2-Fluorobiphenyl	106	NR
2,4,6-Tribromophenol	91	NR
Terphenyl-d14	96	NR

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: FORT DEVENS

QA SAMPLE NO.:	27960	CONTRACTOR'S SAMPLE NO.:	JN3555
QA FIELD ID:	EX1435LS	CONTRACTOR'S FIELD ID:	EX1435C
QA ANALYSIS DATE:	11/18/94	CONTRACTOR'S ANALYSIS DATE:	10/26/94

MATERIAL DESCRIPTION: SOIL
DATE SAMPLED: 10/20/94
UNITS: mg/kg

PARAMETER	QA LAB MDL	RESULTS QA LAB	CONTRACTOR MDL	RESULTS CONTRACTOR	COMPARISON CODE
Total PCBs	< NR	0.012	< 0.171		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
TCMX (60-150)	98	NR

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: FORT DEVENS

QA SAMPLE NO.: 27960
QA FIELD ID: EX1435LS
QA ANALYSIS DATE: 12/20/94

CONTRACTOR'S SAMPLE NO.: JN3555
CONTRACTOR'S FIELD ID: EX1435C
CONTRACTOR'S ANALYSIS DATE: 10/26/94

MATERIAL DESCRIPTION: SOIL
DATE SAMPLED: 10/20/94
UNITS: ug/kg

PARAMETER	QA LAB MDL	RESULTS QA LAB	CONTRACTOR MDL	RESULTS CONTRACTOR	COMPARISON CODE
Alpha-BHC	< 0.71		< 17		0
Gamma-BHC	< 0.56		< 17		0
Beta-BHC	< 0.68		< 17		0
Heptachlor	< 0.65		< 17		0
Delta-BHC	< 0.77		< 17		0
Aldrin	< 0.62		< 17		0
Heptachlor epoxide	< 0.77		< 17		0
Endosulfan I	< 0.93		< 17		0
4,4'-DDE	< 1.20		< 17		0
Dieldrin	< 1.00		< 17		0
Endrin	< 2.10		< 17		0
4,4'-DDD	< 0.89		< 17		0
Endosulfan II	< 0.83		< 17		0
4,4'-DDT	< 1.50		< 17		0
Endrin aldehyde	< 0.87		< 17		0
Endosulfan sulfate	< 0.87		< 17		0
Methoxychlor	< 0.77		< 17		0
Endrin ketone	< 1.50		< 17		0
Toxaphene	< 49.0		< 343		0
Chlordane	< 1.20		< 171		0

SURROGATE RECOVERIES (%)

	QA	CONTRACTOR
TCMX (60-150)	89	NR
DCB (60-150)	117	NR

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

AB COPY.

OHM Corporation

CHAIN-OF-CUSTODY RECORD

(E025 1)

Form 0010
Field Technical Services
Rev. 08/89
140089

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Ft Devens
PROJECT LOCATION: Ayer, MA
PROJ. NO.: 16208
PROJECT CONTACT: Mike Quinlan
PROJECT TELEPHONE NO.: (508) 772-2610
CLIENT'S REPRESENTATIVE: Tom Best - USACE
PROJECT MANAGER/SUPERVISOR: Bill Snow

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH 4oz amb gl; BNA (Total) (4oz amb gl); BTEX (2x40ml amb gl)

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	TPH	BNA	BTEX						REMARKS
1 (54)	SB1435TRPG	10-5-94	1150		✓	Brown Sand Triplicate of SB1435WG and SB1435DUPG	2x40ml			✓						
2 (55)	SB1435TRPC	↓	1155	✓		Brown sand, Triplicate of SB1435WC and SB1435DUPC	2x4oz	✓	✓							
3																
4																
5																
6																
7																
8																
9																
10																

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1,2	[signature]	FED Ex Airbill 2989343663	10-5-94	1530
2		FEDEX	[signature]	10-6-94	1200
3					
4					

REMARKS:
- 4°C
- Temp Blank included

SAMPLER'S SIGNATURE: [signature]

REVISED ON 9-6-94

CENED-ED-GL
SAMPLE CONTAINER RECEIPT FORM

PROJECT: Contaminated Soil Fort Devens Project #: EC&ST
Work Order #: 94352

Container received on 10.6.94 and inspected on 10.6.94 by: Cheryl Noonan

1. Temperature 2.0 °C. Temperature taken on 10.6.94 (date)
2. Shipper _____ Shipper # 2989343685
(USM, UPS, DHL, (FEDEX), P/C, AIR EXP, HAND-DELIVERED)
3. Container type ((Cooler), box, envelope, etc.) _____
4. Were custody seals on outside of container? N/A (Yes) No
How many & where: 1 Around Cooler, seal date: 10.5.94, seal name: ? Signature
5. Were custody papers taped to lid inside container? N/A (Yes) No
6. Custody papers properly filled out? (ink, signed, etc.) (Yes) No
7. Was project and project # identifiable from custody papers? No project # Yes (No)
8. Did you sign custody papers in appropriate place? (Yes) No
9. Did you attach shipper's packing form to this form? N/A (Yes) No
10. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, (other))
11. Were all samples sealed in separate plastic bags? N/A Yes (No)
12. Did all samples arrive in good condition? (Yes) No
13. Sample labels complete? (#, date, analysis, preservation, sign.) (Yes) No
14. Were correct sample containers used for tests indicated? N/A (Yes) No
15. Were correct preservatives used? (TM pH___, CN- pH___) (N/A) Yes No
(TOC pH___, NUTRIENT pH___, TOX pH___, TPH pH___, OTHER pH___)
16. Were VOA vials bubble-free (H_2O) or no headspace (soil)? N/A (Yes) No
17. Was sufficient amount of sample sent in each container? (Yes) No
18. Did all sample labels agree with custody papers? (Yes) No
19. Were air volumes noted for air samples? (N/A) Yes No
20. Were initial weights noted for pre-weighed filters? (N/A) Yes No

Discrepancies: _____

OHM Corporation

E0251

CHAIN-OF-CUSTODY RECORD

PAGE 2 OF 2

Field Technic...

No. 107710

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	PROJECT LOCATION
FORT DEVENS	AYER MA

PROJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO.
16208	MIKE QUINLAN / MARGIE BLEAU	508-772-2014

CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
TOM BEST (USACE)	BILL SNOW

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	TRPH	BNA (TOTAL)	VOLATILE'S (TOTAL)	METALS (TOTAL)	Pesticides 8080	PCB's		REMARKS
1	EXSA56ACS	10-20-94	929	✓		GREY, BROWN, Clay Sand Mixture	5x40z Amber	✓	✓		✓	✓	✓		
2	EXSA56AGS	10-20-94	925		✓	Grey, BROWN, Clay Sand Mixture	BD 10-20-94 2x40z VOA			✓					
3	EX1435CS	10-20-94	1100	✓		GOLD SAND W/ODOR	5x40z Amber	✓	✓		✓	✓	✓		
4	EX1435GS	10-20-94	1115		✓	GOLD SAN W/ MIXED GRAINS	2x40z VOA			✓					
5															
6															
7															
8															
9															
10															

(8) RCRA METALS per GSR - CLH 10-24-94

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-4	Will Dl	AIRBILL 19445 20213 FEDERAL EXPRESS	10-20-94	1530
2		FEDEX	BD 10-24-94	10-21-94	1200
3					
4					

REMARKS

* Preserved at 4°C
* TEMPERATURE BLANK INCLUDED

SAMPLER'S SIGNATURE

Will Dl

LAB COPY

REVISED ON 9-6-94

CENED-ED-GL

SAMPLE CONTAINER RECEIPT FORM

PROJECT: CONTAM (INATED) SOIL FT. DEVENS Project #: E025/
Work Order #: 94.352

Container received on 10-21-94 and inspected on 10-21-94 by: [signature]

a. Temperature 4.1 °C. Temperature taken on 10-21-94 (date)

1. Shipper _____ Shipper # 194457021 3
(USM, UPS, DHL, (FEDEX), P/C, AIR EXP, HAND-DELIVERED)

3. Container type (Cooler), box, envelope, etc.) _____

4. Were custody seals on outside of container? N/A (Yes) No
How many & where: (4) AROUND, seal date: 10-20-94, seal name: Signature

5. Were custody papers taped to lid inside container? N/A (Yes) No

6. Custody papers properly filled out? (ink, signed, etc.) (Yes) No

7. Was project and project # identifiable from custody papers? (Yes) No

8. Did you sign custody papers in appropriate place? (Yes) No

9. Did you attach shipper's packing form to this form? N/A (Yes) No

. Packing material (peanuts, vermiculite, ~~bubble wrap~~, paper, cans, ~~other~~)

11. Were all samples sealed in separate plastic bags? N/A (Yes) No

12. Did all samples arrive in good condition? (Yes) No

13. Sample labels complete? (#, date, analysis, preservation, sign.) (Yes) No

14. Were correct sample containers used for tests indicated? N/A (Yes) No

15. Were correct preservatives used? (TM pH___, CN- pH___) (N/A) Yes No
(TOC pH___, NUTRIENT pH___, TOX pH___, TPH pH___, OTHER pH___)

16. Were VOA vials bubble-free (H_2O) or no headspace (soil)? N/A (Yes) No

17. Was sufficient amount of sample sent in each container? (Yes) No

18. Did all sample labels agree with custody papers? (Yes) No

19. Were air volumes noted for air samples? (N/A) Yes No

20. Were initial weights noted for pre-weighed filters? (N/A) Yes No

Discrepancies: _____

Appendix D
ASC Analytical Report - Topsoil Sample Results

Analytical Services Corp.

ANALYTICAL REPORT

Client: OHM Remediation Services Corporation
Eastern Region (Hopkinton, MA)

Attn: William Snow
Ron Kenyon
Mike Quinlan

Project: 16208C - USACE; Fort Devens, MA

Sample Type(s): Solid

Analysis Performed: Conventional

Date Sample Received: September 10, 1994

Date Order Received: September 10, 1994

Joblink(s): 616604

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. Analytical Services Corporation assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: J. Thomas E. Gran, Ph.D., Vice President *Date:* September 14, 1994

PROJECT NARRATIVE

The following items relate to the samples and analytical data contained in this report.

- All sample results are reported on an as received "wet weight" basis.
- Note any and all comments at the bottom of the tables in Appendix B and/or Appendix C.
- **ASC** will retain samples for a maximum of thirty (30) days after completion of the analysis, samples will be held for a longer period of time, if appropriate arrangements are made in advance. A nominal disposal charge of $5.00/ sample will be imposed for unreturned samples.

APPENDIX A

DATA SUMMARY REPORT

NOTE: The Tentatively Identified Volatile (GC/MS) Screen result(s), if applicable, is included in Appendix B.

DATA SUMMARY REPORT

DATE: 09/12/94

PAGE: 1

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID:	**LEGASSE-TP**
ASC Sample Number:	JN2162
Sample Date:	940909
Facility Code:	016208C

Parameters	Units	
Conventional Data (CV10)		
pH (Electrode)	std	6.40

APPENDIX B

QUANTITATIVE RESULTS

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	LEGASSE-TP	JN2162

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
pH (Electrode)	std	6.40	-	-	

APPENDIX C

QUALITY ASSURANCE DATA

SUMMARY OF ANALYTICAL METHODOLOGY

ASC Joblink # 616604

REFERENCE		TITLE
CLP 1.7.1.1	CLP	pH, Electrode (soil)

METHODOLOGY REFERENCES

ASTM	*American Society for Testing and Materials*, 1985 edition.
CAWW	*Methods for Chemical Analysis of Water and Wastes*, April 1979 and Updated #1 March 1983.
CLP	*USEPA Contract Laboratory Program*, Document #OLMO1.0, updates December 1990 #OLMO1.1 and February 1991 #OLMO1.1.1.
EPA-500	*USEPA Methods for the Determination of Organic Compounds in Drinking Water,* EPA-600/4-88/039 December 1988.
EPA-600	*USEPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057 July 1982.
NIOSH	*National Institute for Occupational Safety and Health*, 3rd edition, 1984.
SMEWW	*Standard Methods for the Examination of Water and Wastewater*, 17th edition, 1989.
STOA	*Spot Tests In Organic Analysis*, 7th edition, 1966.
SW-846	*Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, 3rd edition, September 1986 and Update #1 July 1992.
(1)	This method was modified to incorporate the use of Boron Trifluoride (BF3) as the derivatizing reagent according to Method 6640 in *SMEWW*, 17th edition, 1989.
Title 22	*Waste Extraction Test*, Title 22, Section 66261.126 Appendix 2 of the California Administrative Code, May 1991.

ASC Certifications

State	Agency	Certification #
Alabama	ADEM	40830
California	CADOH	1178
Colorado	CODOH	OH113
Delaware	DEHSS	OH113
Kansas	KSDHE	E-202 & E-1173
Louisiana	LADOHH	92-10
Maryland	MDDHMH	210
Massachusetts	MADEP	M-OH113
New Jersey	NJDEPE	74603
New York	NYDOH	10712
North Carolina	NCDEM	392
Ohio	OHEPA	OH113
Oklahoma	OKDEQ	9216
Pennsylvania	PADER	68-450
South Carolina	SCDEHNR	92002
Tennessee	TNDOH/TNDEC	2978
Virginia	VADGS	00011
Washington	WADOE	C154
Wisconsin	WIDNR	999037160

Validated by:

- o US Army Corps of Engineers ..... Chemical Analysis In Various Matrices

Approvals:

- o Chemical Waste Management ..... Waste Characterization Analysis
- o Envirosafe ..... Waste Characterization Analysis
- o USDA ..... Permit for Importing Soils
- o Florida DEP ..... Quality Assurance Plan #930034G
- o Naval Facilities Engineering Service Center ..... Chemical Analysis In Various Matrices

REPORT KEY

mg/kg	=	milligram per kilogram (ppm)
Mg/m^3	=	milligram per cubic meter
ug/kg	=	microgram per kilogram (ppb)
mg/L	=	milligram per liter (ppm)
ug/L	=	microgram per liter (ppb)
mg/W	=	milligram per wipe
ug/W	=	microgram per wipe
mg/SMP	=	milligram per sample
ug/SMP	=	microgram per sample
um/cm	=	microMho per centimeter
pCi/l	=	picocurie per liter
gm/cc	=	grams per cubic centimeter
ppm	=	parts per million
ppb	=	parts per billion
ND	=	Not detected at or above stated detection limit
<	=	less than
>	=	greater than
%	=	percent
BTU/lb	=	British Thermal Units per pound
Deg. C	=	Degrees Celsius
n/a	=	not applicable
Unk	=	unknown
std	=	result is relative to standard pH units
CV	=	Conventionals
IR	=	Infrared Spectrophotometric
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
GRO	=	Gasoline Range Organics
DRO	=	Diesel Range Organics
PCB	=	Polychlorinated Biphenyls (PCBs)
EP TOX	=	Extraction Procedure Toxicity
TCLP	=	Toxicity Characteristic Leaching Procedure
RCRA	=	Resource Conservation and Recovery Act

APPENDIX D

CHAIN-OF-CUSTODY RECORD(S)

'M Corporation

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev 08/89

No. 107639

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

OJECT NAME	PROJECT LOCATION
FORT DEVONS	AYER MA

OJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO
.6208	MARGIE BLEAU/MIKE QUINLAN	(508)-772-2610

ENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
TOM BEST (USACE)	BILL SNOW

SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) pH	REMARKS
LEGASSE-TP	9-9-94	835		/	Brownsoil	1x40z amber	✓	

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1	Will Dl	FED Ex. AIRBILL 177 9841560	09-09-94	1500
2	1	Fedex		9-10-94	1340
3					
4					

REMARKS

* NOTE
- 4°c preserved
MGQ ~~TEMP BLANK ENCLOSED~~
09-09-94 ~~3 DAY TAT~~ 24 hr TAT
Temp 15°C

SAMPLER'S SIGNATURE
Will Dl

LAB COPY

Appendix E
ASC Analytical Report - Waste Characterization Sample Results

Analytical Services Corp.

ANALYTICAL REPORT

Client: OHM Remediation Services Corporation
Eastern Region (Hopkinton, MA)

Attn: William Snow
Ron Kenyon
Mike Quinlan

Project: 16208C - USACE; Fort Devens, MA

Sample(s): EX1435C and EX1435G

Sample Type(s): Solid

Analysis Performed: Conventional and Organics

Date Sample Received: October 21, 1994

Date Order Received: October 21, 1994

Joblink(s): 616886

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. Analytical Services Corporation assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: T E Gran *Date:* November 2, 1994

Thomas E. Gran, Ph.D., Vice President

16406 U.S. Route 224 East ▪ P.O. Box 1404 ▪ Findlay, Ohio 45839-1404 ▪ 419-423-3526

PROJECT NARRATIVE

The following items relate to the samples and analytical data contained in this report.

- All sample results are reported on a "dry weight" basis.
- Note any and all comments at the bottom of the tables in Appendix B and/or Appendix C.
- **ASC** will retain samples for a maximum of thirty (30) days after completion of the analysis, samples will be held for a longer period of time, if appropriate arrangements are made in advance. A nominal disposal charge of $5.00/ sample will be imposed for unreturned samples.

APPENDIX A

DATA SUMMARY REPORT

NOTE: The Tentatively Identified Volatile (GC/MS) Screen result(s), if applicable, is included in Appendix B.

DATA SUMMARY REPORT

DATE: 10/27/94

PAGE: 1

Company: OHM REMEDIATION SERVICES CORPORATION

	Sample Point ID:	**EX1435C**	**EX1435G**
	ASC Sample Number:	JN3555	JN3558
	Sample Date:	941020	941020
	Facility Code:	016208C	016208C
Parameters	Units		
Conventional Data (CV10)			
Solids, Total	%	95.0	95.9

	Sample Point ID:	**EX1435C**
	ASC Sample Number:	JN3555
	Sample Date:	941020
	Facility Code:	016208C
Parameters	Units	
Total Pesticide and PCB Analysis, GC, (GS05)		
Aldrin	mg/kg	<.017
Alpha-BHC	mg/kg	<.017
Beta-BHC	mg/kg	<.017
Chlordane	mg/kg	<.171
4,4'-DDD	mg/kg	<.017
4,4'-DDE	mg/kg	<.017
4,4'-DDT	mg/kg	<.017
Delta-BHC	mg/kg	<.017
Dieldrin	mg/kg	<.017
Endosulfan sulfate	mg/kg	<.017
Endosulfan I	mg/kg	<.017
Endosulfan II	mg/kg	<.017
Endrin	mg/kg	<.017
Endrin aldehyde	mg/kg	<.017
Endrin ketone	mg/kg	<.017
Gamma-BHC	mg/kg	<.017
Heptachlor	mg/kg	<.017
Heptachlor epoxide	mg/kg	<.017
Methoxychlor	mg/kg	<.017
Toxaphene	mg/kg	<.343
Aroclor 1016	mg/kg	<.171
Aroclor 1221	mg/kg	<.171
Aroclor 1232	mg/kg	<.171
Aroclor 1242	mg/kg	<.171

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID:	**EX1435C**
ASC Sample Number:	JN3555
Sample Date:	941020
Facility Code:	016208C

Parameters	Units	
Total Pesticide and PCB Analysis, GC, (GS05)		
Aroclor 1248	mg/kg	<.171
Aroclor 1254	mg/kg	<.171
Aroclor 1260	mg/kg	<.171

Sample Point ID:	**EX1435G**
ASC Sample Number:	JN3558
Sample Date:	941020
Facility Code:	016208C

Parameters	Units	
BTXE Volatile Analysis, GC, (GV33)		
Benzene	mg/kg	<.001
Ethylbenzene	mg/kg	<.001
Toluene	mg/kg	<.001
Xylenes	mg/kg	<.001

Sample Point ID:	**EX1435C**
ASC Sample Number:	JN3555
Sample Date:	941020
Facility Code:	016208C

Parameters	Units	
Total Petroleum Hydrocarbon Analysis, IR (IR00)		
Petroleum Hydrocarbons (IR)	mg/kg	1230

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID: EX1435C
ASC Sample Number: JN3555
Sample Date: 941020
Facility Code: 016208C

Parameters	Units	
Total Base/Neutral/Acid Analysis, MS, (MS02)		
Acenaphthene	mg/kg	<.348
Acenaphthylene	mg/kg	<.348
Anthracene	mg/kg	<.348
Benzidine	mg/kg	<.348
Benzo(a)anthracene	mg/kg	<.348
Benzo(b)fluoranthene	mg/kg	<.348
Benzo(k)fluoranthene	mg/kg	<.348
Benzo(ghi)perylene	mg/kg	<.348
Benzo(a)pyrene	mg/kg	<.348
bis(2-Chloroethyl) ether	mg/kg	<.348
bis(2-Chloroethoxy)methane	mg/kg	<.348
bis(2-Chloroisopropyl)ether	mg/kg	<.348
bis(2-Ethylhexyl)phthalate	mg/kg	1.39
4-Bromophenyl phenyl ether	mg/kg	<.348
Butyl benzyl phthalate	mg/kg	<.348
Carbazole	mg/kg	<.348
4-Chloroaniline	mg/kg	<.348
p-Chloro-m-cresol	mg/kg	<.348
2-Chloronaphthalene	mg/kg	<.348
2-Chlorophenol	mg/kg	<.348
4-Chlorophenyl phenyl ether	mg/kg	<.348
Chrysene	mg/kg	<.348
Dibenzo(a,h)anthracene	mg/kg	<.348
Dibenzofuran	mg/kg	<.348
Di-n-butyl phthalate	mg/kg	<.348
1,2-Dichlorobenzene	mg/kg	<.348
1,3-Dichlorobenzene	mg/kg	<.348
1,4-Dichlorobenzene	mg/kg	<.348
3,3'-Dichlorobenzidine	mg/kg	<.348
2,4-Dichlorophenol	mg/kg	<.348
Diethyl phthalate	mg/kg	<.348
Dimethyl phthalate	mg/kg	<.348
2,4-Dimethylphenol	mg/kg	<.348
4,6-Dinitro-o-cresol	mg/kg	<.871
2,4-Dinitrophenol	mg/kg	<1.74

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID: EX1435C
ASC Sample Number: JN3555
Sample Date: 941020
Facility Code: 016208C

Parameters	Units	
Total Base/Neutral/Acid Analysis, MS, (MS02)		
2,4-Dinitrotoluene	mg/kg	<.348
2,6-Dinitrotoluene	mg/kg	<.348
Di-n-octyl phthalate	mg/kg	<.348
Fluoranthene	mg/kg	<.348
Fluorene	mg/kg	<.348
Hexachlorobenzene	mg/kg	<.348
Hexachlorobutadiene	mg/kg	<.348
Hexachlorocyclopentadiene	mg/kg	<.348
Hexachloroethane	mg/kg	<.348
Indeno(1,2,3-cd)pyrene	mg/kg	<.348
Isophorone	mg/kg	<.348
2-Methylnaphthalene	mg/kg	<.348
2-Methylphenol	mg/kg	<.348
4-Methylphenol	mg/kg	<.348
N-Nitrosodimethylamine	mg/kg	<.348
N-Nitrosodi-n-propylamine	mg/kg	<.348
N-Nitrosodiphenylamine	mg/kg	<.348
Naphthalene	mg/kg	<.348
2-Nitroaniline	mg/kg	<.348
3-Nitroaniline	mg/kg	<.348
4-Nitroaniline	mg/kg	<.348
Nitrobenzene	mg/kg	<.348
2-Nitrophenol	mg/kg	<.348
4-Nitrophenol	mg/kg	<1.74
Pentachlorophenol	mg/kg	<.348
Phenanthrene	mg/kg	<.348
Phenol	mg/kg	<.348
Pyrene	mg/kg	<.348
Pyridine	mg/kg	<.348
1,2,4-Trichlorobenzene	mg/kg	<.348
2,4,5-Trichlorophenol	mg/kg	<.348
2,4,6-Trichlorophenol	mg/kg	<.348

APPENDIX B

QUANTITATIVE RESULTS

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435C	JN3555

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Solids, Total	%	95.0	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435G	JN3558

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Solids, Total	%	95.9	.100	-	

TOTAL PESTICIDE AND PCB ANALYSIS, GC, (GS05)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435C	JN3555

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Aldrin	ND	.017	ND	Q2P41545
Alpha-BHC	ND	.017	ND	Q2P41545
Beta-BHC	ND	.017	ND	Q2P41545
Chlordane	ND	.171	ND	Q2P41545
4,4'-DDD	ND	.017	ND	Q2P41545
4,4'-DDE	ND	.017	ND	Q2P41545
4,4'-DDT	ND	.017	ND	Q2P41545
Delta-BHC	ND	.017	ND	Q2P41545
Dieldrin	ND	.017	ND	Q2P41545
Endosulfan sulfate	ND	.017	ND	Q2P41545
Endosulfan I	ND	.017	ND	Q2P41545
Endosulfan II	ND	.017	ND	Q2P41545
Endrin	ND	.017	ND	Q2P41545
Endrin aldehyde	ND	.017	ND	Q2P41545
Endrin ketone	ND	.017	ND	Q2P41545
Gamma-BHC	ND	.017	ND	Q2P41545
Heptachlor	ND	.017	ND	Q2P41545
Heptachlor epoxide	ND	.017	ND	Q2P41545
Methoxychlor	ND	.017	ND	Q2P41545
Toxaphene	ND	.343	ND	Q2P41545
Aroclor 1016	ND	.171	ND	Q2P41545
Aroclor 1221	ND	.171	ND	Q2P41545
Aroclor 1232	ND	.171	ND	Q2P41545
Aroclor 1242	ND	.171	ND	Q2P41545
Aroclor 1248	ND	.171	ND	Q2P41545
Aroclor 1254	ND	.171	ND	Q2P41545
Aroclor 1260	ND	.171	ND	Q2P41545

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435G	JN3558

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W3957
Ethylbenzene	ND	.001	ND	Q2W3957
Toluene	ND	.001	ND	Q2W3957
Xylenes	ND	.001	ND	Q2W3957

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435C	JN3555

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	1230	69.4	ND	Q2T41547

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435C	JN3555

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.348	ND	Q2C41530
Acenaphthylene	ND	.348	ND	Q2C41530
Anthracene	ND	.348	ND	Q2C41530
Benzidine	ND	.348	ND	Q2C41530
Benzo(a)anthracene	ND	.348	ND	Q2C41530
Benzo(b)fluoranthene	ND	.348	ND	Q2C41530
Benzo(k)fluoranthene	ND	.348	ND	Q2C41530
Benzo(ghi)perylene	ND	.348	ND	Q2C41530
Benzo(a)pyrene	ND	.348	ND	Q2C41530
bis(2-Chloroethyl) ether	ND	.348	ND	Q2C41530
bis(2-Chloroethoxy)methane	ND	.348	ND	Q2C41530
bis(2-Chloroisopropyl)ether	ND	.348	ND	Q2C41530
bis(2-Ethylhexyl)phthalate	1.39	.348	ND	Q2C41530
4-Bromophenyl phenyl ether	ND	.348	ND	Q2C41530
Butyl benzyl phthalate	ND	.348	ND	Q2C41530
Carbazole	ND	.348	ND	Q2C41530
4-Chloroaniline	ND	.348	ND	Q2C41530
p-Chloro-m-cresol	ND	.348	ND	Q2C41530
2-Chloronaphthalene	ND	.348	ND	Q2C41530
2-Chlorophenol	ND	.348	ND	Q2C41530
4-Chlorophenyl phenyl ether	ND	.348	ND	Q2C41530
Chrysene	ND	.348	ND	Q2C41530
Dibenzo(a,h)anthracene	ND	.348	ND	Q2C41530
Dibenzofuran	ND	.348	ND	Q2C41530
Di-n-butyl phthalate	ND	.348	ND	Q2C41530
1,2-Dichlorobenzene	ND	.348	ND	Q2C41530
1,3-Dichlorobenzene	ND	.348	ND	Q2C41530
1,4-Dichlorobenzene	ND	.348	ND	Q2C41530
3,3'-Dichlorobenzidine	ND	.348	ND	Q2C41530
2,4-Dichlorophenol	ND	.348	ND	Q2C41530
Diethyl phthalate	ND	.348	ND	Q2C41530
Dimethyl phthalate	ND	.348	ND	Q2C41530
2,4-Dimethylphenol	ND	.348	ND	Q2C41530
4,6-Dinitro-o-cresol	ND	.871	ND	Q2C41530
2,4-Dinitrophenol	ND	1.74	ND	Q2C41530
2,4-Dinitrotoluene	ND	.348	ND	Q2C41530
2,6-Dinitrotoluene	ND	.348	ND	Q2C41530
Di-n-octyl phthalate	ND	.348	ND	Q2C41530
Fluoranthene	ND	.348	ND	Q2C41530
Fluorene	ND	.348	ND	Q2C41530
Hexachlorobenzene	ND	.348	ND	Q2C41530
Hexachlorobutadiene	ND	.348	ND	Q2C41530
Hexachlorocyclopentadiene	ND	.348	ND	Q2C41530
Hexachloroethane	ND	.348	ND	Q2C41530
Indeno(1,2,3-cd)pyrene	ND	.348	ND	Q2C41530
Isophorone	ND	.348	ND	Q2C41530
2-Methylnaphthalene	ND	.348	ND	Q2C41530
2-Methylphenol	ND	.348	ND	Q2C41530
4-Methylphenol	ND	.348	ND	Q2C41530
N-Nitrosodimethylamine	ND	.348	ND	Q2C41530

TOTAL BASE/NEUTRAL/ACID ANALYSIS, MS, (MS02)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435C	JN3555

Compounds	**Sample Results** mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
N-Nitrosodi-n-propylamine	ND	.348	ND	Q2C41530
N-Nitrosodiphenylamine	ND	.348	ND	Q2C41530
Naphthalene	ND	.348	ND	Q2C41530
2-Nitroaniline	ND	.348	ND	Q2C41530
3-Nitroaniline	ND	.348	ND	Q2C41530
4-Nitroaniline	ND	.348	ND	Q2C41530
Nitrobenzene	ND	.348	ND	Q2C41530
2-Nitrophenol	ND	.348	ND	Q2C41530
4-Nitrophenol	ND	1.74	ND	Q2C41530
Pentachlorophenol	ND	.348	ND	Q2C41530
Phenanthrene	ND	.348	ND	Q2C41530
Phenol	ND	.348	ND	Q2C41530
Pyrene	ND	.348	ND	Q2C41530
Pyridine	ND	.348	ND	Q2C41530
1,2,4-Trichlorobenzene	ND	.348	ND	Q2C41530
2,4,5-Trichlorophenol	ND	.348	ND	Q2C41530
2,4,6-Trichlorophenol	ND	.348	ND	Q2C41530

3-Methyl- and 4-Methylphenol coelute and are reported as the total

APPENDIX C

QUALITY ASSURANCE DATA

SUMMARY OF ANALYTICAL METHODOLOGY

ASC Joblink # 616886

REFERENCE		TITLE
160.3	CAWW	Residue, Total, Gravimetric, Dried at 103-105 C
418.1	MCAWW	Petroleum Hydrocarbons, Total Recoverable
8020	SW-846	Aromatic Volatile Organics by GC
8080	SW-846	Organochlorine Pesticides and/or PCBs
8270	SW-846	GC/MS for Semivolatile Organics: Capillary Column Technique

METHODOLOGY REFERENCES

ASTM	*American Society for Testing and Materials*, 1985 edition.
CAWW	*Methods for Chemical Analysis of Water and Wastes*, April 1979 and Updated #1 March 1983.
CLP	*USEPA Contract Laboratory Program*, Document #OLMO1.0, updates December 1990 #OLMO1.1 and February 1991 #OLMO1.1.1.
EPA-500	*USEPA Methods for the Determination of Organic Compounds in Drinking Water,* EPA-600/4-88/039 December 1988.
EPA-600	*USEPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057 July 1982.
NIOSH	*National Institute for Occupational Safety and Health*, 3rd edition, 1984.
SMEWW	*Standard Methods for the Examination of Water and Wastewater*, 17th edition, 1989.
STOA	*Spot Tests In Organic Analysis*, 7th edition, 1966.
SW-846	*Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, 3rd edition, September 1986 and Update #1 July 1992.
(1)	This method was modified to incorporate the use of Boron Trifluoride (BF3) as the derivatizing reagent according to Method 6640 in *SMEWW*, 17th edition, 1989.
Title 22	*Waste Extraction Test*, Title 22, Section 66261.126 Appendix 2 of the California Administrative Code, May 1991.

ASC Certifications

State	Agency	Certification #
Alabama	ADEM	40830
California	CADOH	1178
Colorado	CODOH	OH113
Delaware	DEHSS	OH113
Kansas	KSDHE	E-202 & E-1173
Louisiana	LADOHH	92-10
Maryland	MDDHMH	210
Massachusetts	MADEP	M-OH113
New Jersey	NJDEPE	74603
New York	NYDOH	10712
North Carolina	NCDEM	392
Ohio	OHEPA	OH113
Oklahoma	OKDEQ	9216
Pennsylvania	PADER	68-450
South Carolina	SCDEHNR	92002
Tennessee	TNDOH/TNDEC	2978
Virginia	VADGS	00011
Washington	WADOE	C154
Wisconsin	WIDNR	999037160

Validated by:

- o US Army Corps of Engineers ..... Chemical Analysis in Various Matrices

Approvals:

- o Chemical Waste Management ..... Waste Characterization Analysis
- o Envirosafe ..... Waste Characterization Analysis
- o USDA ..... Permit for Importing Soils
- o Florida DEP ..... Quality Assurance Plan #930034G
- o Naval Facilities Engineering Service Center ..... Chemical Analysis in Various Matrices

REPORT KEY

mg/kg	=	milligram per kilogram (ppm)
Mg/m^3	=	milligram per cubic meter
ug/kg	=	microgram per kilogram (ppb)
mg/L	=	milligram per liter (ppm)
ug/L	=	microgram per liter (ppb)
mg/W	=	milligram per wipe
ug/W	=	microgram per wipe
mg/SMP	=	milligram per sample
ug/SMP	=	microgram per sample (Tedlar Bag)
ug/smp	=	microgram per sample
um/cm	=	microMho per centimeter
pCi/l	=	picocurie per liter
gm/cc	=	grams per cubic centimeter
ppm	=	parts per million
ppb	=	parts per billion
ND	=	Not detected at or above stated detection limit
<	=	less than
>	=	greater than
%	=	percent
BTU/lb	=	British Thermal Units per pound
Deg. C	=	Degrees Celsius
n/a	=	not applicable
Unk	=	unknown
std	=	result is relative to standard pH units
CV	=	Conventionals
IR	=	Infrared Spectrophotometric
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
GRO	=	Gasoline Range Organics
DRO	=	Diesel Range Organics
PCB	=	Polychlorinated Biphenyls (PCBs)
EP TOX	=	Extraction Procedure Toxicity
TCLP	=	Toxicity Characteristic Leaching Procedure
RCRA	=	Resource Conservation and Recovery Act
SOW	=	Statement of Work

Quality Assurance Data

Total Pesticide and PCB Analysis, GC, (GS05)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Aldrin	ND	87	ND	69	3	Q2P41545
Alpha-BHC	ND	85	ND	59	1	Q2P41545
Beta-BHC	ND	89	ND	84	1	Q2P41545
Chlordane	ND	95	ND	91	1	Q2P41545
4,4'-DDD	ND	99	ND	77	1	Q2P41545
4,4'-DDE	ND	97	ND	85	2	Q2P41545
4,4'-DDT	ND	97	ND	75	5	Q2P41545
Delta-BHC	ND	92	ND	71	1	Q2P41545
Dieldrin	ND	98	ND	81	1	Q2P41545
Endosulfan sulfate	ND	98	ND	84	2	Q2P41545
Endosulfan I	ND	93	ND	88	1	Q2P41545
Endosulfan II	ND	96	ND	88	2	Q2P41545
Endrin	ND	98	ND	85	1	Q2P41545
Endrin aldehyde	ND	82	ND	74	1	Q2P41545
Endrin ketone	ND	97	ND	79	1	Q2P41545
Gamma-BHC	ND	89	ND	69	1	Q2P41545
Heptachlor	ND	94	ND	84	2	Q2P41545
Heptachlor epoxide	ND	96	ND	90	1	Q2P41545
Methoxychlor	ND	95	ND	95	10	Q2P41545

Quality Assurance Data

BTXE Volatile Analysis, GC, (GV33)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Benzene	ND	98	ND	89	19	Q2W3957
Ethylbenzene	ND	96	ND	89	18	Q2W3957
Toluene	ND	96	ND	91	20	Q2W3957
Xylenes	ND	98	ND	90	20	Q2W3957

Quality Assurance Data

Total Petroleum Hydrocarbon Analysis, IR (IR00)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Petroleum Hydrocarbons (IR)	ND	90	ND	99	4	Q2T41547

Quality Assurance Data

Total Base/Neutral/Acid Analysis, MS, (MS02)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Acenaphthene	ND	67	ND	62	7	Q2C41530
Acenaphthylene	ND	75	ND	69	6	Q2C41530
Anthracene	ND	74	ND	72	6	Q2C41530
Benzidine	ND	11	ND	12	62	Q2C41530
Benzo(a)anthracene	ND	73	ND	71	3	Q2C41530
Benzo(b)fluoranthene	ND	73	ND	77	10	Q2C41530
Benzo(k)fluoranthene	ND	72	ND	82	4	Q2C41530
Benzo(ghi)perylene	ND	71	ND	42	6	Q2C41530
Benzo(a)pyrene	ND	71	ND	69	6	Q2C41530
bis(2-Chloroethyl) ether	ND	75	ND	62	13	Q2C41530
bis(2-Chloroethoxy)methane	ND	74	ND	64	12	Q2C41530
bis(2-Chloroisopropyl)ether	ND	66	ND	58	10	Q2C41530
bis(2-Ethylhexyl)phthalate	ND	70	ND	62	8	Q2C41530
4-Bromophenyl phenyl ether	ND	74	ND	70	7	Q2C41530
Butyl benzyl phthalate	ND	71	ND	74	5	Q2C41530
Carbazole	ND	78	ND	74	3	Q2C41530
4-Chloroaniline	ND	20	ND	25	5	Q2C41530
p-Chloro-m-cresol	ND	74	ND	67	7	Q2C41530
2-Chloronaphthalene	ND	70	ND	63	8	Q2C41530
2-Chlorophenol	ND	69	ND	58	13	Q2C41530
4-Chlorophenyl phenyl ether	ND	75	ND	70	4	Q2C41530
Chrysene	ND	72	ND	71	2	Q2C41530
Dibenzo(a,h)anthracene	ND	70	ND	45	6	Q2C41530
Dibenzofuran	ND	71	ND	67	5	Q2C41530
Di-n-butyl phthalate	ND	75	ND	71	4	Q2C41530
1,2-Dichlorobenzene	ND	67	ND	55	14	Q2C41530
1,3-Dichlorobenzene	ND	67	ND	53	14	Q2C41530
1,4-Dichlorobenzene	ND	67	ND	53	16	Q2C41530
3,3'-Dichlorobenzidine	ND	30	ND	29	5	Q2C41530
2,4-Dichlorophenol	ND	72	ND	64	12	Q2C41530
Diethyl phthalate	ND	74	ND	69	3	Q2C41530
Dimethyl phthalate	ND	76	ND	72	2	Q2C41530
2,4-Dimethylphenol	ND	72	ND	66	13	Q2C41530
4,6-Dinitro-o-cresol	ND	75	ND	65	5	Q2C41530
2,4-Dinitrophenol	ND	82	ND	43	13	Q2C41530
2,4-Dinitrotoluene	ND	74	ND	69	3	Q2C41530
2,6-Dinitrotoluene	ND	74	ND	71	2	Q2C41530
Di-n-octyl phthalate	ND	74	ND	100	16	Q2C41530
Fluoranthene	ND	75	ND	75	1	Q2C41530
Fluorene	ND	73	ND	68	4	Q2C41530
Hexachlorobenzene	ND	75	ND	71	6	Q2C41530
Hexachlorobutadiene	ND	67	ND	52	22	Q2C41530
Hexachlorocyclopentadiene	ND	52	ND	15	37	Q2C41530
Hexachloroethane	ND	67	ND	51	16	Q2C41530
Indeno(1,2,3-cd)pyrene	ND	71	ND	46	7	Q2C41530
Isophorone	ND	74	ND	65	11	Q2C41530
2-Methylnaphthalene	ND	73	ND	61	14	Q2C41530
2-Methylphenol	ND	67	ND	61	7	Q2C41530
4-Methylphenol	ND	67	ND	60	11	Q2C41530
N-Nitrosodimethylamine	ND	68	ND	57	9	Q2C41530

Quality Assurance Data

Total Base/Neutral/Acid Analysis, MS, (MS02)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
N-Nitrosodi-n-propylamine	ND	75	ND	65	9	Q2C41530
N-Nitrosodiphenylamine	ND	77	ND	74	4	Q2C41530
Naphthalene	ND	70	ND	59	16	Q2C41530
3-Nitroaniline	ND	46	ND	46	2	Q2C41530
4-Nitroaniline	ND	72	ND	69	1	Q2C41530
Nitrobenzene	ND	69	ND	59	14	Q2C41530
2-Nitrophenol	ND	66	ND	56	10	Q2C41530
4-Nitrophenol	ND	87	ND	88	1	Q2C41530
Pentachlorophenol	ND	92	ND	103	2	Q2C41530
Phenanthrene	ND	74	ND	72	5	Q2C41530
Phenol	ND	66	ND	56	12	Q2C41530
Pyrene	ND	72	ND	78	6	Q2C41530
Pyridine	ND	40	ND	40	1	Q2C41530
1,2,4-Trichlorobenzene	ND	69	ND	56	17	Q2C41530
2,4,5-Trichlorophenol	ND	70	ND	71	4	Q2C41530
2,4,6-Trichlorophenol	ND	77	ND	74	6	Q2C41530

3-Methyl- and 4-Methylphenol coelute and are reported as the total

QUALITY ASSURANCE DATA
SURROGATE SUMMARY REPORT

SURROGATE ID	A159	B732	A121	A884	A158	B142	# OUT
QC BATCH: Q2C41530 Solid (Semi-Volatile organics by MS)							
SAMPLE ID							
BLANK	58	65	84	62	62	67	0
BLANK SPIKE	60	62	89	61	61	64	0
EX1435C	44	48	52	44	59	51	0
EXSA56AC	62	65	60	53	59	64	0
EXSA56BC	55	59	60	51	59	60	0
SBAR61MNC MD	58	59	87	62	58	65	0
SBAR61MNC MS	53	53	84	54	52	63	0
QC LIMITS	(25-121)	(24-113)	(19-122)	(23-120)	(30-115)	(18-137)	

SURROGATE ID	B816	A500	# OUT
QC BATCH: Q2P41545 Solid (Pesticide compounds by GC)			
SAMPLE ID			
BLANK	50	79	0
BLANK SPIKE	78	81	0
EX1435C	60	85	0
EXSA56AC	79	100	0
EXSA56AC MD	66	88	0
EXSA56AC MS	68	87	0
EXSA56BC	66	89	0
QC LIMITS	(30-130)	(30-130)	

SURROGATE ID	A228	# OUT
QC BATCH: Q2W3957 Solid (Volatile organics by GC)		
SAMPLE ID		
AST-1 MD	79	0
AST-1 MS	93	0
BLANK	102	0
BLANK SPIKE	99	0
EX1435G	103	0
EXSA56AG	78	0
EXSA56BG	75	0
QC LIMITS	(30-130)	

SURROGATE ID

A159 = 2-Fluorophenol
B732 = Phenol-D6
A121 = 2,4,6-Tribromophenol
A884 = Nitrobenzene-D5
A158 = 2-Fluorobiphenyl
B142 = Terphenyl-D14
A228 = a,a,a-Trifluorotoluene
B816 = 2,4,5,6-Tetrachloro-m-xylene
A500 = Decachlorobiphenyl

* Values outside of method quality control limits
D Sample was diluted, however, some surrogates may be reported if results were observed.

It is ASC's laboratory policy to allow one surrogate per sample fraction (acid, base-neutral or pesticide) to exceed the stated QC limits. This policy is based upon the USEPA SOW for the Contract Laboratory Program (CLP).

APPENDIX D

CHAIN-OF-CUSTODY RECORD(S)

OHM Corporation

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/89

No. 107707

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	PROJECT LOCATION
FORT DEVENS	AYER MA

PROJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO.
16208	MIKE QUINLAN / MARGIE BLEAU	

CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
TOM BEST (USACE)	BILL SNOW

ITEM NO	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) TRPH	BNA (TOTAL)	VOLATILES (TOTAL)	METALS	Pesticides 8080 (PCB's)	PCB's		REMARKS
1	EXSA56AC	10-20 94	929	✓		Grey, Brown, Clay Sand mixture	5 x 40z Amber	✓	✓		✓	✓	✓		
2	EXSA56AG	10-20 94	925		✓	Grey, Brown, Clay Sand mixture	2 x 40ml VOA			✓					
3	EXSA56BC	10-20 94	945	✓		Grey, Brown Clay Sand Mixture	5 x 40z Amber	✓	✓		✓	✓	✓		
4	EXSA56BG	10-20 94	940		✓	Grey, Brown Clay Sand Mixture	2 x 40ml VOA			✓					
5	EX1435C	10-20 94	1100	✓		Gold Sand with odor	5 x 40z Amber	✓	✓		✓	✓	✓		
6	EX1435G	10-20 94	1115		✓	Gold Sand with mixed grains	2 x 40ml VOA			✓					
7															
8															
9															
10															

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-6	William Dale	194457018O FEDERAL EXPRESS AIRBILL	10-20 94	1530
2	1-6	Fed Ex # 194457018O		10/21/94	1010
3					
4					

REMARKS

* Preserved at 4°c celsius
* 30 DAY TAT
* TEMPERATURE BLANK INCLUDED

SAMPLER'S SIGNATURE
William Dale

LAB COPY

OHM Corporation

CHAIN-OF-CUSTODY RECORD

MGQ 10/21/94

Form 0019
Field Technical Services
Rev. 08/89

No. 107707

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	PROJECT LOCATION
FORT DEVENS	AYER MA

PROJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO.
16208	MIKE QUINLAN / MARGIE BLEAU	

CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
TOM BEST (USACE)	BILL SNOW

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH; BNA (TOTAL); VOLATILES; METALS (TOTAL); PESTICIDES / PCBS 8080 (PCBS); BTEX

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	TPH	BNA (TOTAL)	VOLATILES	METALS	PESTICIDES/PCBS	BTEX			REMARKS
1	EXSA56AC	10-20-94	929	✓		Grey, Brown, Clay Sand mixture	5 x 4oz Amber	✓	✓		✓	✓	✓			
2	EXSA56AG	10-20-94	925		✓	Grey, Brown, Clay Sand mixture	2 x 40ml VOA			✓						
3	EXSA56BC	10-20-94	945	✓		Grey, Brown Clay Sand Mixture	5 x 4oz Amber	✓	✓		✓	✓	✓			
4	EXSA56BG	10-20-94	940		✓	Grey, Brown Clay Sand Mixture	2 x 40ml VOA			✓						
5	EX1435C	10-20-94	1100	✓		Gold Sand with odor	5 x 4oz Amber	✓	✓		✓	✓	✓			
6	EX1435G	10-20-94	1115		✓	Gold Sand with mixed grain	2 x 40ml VOA			✓						
7																
8																
9																
10																

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-6	William Dale	1944570180 FEDERAL EXPRESS AIRBILL	10-20-94	1530
2					
3					
4					

REMARKS

* Preserved at 4°C celsius
* 30AY TAT
* TEMPERATURE BLANK INCLUDED

SAMPLER'S SIGNATURE: William Dale

LAB COPY

Analytical Services Corp.

ANALYTICAL REPORT

Client: OHM Remediation Services Corporation
Eastern Region (Hopkinton, MA)

Attn: William Snow
Ron Kenyon
Mike Quinlan

Project: 16208C - USACE; Fort Devens, MA

Sample Type(s): Solid

Analysis Performed: Conventional and Organic

Date Sample Received: November 30, 1994

Date Order Received: November 30, 1994

Joblink(s): 617165

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. Analytical Services Corporation assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: _____ *Date:* January 4, 1995
Thomas E. Gran, Ph.D., Vice President

PROJECT NARRATIVE

The following items relate to the samples and analytical data contained in this report.

- All sample results are reported on a "dry weight" basis.
- Note any and all comments at the bottom of the tables in Appendix B and/or Appendix C.
- **ASC** will retain samples for a maximum of thirty (30) days after completion of the analysis, samples will be held for a longer period of time, if appropriate arrangements are made in advance. A nominal disposal charge of $5.00/ sample will be imposed for unreturned samples.

APPENDIX A

DATA SUMMARY REPORT

NOTE: The Tentatively Identified Volatile (GC/MS) Screen result(s), if applicable, is included in Appendix B.

DATA SUMMARY REPORT

DATE: 01/03/95

Company: OHM REMEDIATION SERVICES CORPORATION

	Sample Point ID:	EX1435AC	EX1435AG
	ASC Sample Number:	JN5598	JN5599
	Sample Date:	941129	941129
	Facility Code:	016208C	016208C
Parameters	Units		
Conventional Data (CV10)			
Solids, Total	%	95.3	94.3

	Sample Point ID:	EX1435AC
	ASC Sample Number:	JN5598
	Sample Date:	941129
	Facility Code:	016208C
Parameters	Units	
Priority Pollutant PNA Analysis, GC, (GS16)		
Acenaphthene	mg/kg	<.035
Acenaphthylene	mg/kg	<.035
Anthracene	mg/kg	.790
Benzo(a)anthracene	mg/kg	<.035
Benzo(b)fluoranthene	mg/kg	<.035
Benzo(k)fluoranthene	mg/kg	.040
Benzo(ghi)perylene	mg/kg	<.035
Benzo(a)pyrene	mg/kg	<.035
Chrysene	mg/kg	<.035
Dibenzo(a,h)anthracene	mg/kg	<.035
Fluoranthene	mg/kg	.400
Fluorene	mg/kg	<.035
Indeno(1,2,3-c,d)pyrene	mg/kg	<.035
Naphthalene	mg/kg	<.035
Phenanthrene	mg/kg	1.11
Pyrene	mg/kg	.680

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID:	**EX1435AG**
ASC Sample Number:	JN5599
Sample Date:	941129
Facility Code:	016208C

Parameters	Units	
BTXE Volatile Analysis, GC, (GV33)		
Benzene	mg/kg	<.001
Ethylbenzene	mg/kg	<.001
Toluene	mg/kg	<.001
Xylenes	mg/kg	<.001

Sample Point ID:	**EX1435AC**
ASC Sample Number:	JN5598
Sample Date:	941129
Facility Code:	016208C

Parameters	Units	
Total Petroleum Hydrocarbon Analysis, IR (IR00)		
Petroleum Hydrocarbons (IR)	mg/kg	87.1

APPENDIX B

QUANTITATIVE RESULTS

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435AC	JN5598

Compounds	Sample Results %	Detection Limits %	Blank Results %	Batch Number
Solids, Total	95.3	.100	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435AG	JN5599

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Solids, Total	%	94.3	.100	-	

PRIORITY POLLUTANT PNA ANALYSIS, GC, (GS16)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435AC	JN5598

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Acenaphthene	ND	.035	ND	Q2F41783
Acenaphthylene	ND	.035	ND	Q2F41783
Anthracene	.790	.035	ND	Q2F41783
Benzo(a)anthracene	ND	.035	ND	Q2F41783
Benzo(b)fluoranthene	ND	.035	ND	Q2F41783
Benzo(k)fluoranthene	.040	.035	ND	Q2F41783
Benzo(ghi)perylene	ND	.035	ND	Q2F41783
Benzo(a)pyrene	ND	.035	ND	Q2F41783
Chrysene	ND	.035	ND	Q2F41783
Dibenzo(a,h)anthracene	ND	.035	ND	Q2F41783
Fluoranthene	.400	.035	ND	Q2F41783
Fluorene	ND	.035	ND	Q2F41783
Indeno(1,2,3-c,d)pyrene	ND	.035	ND	Q2F41783
Naphthalene	ND	.035	ND	Q2F41783
Phenanthrene	1.11	.350	ND	Q2F41783
Pyrene	.680	.035	ND	Q2F41783

BTXE Volatile Analysis, GC, (GV33)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435AG	JN5599

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Benzene	ND	.001	ND	Q2W4068
Ethylbenzene	ND	.001	ND	Q2W4068
Toluene	ND	.001	ND	Q2W4068
Xylenes	ND	.001	ND	Q2W4068

TOTAL PETROLEUM HYDROCARBON ANALYSIS, IR (IR00)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435AC	JN5598

Compounds	**Sample Results** mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Petroleum Hydrocarbons (IR)	87.1	6.80	ND	Q2T41784

APPENDIX C

QUALITY ASSURANCE DATA

SUMMARY OF ANALYTICAL METHODOLOGY

ASC Joblink # 617165

REFERENCE		TITLE
160.3	CAWW	Residue, Total, Gravimetric, Dried at 103-105 C
418.1	MCAWW	Petroleum Hydrocarbons, Total Recoverable
8020	SW-846	Aromatic Volatile Organics by GC
8100	SW-846	Polynuclear Aromatic Hydrocarbons

METHODOLOGY REFERENCES

ASTM	*American Society for Testing and Materials*, 1985 edition.
CAWW	*Methods for Chemical Analysis of Water and Wastes*, April 1979 and Updated #1 March 1983.
CLP	*USEPA Contract Laboratory Program*, Document #OLMO1.0, updates December 1990 #OLMO1.1 and February 1991 #OLMO1.1.1.
EPA-500	*USEPA Methods for the Determination of Organic Compounds in Drinking Water,* EPA-600/4-88/039 December 1988.
EPA-600	*USEPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057 July 1982.
NIOSH	*National Institute for Occupational Safety and Health*, 3rd edition, 1984.
SMEWW	*Standard Methods for the Examination of Water and Wastewater*, 17th edition, 1989.
STOA	*Spot Tests In Organic Analysis*, 7th edition, 1966.
SW-846	*Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, 3rd edition, September 1986 and Update #1 July 1992.
(1)	This method was modified to incorporate the use of Boron Trifluoride (BF3) as the derivatizing reagent according to Method 6640 in *SMEWW*, 17th edition, 1989.
Title 22	*Waste Extraction Test*, Title 22, Section 66261.126 Appendix 2 of the California Administrative Code, May 1991.

ASC Certifications

State	Agency	Certification #
Alabama	ADEM	40830
California	CADOH	1178
Colorado	CODOH	OH113
Delaware	DEHSS	OH113
Kansas	KSDHE	E-202 & E-1173
Louisiana	LADOHH	92-10
Maryland	MDDHMH	210
Massachusetts	MADEP	M-OH113
New Jersey	NJDEPE	74603
New York	NYDOH	10712
North Carolina	NCDEM	392
Ohio	OHEPA	OH113
Oklahoma	OKDEQ	9216
Pennsylvania	PADER	68-450
South Carolina	SCDEHNR	92002
Tennessee	TNDOH/TNDEC	2978
Virginia	VADGS	00011
Washington	WADOE	C154
Wisconsin	WIDNR	999037160

Validated by:

- o US Army Corps of Engineers ..... Chemical Analysis in Various Matrices

Approvals:

- o Chemical Waste Management ..... Waste Characterization Analysis
- o Envirosafe ..... Waste Characterization Analysis
- o USDA ..... Permit for Importing Soils
- o Florida DEP ..... Quality Assurance Plan #930034G
- o Naval Facilities Engineering Service Center ..... Chemical Analysis in Various Matrices

REPORT KEY

mg/kg	=	milligram per kilogram (ppm)
Mg/m^3	=	milligram per cubic meter
ug/kg	=	microgram per kilogram (ppb)
mg/L	=	milligram per liter (ppm)
ug/L	=	microgram per liter (ppb)
mg/W	=	milligram per wipe
ug/W	=	microgram per wipe
mg/SMP	=	milligram per sample
ug/SMP	=	microgram per sample (Tedlar Bag)
ug/smp	=	microgram per sample
um/cm	=	microMho per centimeter
pCi/l	=	picocurie per liter
gm/cc	=	grams per cubic centimeter
ppm	=	parts per million
ppb	=	parts per billion
ND	=	Not detected at or above stated detection limit
<	=	less than
>	=	greater than
%	=	percent
BTU/lb	=	British Thermal Units per pound
Deg. C	=	Degrees Celsius
n/a	=	not applicable
Unk	=	unknown
std	=	result is relative to standard pH units
CV	=	Conventionals
IR	=	Infrared Spectrophotometric
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
GRO	=	Gasoline Range Organics
DRO	=	Diesel Range Organics
PCB	=	Polychlorinated Biphenyls (PCBs)
EP TOX	=	Extraction Procedure Toxicity
TCLP	=	Toxicity Characteristic Leaching Procedure
RCRA	=	Resource Conservation and Recovery Act
SOW	=	Statement of Work

Quality Assurance Data

Priority Pollutant PNA Analysis, GC, (GS16)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Acenaphthene	ND	93	ND	-	-	Q2F41783
Acenaphthylene	ND	58	ND	-	-	Q2F41783
Anthracene	ND	59	.790	-	-	Q2F41783
Benzo(a)anthracene	ND	96	ND	127	6	Q2F41783
Benzo(b)fluoranthene	ND	86	ND	103	5	Q2F41783
Benzo(k)fluoranthene	ND	104	.040	115	2	Q2F41783
Benzo(ghi)perylene	ND	100	ND	137	2	Q2F41783
Benzo(a)pyrene	ND	63	ND	111	12	Q2F41783
Chrysene	ND	100	ND	125	5	Q2F41783
Dibenzo(a,h)anthracene	ND	56	ND	78	27	Q2F41783
Fluoranthene	ND	100	.400	-	-	Q2F41783
Fluorene	ND	93	ND	-	-	Q2F41783
Indeno(1,2,3-c,d)pyrene	ND	56	ND	78	26	Q2F41783
Naphthalene	ND	89	ND	-	-	Q2F41783
Phenanthrene	ND	100	1.11	-	-	Q2F41783
Pyrene	ND	107	.680	-	-	Q2F41783

— Due to sample matrix interferences, the spiked sample does not provide valid spike recovery data for some compounds.

Quality Assurance Data

BTXE Volatile Analysis, GC, (GV33)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Benzene	ND	100	ND	94	17	Q2W4068
Ethylbenzene	ND	100	ND	81	21	Q2W4068
Toluene	ND	100	ND	88	19	Q2W4068
Xylenes	ND	101	ND	80	21	Q2W4068

Quality Assurance Data

Total Petroleum Hydrocarbon Analysis, IR (IR00)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Petroleum Hydrocarbons (IR)	ND	92	125	60	12	Q2T41784

QUALITY ASSURANCE DATA
SURROGATE SUMMARY REPORT

SURROGATE ID	A228	# OUT
QC BATCH: Q2W4068 Solid (Volatile organics by GC)		
SAMPLE ID		
BLANK	91	0
BLANK SPIKE	100	0
EX1435AG	83	0
EX1435AG MD	71	0
EX1435AG MS	85	0
QC LIMITS	(30-130)	

SURROGATE ID

A228 = a,a,a-Trifluorotoluene

* Values outside of method quality control limits
D Sample was diluted, however, some surrogates may be reported if results were observed.

It is ASC's laboratory policy to allow one surrogate per sample fraction (acid, base-neutral or pesticide) to exceed the stated QC limits. This policy is based upon the USEPA SOW for the Contract Laboratory Program (CLP).

APPENDIX D

CHAIN-OF-CUSTODY RECORD(S)

OHM Corporation

CHAIN-OF-CUSTODY RECORD

Form 001c
Field Technical Services
Rev. 08/89

No. 107743

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	PROJECT LOCATION
Fort Devens	Ayer, MA.

PROJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO.
16208	Mike Quinlan	508 772-2019

CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
Tim Colonna (USACE)	Bill Snow

ITEM NO	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS) TPH (1 x 4 oz Amb. Glass)	PAHs (8100) (1 x 4 oz Amb. Glass)	BTEX (8020) (2 x 40 ml Amb. Glass vials)	REMARKS
1	EX1435AC	11-29-94	1312	✓		Composite sample of stockpiled soil from UST 1435 Excavation	2	1	1		
2	EX1435AG	"	1300		✓	Grab sample of stockpiled soil from UST 1435 Excavation	2		1		
3											
4											
5											
6											
7											
8											
9											
10											

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-2	Michael N. Zenk	Fed. Ex. Airbill # 2989345564	11-29-94	1530
2	1,2	FEDEX2989345564	Donita Jensen	11-30-94	10:16
3					
4					

REMARKS

4°C - Temp Blank Included

3 day TAT

SAMPLER'S SIGNATURE: Michael N. Zenk

LAB COPY

Analytical Services Corp.

ANALYTICAL REPORT

Client: OHM Remediation Services Corp.
Eastern Region (Hopkinton, MA)

Attn: William Snow
Ron Kenyon
Mike Quinlan

Project: 16208C - USACE; Fort Devens, MA

Sample Type(s): Solid

Analysis Performed: Conventionals and RCRA TCLP Leachate Parameters

Date Sample Received: December 16, 1994

Date Order Received: December 16, 1994

Joblink(s): 617282

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. OHM Remediation Services Corp., Analytical Division, assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: _____ *Date:* January 18, 1995
Thomas E. Gran, Ph.D., Vice President

PROJECT NARRATIVE

The following items relate to the samples and analytical data contained in this report.

- All solid sample results are reported on an as received "wet weight" basis.
- Note any and all comments at the bottom of the tables in Appendix B and/or Appendix C.
- Samples will be retained for a maximum of thirty (30) days after completion of the analysis, samples will be held for a longer period of time, if appropriate arrangements are made in advance. A nominal disposal charge of $5.00/ sample will be imposed for unreturned samples.
- Surrogate compounds were not added to the method spike for the TCLP Semi-volatile Organics Batch #Q7C41884. All spike recoveries, sample and method blank surrogate recoveries met method criteria, therefore, the batch was accepted. This anomaly will not impact the validity of the data reported.

APPENDIX A

DATA SUMMARY REPORT

NOTE: The Tentatively Identified Volatile (GC/MS) Screen result(s), if applicable, is included in Appendix B.

DATA SUMMARY REPORT

DATE: 01/10/95

Company: OHM REMEDIATION SERVICES CORPORATION

		Sample Point ID:	EX1435-1C	EX1435-2C
		ASC Sample Number:	JN6327	JN6328
		Sample Date:	941215	941215
		Facility Code:	016208C	016208C
Parameters	Units			
Conventional Data (CV10)				
Flash Point, Seta Flash	Deg C		>93	>93
Reactive Cyanide	mg/kg		86.2	<10.0
Reactive Sulfide	mg/kg		<20.0	<20.0
pH (Electrode)	std		6.54	5.68
RCRA TCLP Leachate Herbicide Analysis, GC, (GS52)				
2,4-D	mg/L		<.250	<.250
2,4,5-TP (Silvex)	mg/L		<.250	<.250
RCRA TCLP Leachate Pesticide Analysis, GC, (GS54)				
Chlordane	mg/L		<.020	<.020
Endrin	mg/L		<.002	<.002
Heptachlor	mg/L		<.002	<.002
Heptachlor epoxide	mg/L		<.002	<.002
Lindane	mg/L		<.002	<.002
Methoxychlor	mg/L		<.002	<.002
Toxaphene	mg/L		<.040	<.040
RCRA TCLP Leachate Metals Analysis, (ME52)				
Arsenic	mg/L		<.100	<.100
Barium	mg/L		.364	<.100
Cadmium	mg/L		.019	<.005
Chromium	mg/L		<.020	<.020
Lead	mg/L		<.100	<.100
Mercury	mg/L		<.001	<.001
Selenium	mg/L		<.100	<.100
Silver	mg/L		<.020	<.020
Copper	mg/L		.036	<.020
Zinc	mg/L		<.200	<.200

DATA SUMMARY REPORT

Company: OHM REMEDIATION SERVICES CORPORATION

	Sample Point ID:	EX1435-1C	EX1435-2C
	ASC Sample Number:	JN6327	JN6328
	Sample Date:	941215	941215
	Facility Code:	016208C	016208C
Parameters	Units		
RCRA TCLP Leachate Base/Neutral/Acid Analysis, MS, (MS52)			
2,4-Dinitrotoluene	mg/L	<.100	<.100
Hexachlorobenzene	mg/L	<.100	<.100
Hexachloroethane	mg/L	<.100	<.100
Hexachlorobutadiene	mg/L	<.100	<.100
2-Methylphenol	mg/L	<.100	<.100
4-Methylphenol	mg/L	<.100	<.100
Nitrobenzene	mg/L	<.100	<.100
Pentachlorophenol	mg/L	<.100	<.100
Pyridine	mg/L	<.100	<.100
2,4,5-Trichlorophenol	mg/L	<.100	<.100
2,4,6-Trichlorophenol	mg/L	<.100	<.100
RCRA TCLP Leachate (ZHE) Volatile Analysis, MS, (MV50)			
Benzene	mg/L	<.125	<.125
Carbon tetrachloride	mg/L	<.125	<.125
Chlorobenzene	mg/L	<.125	<.125
Chloroform	mg/L	<.125	<.125
1,4-Dichlorobenzene	mg/L	<.125	<.125
1,2-Dichloroethane	mg/L	<.125	<.125
1,1-Dichloroethylene	mg/L	<.125	<.125
Methyl ethyl ketone	mg/L	<.125	<.125
Tetrachloroethylene	mg/L	<.125	<.125
Trichloroethylene	mg/L	<.125	<.125
Vinyl chloride	mg/L	<.125	<.125

APPENDIX B

QUANTITATIVE RESULTS

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN6327

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Reactive Cyanide	mg/kg	86.2	10.0	ND	Q2I4065
Reactive Sulfide	mg/kg	ND	20.0	ND	Q2I4067
pH (Electrode)	std	6.54	-	-	
Flash Point, Seta Flash	Deg C	>93	-	-	

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-2C	JN6328

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Reactive Cyanide	mg/kg	ND	10.0	ND	Q2I4065
Reactive Sulfide	mg/kg	ND	20.0	ND	Q2I4067
pH (Electrode)	std	5.68	-	-	
Flash Point, Seta Flash	Deg C	>93	-	-	

RCRA TCLP Leachate Metals Analysis, (ME52)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN6327

Compounds	Sample Results mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
Arsenic	ND	.100	ND	Q7M5777
Barium	.364	.100	ND	Q7M5777
Cadmium	.019	.005	ND	Q7M5777
Chromium	ND	.020	ND	Q7M5777
Lead	ND	.100	ND	Q7M5777
Mercury	ND	.001	ND	Q7G5795
Selenium	ND	.100	ND	Q7M5777
Silver	ND	.020	ND	Q7M5777
Copper	.036	.020	ND	Q7M5777
Zinc	ND	.200	ND	Q7M5777

RCRA TCLP Leachate Metals Analysis, (ME52)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-2C	JN6328

Compounds	**Sample Results** mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
Arsenic	ND	.100	ND	Q7M5777
Barium	ND	.100	ND	Q7M5777
Cadmium	ND	.005	ND	Q7M5777
Chromium	ND	.020	ND	Q7M5777
Lead	ND	.100	ND	Q7M5777
Mercury	ND	.001	ND	Q7G5795
Selenium	ND	.100	ND	Q7M5777
Silver	ND	.020	ND	Q7M5777
Copper	ND	.020	ND	Q7M5777
Zinc	ND	.200	ND	Q7M5777

RCRA TCLP Leachate Herbicide Analysis, GC, (GS52)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN6327

Compounds	Sample Results mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
2,4-D	ND	.250	ND	Q7H41872A
2,4,5-TP (Silvex)	ND	.250	ND	Q7H41872A

RCRA TCLP Leachate Herbicide Analysis, GC, (GS52)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-2C	JN6328

Compounds	Sample Results mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
2,4-D	ND	.250	ND	Q7H41872A
2,4,5-TP (Silvex)	ND	.250	ND	Q7H41872A

RCRA TCLP Leachate Pesticide Analysis, GC, (GS54)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN6327

Compounds	**Sample Results** mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
Chlordane	ND	.020	ND	Q7P41892A
Endrin	ND	.002	ND	Q7P41892A
Heptachlor	ND	.002	ND	Q7P41892A
Heptachlor epoxide	ND	.002	ND	Q7P41892A
Lindane	ND	.002	ND	Q7P41892A
Methoxychlor	ND	.002	ND	Q7P41892A
Toxaphene	ND	.040	ND	Q7P41892A

RCRA TCLP Leachate Pesticide Analysis, GC, (GS54)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-2C	JN6328

Compounds	Sample Results mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
Chlordane	ND	.020	ND	Q7P41892A
Endrin	ND	.002	ND	Q7P41892A
Heptachlor	ND	.002	ND	Q7P41892A
Heptachlor epoxide	ND	.002	ND	Q7P41892A
Lindane	ND	.002	ND	Q7P41892A
Methoxychlor	ND	.002	ND	Q7P41892A
Toxaphene	ND	.040	ND	Q7P41892A

RCRA TCLP Leachate Base/Neutral/Acid Analysis, MS, (MS52)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN6327

Compounds	Sample Results mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
2,4-Dinitrotoluene	ND	.100	ND	Q7C41884
Hexachlorobenzene	ND	.100	ND	Q7C41884
Hexachloroethane	ND	.100	ND	Q7C41884
Hexachlorobutadiene	ND	.100	ND	Q7C41884
2-Methylphenol	ND	.100	ND	Q7C41884
4-Methylphenol	ND	.100	ND	Q7C41884
Nitrobenzene	ND	.100	ND	Q7C41884
Pentachlorophenol	ND	.100	ND	Q7C41884
Pyridine	ND	.100	ND	Q7C41884
2,4,5-Trichlorophenol	ND	.100	ND	Q7C41884
2,4,6-Trichlorophenol	ND	.100	ND	Q7C41884

3-Methyl- and 4-Methylphenol coelute and are reported as the total

RCRA TCLP Leachate Base/Neutral/Acid Analysis, MS, (MS52)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-2C	JN6328

Compounds	Sample Results mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
2,4-Dinitrotoluene	ND	.100	ND	Q7C41884
Hexachlorobenzene	ND	.100	ND	Q7C41884
Hexachloroethane	ND	.100	ND	Q7C41884
Hexachlorobutadiene	ND	.100	ND	Q7C41884
2-Methylphenol	ND	.100	ND	Q7C41884
4-Methylphenol	ND	.100	ND	Q7C41884
Nitrobenzene	ND	.100	ND	Q7C41884
Pentachlorophenol	ND	.100	ND	Q7C41884
Pyridine	ND	.100	ND	Q7C41884
2,4,5-Trichlorophenol	ND	.100	ND	Q7C41884
2,4,6-Trichlorophenol	ND	.100	ND	Q7C41884

3-Methyl- and 4-Methylphenol coelute and are reported as the total

RCRA TCLP Leachate (ZHE) Volatile Analysis, MS, (MV50)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN6327

Compounds	**Sample Results** mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
Benzene	ND	.125	ND	Q7V4132
Carbon tetrachloride	ND	.125	ND	Q7V4132
Chlorobenzene	ND	.125	ND	Q7V4132
Chloroform	ND	.125	ND	Q7V4132
1,4-Dichlorobenzene	ND	.125	ND	Q7V4132
1,2-Dichloroethane	ND	.125	ND	Q7V4132
1,1-Dichloroethylene	ND	.125	ND	Q7V4132
Methyl ethyl ketone	ND	.125	ND	Q7V4132
Tetrachloroethylene	ND	.125	ND	Q7V4132
Trichloroethylene	ND	.125	ND	Q7V4132
Vinyl chloride	ND	.125	ND	Q7V4132

RCRA TCLP Leachate (ZHE) Volatile Analysis, MS, (MV50)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-2C	JN6328

Compounds	Sample Results mg/L	Detection Limits mg/L	Blank Results mg/L	Batch Number
Benzene	ND	.125	ND	Q7V4132
Carbon tetrachloride	ND	.125	ND	Q7V4132
Chlorobenzene	ND	.125	ND	Q7V4132
Chloroform	ND	.125	ND	Q7V4132
1,4-Dichlorobenzene	ND	.125	ND	Q7V4132
1,2-Dichloroethane	ND	.125	ND	Q7V4132
1,1-Dichloroethylene	ND	.125	ND	Q7V4132
Methyl ethyl ketone	ND	.125	ND	Q7V4132
Tetrachloroethylene	ND	.125	ND	Q7V4132
Trichloroethylene	ND	.125	ND	Q7V4132
Vinyl chloride	ND	.125	ND	Q7V4132

APPENDIX C

QUALITY ASSURANCE DATA

SUMMARY OF ANALYTICAL METHODOLOGY

ASC Joblink # 617282

REFERENCE		TITLE
1020	SW-846	Flash Point, Setaflash
1311	SW-846	Toxicity Characteristic Leaching Procedure
6010	SW-846	Inductively Coupled Plasma Atomic Emmision Spectroscopy
7470	SW-846	Mercury in Liquid Waste (Manual Cold-Vapor Technique)
8080	SW-846	Organochlorine Pesticides and/or PCBs
8150	SW-846	Chlorinated Herbicides
8240	SW-846	GC/MS for Volatile Organics
8270	SW-846	GC/MS for Semivolatile Organics: Capillary Column Technique
CLP 1.7.1.1	CLP	pH, Electrode
SECTION 7.3.3.2	SW-846	Test Method to Determine HCN Released from Wastes
SECTION 7.3.4.2	SW-846	Test Method to Determine HS Released from Wastes

METHODOLOGY REFERENCES

ASTM	*American Society for Testing and Materials*, 1985 edition.
CAWW	*Methods for Chemical Analysis of Water and Wastes*, April 1979 and Updated #1 March 1983.
CLP	*USEPA Contract Laboratory Program*, Document #OLMO1.0, updates December 1990 #OLMO1.1 and February 1991 #OLMO1.1.1.
EPA-500	*USEPA Methods for the Determination of Organic Compounds in Drinking Water,* EPA-600/4-88/039 December 1988.
EPA-600	*USEPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057 July 1982.
NIOSH	*National Institute for Occupational Safety and Health*, 3rd edition, 1984.
SMEWW	*Standard Methods for the Examination of Water and Wastewater*, 17th edition, 1989.
STOA	*Spot Tests In Organic Analysis*, 7th edition, 1966.
SW-846	*Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, 3rd edition, September 1986 and Update #1 July 1992.
(1)	This method was modified to incorporate the use of Boron Trifluoride (BF3) as the derivatizing reagent according to Method 6640 in *SMEWW*, 17th edition, 1989.
Title 22	*Waste Extraction Test*, Title 22, Section 66261.126 Appendix 2 of the California Administrative Code, May 1991.

ASC Certifications

State	Agency	Certification #
Alabama	ADEM	40830
California	CADOH	1178
Colorado	CODOH	OH113
Delaware	DEHSS	OH113
Kansas	KSDHE	E-202 & E-1173
Louisiana	LADOHH	92-10
Maryland	MDDHMH	210
Massachusetts	MADEP	M-OH113
New Jersey	NJDEPE	74603
New York	NYDOH	10712
North Carolina	NCDEM	392
Ohio	OHEPA	OH113
Oklahoma	OKDEQ	9216
Pennsylvania	PADER	68-450
South Carolina	SCDEHNR	92002
Tennessee	TNDOH/TNDEC	2978
Virginia	VADGS	00011
Washington	WADOE	C154
Wisconsin	WIDNR	999037160

Validated by:

- o US Army Corps of Engineers . . . . . Chemical Analysis in Various Matrices

Approvals:

- o Chemical Waste Management . . . . . Waste Characterization Analysis
- o Envirosafe . . . . . Waste Characterization Analysis
- o USDA . . . . . Permit for Importing Soils
- o Florida DEP . . . . . Quality Assurance Plan #930034G
- o Naval Facilities Engineering Service Center . . . . . Chemical Analysis in Various Matrices

REPORT KEY

mg/kg	=	milligram per kilogram (ppm)
Mg/m^3	=	milligram per cubic meter
ug/kg	=	microgram per kilogram (ppb)
mg/L	=	milligram per liter (ppm)
ug/L	=	microgram per liter (ppb)
mg/W	=	milligram per wipe
ug/W	=	microgram per wipe
mg/SMP	=	milligram per sample
ug/SMP	=	microgram per sample (Tedlar Bag)
ug/smp	=	microgram per sample
um/cm	=	microMho per centimeter
pCi/l	=	picocurie per liter
gm/cc	=	grams per cubic centimeter
ppm	=	parts per million
ppb	=	parts per billion
ND	=	Not detected at or above stated detection limit
<	=	less than
>	=	greater than
%	=	percent
BTU/lb	=	British Thermal Units per pound
Deg. C	=	Degrees Celsius
n/a	=	not applicable
Unk	=	unknown
std	=	result is relative to standard pH units
CV	=	Conventionals
IR	=	Infrared Spectrophotometric
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
GRO	=	Gasoline Range Organics
DRO	=	Diesel Range Organics
PCB	=	Polychlorinated Biphenyls (PCBs)
EP TOX	=	Extraction Procedure Toxicity
TCLP	=	Toxicity Characteristic Leaching Procedure
RCRA	=	Resource Conservation and Recovery Act
SOW	=	Statement of Work

Quality Assurance Data

Conventional Data (CV10)

Compounds		Blank Results	Blank Spike Recov	Unspiked Sample Results	Matrix Spike Recov	Relative Percent Diff	Batch Number
Reactive Cyanide	mg/kg	ND	87	-	-	-	Q2I4065
Reactive Sulfide	mg/kg	ND	91	-	-	-	Q2I4067

Quality Assurance Data

RCRA TCLP Leachate Metals Analysis, (ME52)

Compounds	Blank Results mg/L	Blank Spike Recov	Unspiked Sample Results mg/L	Matrix Spike Recov	Relative Percent Diff	Batch Number
Arsenic	ND	82	ND	85	1	Q7M5777
Barium	ND	84	.364	84	1	Q7M5777
Cadmium	ND	84	.019	86	1	Q7M5777
Chromium	ND	82	ND	83	1	Q7M5777
Lead	ND	81	ND	80	1	Q7M5777
Mercury	ND	99	ND	94	6	Q7G5795
Selenium	ND	77	ND	79	2	Q7M5777
Silver	ND	94	ND	81	1	Q7M5777
Copper	ND	81	.036	85	1	Q7M5777
Zinc	ND	81	ND	85	1	Q7M5777

Quality Assurance Data

RCRA TCLP Leachate Herbicide Analysis, GC, (GS52)

Compounds	Blank Results mg/L	Blank Spike Recov	Unspiked Sample Results mg/L	Matrix Spike Recov	Relative Percent Diff	Batch Number
2,4-D	ND	71	ND	60	16	Q7H41872A
2,4,5-TP (Silvex)	ND	102	ND	90	13	Q7H41872A

Quality Assurance Data

RCRA TCLP Leachate Pesticide Analysis, GC, (GS54)

Compounds	Blank Results mg/L	Blank Spike Recov	Unspiked Sample Results mg/L	Matrix Spike Recov	Relative Percent Diff	Batch Number
Chlordane	ND	109	ND	112	3	Q7P41892A
Endrin	ND	109	ND	128	15	Q7P41892A
Heptachlor	ND	92	ND	104	5	Q7P41892A
Heptachlor epoxide	ND	102	ND	106	5	Q7P41892A
Lindane	ND	63	ND	65	3	Q7P41892A
Methoxychlor	ND	88	ND	92	3	Q7P41892A

QUALITY ASSURANCE DATA

RCRA TCLP LEACHATE BASE/NEUTRAL/ACID ANALYSIS, MS, (MS52)

Compounds	Blank Results mg/L	Blank Spike Recov	Unspiked Sample Results mg/L	Matrix Spike Recov	Relative Percent Diff	Batch Number
2,4-Dinitrotoluene	ND	82	ND	73	3	Q7C41884
Hexachlorobenzene	ND	82	ND	53	13	Q7C41884
Hexachloroethane	ND	58	ND	33	21	Q7C41884
Hexachlorobutadiene	ND	73	ND	35	22	Q7C41884
2-Methylphenol	ND	60	ND	64	2	Q7C41884
4-Methylphenol	ND	83	ND	75	6	Q7C41884
Nitrobenzene	ND	69	ND	62	1	Q7C41884
Pentachlorophenol	ND	73	ND	57	12	Q7C41884
Pyridine	ND	62	ND	59	1	Q7C41884
2,4,5-Trichlorophenol	ND	63	ND	32	4	Q7C41884
2,4,6-Trichlorophenol	ND	78	ND	69	2	Q7C41884

3-Methyl- and 4-Methylphenol coelute and are reported as the total

Quality Assurance Data

RCRA TCLP Leachate (ZHE) Volatile Analysis, MS, (MV50)

Compounds	Blank Results mg/L	Blank Spike Recov	Unspiked Sample Results mg/L	Matrix Spike Recov	Relative Percent Diff	Batch Number
Benzene	ND	97	ND	99	9	Q7V4132
Carbon tetrachloride	ND	97	ND	100	13	Q7V4132
Chlorobenzene	ND	91	ND	90	5	Q7V4132
Chloroform	ND	97	ND	94	4	Q7V4132
1,4-Dichlorobenzene	ND	74	ND	80	6	Q7V4132
1,2-Dichloroethane	ND	99	ND	93	2	Q7V4132
1,1-Dichloroethylene	ND	90	ND	83	1	Q7V4132
Methyl ethyl ketone	ND	90	ND	82	0	Q7V4132
Tetrachloroethylene	ND	95	ND	93	7	Q7V4132
Trichloroethylene	ND	98	ND	99	7	Q7V4132
Vinyl chloride	ND	86	ND	79	5	Q7V4132

QUALITY ASSURANCE DATA
SURROGATE SUMMARY REPORT

SURROGATE ID	A159	B732	A121	A884	A158	B142	# OUT
QC BATCH: Q7C41884 **Leachate (Semi-Volatile organics by MS)**							
SAMPLE ID							
BLANK	66	57	103	74	78	16 *	1
BLANK SPIKE	0 *	0 *	0 *	0 *	0 *	0 *	6
EX1435-1C	44	38	62	53	56	45	0
EX1435-1C MD	68	60	87	70	68	65	0
EX1435-1C MS	74	65	93	76	76	68	0
EX1435-2C	78	70	102	83	86	73	0
QC LIMITS	(21-110)	(10-110)	(10-123)	(35-114)	(43-116)	(33-141)	

SURROGATE ID	F047	# OUT
QC BATCH: Q7H41872A **Leachate (Herbicide compounds by GC)**		
SAMPLE ID		
BLANK	59	0
BLANK SPIKE	100	0
EX1435-1C	98	0
EX1435-1C MD	130	0
EX1435-1C MS	99	0
EX1435-2C	59	0
QC LIMITS	(30-130)	

SURROGATE ID	B816	A500	# OUT
QC BATCH: Q7P41892A **Leachate (Pesticide compounds by GC)**			
SAMPLE ID			
BLANK	89	65	0
BLANK SPIKE	89	46	0
EX1435-1C	89	81	0
EX1435-1C MD	90	82	0
EX1435-1C MS	94	84	0
EX1435-2C	84	78	0
QC LIMITS	(30-130)	(30-130)	

SURROGATE ID

A047 = 1,2-Dichloroethane-D4
B185 = Toluene-D8
B668 = Bromofluorobenzene
A159 = 2-Fluorophenol
B732 = Phenol-D6
A121 = 2,4,6-Tribromophenol
A884 = Nitrobenzene-D5
A158 = 2-Fluorobiphenyl
B142 = Terphenyl-D14
B816 = 2,4,5,6-Tetrachloro-m-xylene
A500 = Decachlorobiphenyl
F047 = 2,4-Dichlorophenylacetic-acid

* Values outside of method quality control limits
D Sample was diluted, however, some surrogates may be reported if results were observed.

It is ASC's laboratory policy to allow one surrogate per sample fraction (acid, base-neutral or pesticide) to exceed the stated QC limits. This policy is based upon the USEPA SOW for the Contract Laboratory Program (CLP).

QUALITY ASSURANCE DATA
SURROGATE SUMMARY REPORT

SURROGATE ID	A047	B185	B668	# OUT
QC BATCH: Q7V4132 **Leachate (Volatile organics by MS)**				
SAMPLE ID				
BLANK	105	100	98	0
BLANK SPIKE	109	102	98	0
EX1435-1C	104	102	99	0
EX1435-2C	106	99	99	0
EX63BEDP2A MD	102	98	96	0
EX63BEDP2A MS	105	98	95	0
QC LIMITS	(70-121)	(81-117)	(74-121)	

SURROGATE ID

A047 = 1,2-Dichloroethane-D4
B185 = Toluene-D8
B668 = Bromofluorobenzene
A159 = 2-Fluorophenol
B732 = Phenol-D6
A121 = 2,4,6-Tribromophenol
A884 = Nitrobenzene-D5
A158 = 2-Fluorobiphenyl
B142 = Terphenyl-D14
B816 = 2,4,5,6-Tetrachloro-m-xylene
A500 = Decachlorobiphenyl
F047 = 2,4-Dichlorophenylacetic-acid

* Values outside of method quality control limits
D Sample was diluted, however, some surrogates may be reported if results were observed.

It is ASC's laboratory policy to allow one surrogate per sample fraction (acid, base-neutral or pesticide) to exceed the stated QC limits. This policy is based upon the USEPA SOW for the Contract Laboratory Program (CLP).

APPENDIX D

CHAIN-OF-CUSTODY RECORD(S)

OHM Corporation

CHAIN-OF-CUSTODY RECORD

Form 0619
Field Technical Services
Rev. 08/89

No. 107748

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	PROJECT LOCATION
Fort Devens	Ayer MA

PROJ. NO.	PROJECT CONTACT	PROJECT TELEPHONE NO.
16208	Mike Quinlan	(508) 772-2019

CLIENT'S REPRESENTATIVE	PROJECT MANAGER/SUPERVISOR
Tim Coleman (USACE)	Bill Snow

ITEM NO	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)	REMARKS
1	EX1435-1C	12.15.94	1015	✓		6-pt composite, LT brown sand, slight cobble	2	Full TCLP (1x1L) RCRA Char (1x40z)	
2	EX1435-2C	↓	1030	✓		4 pt composite LT brown sand, some cobble	2	✓ ✓	
3									
4									
5									
6									
7									
8									
9									
10									

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1,2	[signature]	Fed Ex Airbill 798934597 40	12.15 94	1900
2	1-2	FedX	M. Radabaugh	12/16/94	1021
3					
4					

REMARKS
- 4°C
- Temp blank included
- 3 day TAT

SAMPLER'S SIGNATURE [signature]

LAB COPY

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

ANALYTICAL DIVISION

Laboratory Analysis Report

Client: OHM Remediation Services Corp.
Eastern Region (Hopkinton, MA)

Attn: William Snow
Ron Kenyon
Mike Quinlan

Project: 16208C - USACE; Fort Devens, MA

Sample Type(s): Solid

Analysis Performed: Conventional and Metals

Date Sample Received: December 16, 1994

Date Order Received: January 12, 1995

Joblink(s): 617410

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. OHM Remediation Services Corp., Analytical Division, assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: _____
Thomas E. Gran, Ph.D., Vice President

Date: January 23, 1995

16406 U.S. Route 224 East ■ P.O. Box 551 ■ Findlay, OH 45839-0551 ■ 419-423-3526

PROJECT NARRATIVE

The following items relate to the samples and analytical data contained in this report.

- All solid sample results are reported on a "dry weight" basis.
- Note any and all comments at the bottom of the tables in Appendix B and/or Appendix C.
- Samples will be retained for a maximum of thirty (30) days after completion of the analysis, samples will be held for a longer period of time, if appropriate arrangements are made in advance. A nominal disposal charge of $5.00/ sample will be imposed for unreturned samples.

APPENDIX A

DATA SUMMARY REPORT

DATA SUMMARY REPORT

DATE: 01/19/95

Company: OHM REMEDIATION SERVICES CORPORATION

Sample Point ID:	**EX1435-1C**
ASC Sample Number:	JN7190
Sample Date:	941215
Facility Code:	016208C

Parameters	Units	
Conventional Data (CV10)		
Solids, Total	%	95.7
RCRA Total Metals Analysis, (ME50)		
Arsenic	mg/kg	5.63
Barium	mg/kg	7.65
Cadmium	mg/kg	<1.00
Chromium	mg/kg	3.70
Lead	mg/kg	3.95
Mercury	mg/kg	<.050
Selenium	mg/kg	<5.00
Silver	mg/kg	<1.00

APPENDIX B

QUANTITATIVE RESULTS

CONVENTIONAL DATA (CV10)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN7190

Compounds		Sample Results	Detection Limits	Blank Results	Batch Number
Solids, Total	%	95.7	.100	-	

RCRA Total Metals Analysis, (ME50)

Company Name	Facility	Sample Point	ASC Sample No.
OHM REMEDIATION SERVICES CORPORATION	016208C	EX1435-1C	JN7190

Compounds	Sample Results mg/kg	Detection Limits mg/kg	Blank Results mg/kg	Batch Number
Arsenic	5.63	5.00	ND	Q2M5858
Barium	7.65	1.00	ND	Q2M5858
Cadmium	ND	1.00	ND	Q2M5858
Chromium	3.70	1.00	ND	Q2M5858
Lead	3.95	2.00	ND	Q2M5858
Mercury	ND	.050	ND	Q2G5868
Selenium	ND	5.00	ND	Q2M5858
Silver	ND	1.00	ND	Q2M5858

APPENDIX C

QUALITY ASSURANCE DATA

SUMMARY OF ANALYTICAL METHODOLOGY

Joblink # 617410

REFERENCE		TITLE
160.3	CAWW	Residue, Total, Gravimetric, Dried at 103-105 C
6010	SW-846	Inductively Coupled Plasma Atomic Emmision Spectroscopy
7471	SW-846	Mercury in Solid Waste (Manual Cold-Vapor Technique)

METHODOLOGY REFERENCES

ASTM	*American Society for Testing and Materials*, 1985 edition.
CAWW	*Methods for Chemical Analysis of Water and Wastes*, April 1979 and Updated #1 March 1983.
CLP	*USEPA Contract Laboratory Program*, Document #OLMO1.0, updates December 1990 #OLMO1.1 and February 1991 #OLMO1.1.1.
EPA-500	*USEPA Methods for the Determination of Organic Compounds in Drinking Water,* EPA-600/4-88/039 December 1988.
EPA-600	*USEPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057 July 1982.
NIOSH	*National Institute for Occupational Safety and Health*, 3rd edition, 1984.
SMEWW	*Standard Methods for the Examination of Water and Wastewater*, 17th edition, 1989.
STOA	*Spot Tests In Organic Analysis*, 7th edition, 1966.
SW-846	*Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*, 3rd edition, September 1986 and Update #1 July 1992.
(1)	This method was modified to incorporate the use of Boron Trifluoride (BF3) as the derivatizing reagent according to Method 6640 in *SMEWW*, 17th edition, 1989.
Title 22	*Waste Extraction Test*, Title 22, Section 66261.126 Appendix 2 of the California Administrative Code, May 1991.

Laboratory Certifications

State	Agency	Certification #
Alabama	ADEM	40830
California	CADOH	1178
Colorado	CODOH	OH113
Delaware	DEHSS	OH113
Kansas	KSDHE	E-202 & E-1173
Louisiana	LADOHH	92-10
Maryland	MDDHMH	210
Massachusetts	MADEP	M-OH113
New Jersey	NJDEPE	74603
New York	NYDOH	10712
North Carolina	NCDEM	392
Ohio	OHEPA	OH113
Oklahoma	OKDEQ	9216
Pennsylvania	PADER	68-450
South Carolina	SCDEHNR	92002
Tennessee	TNDOH/TNDEC	2978
Virginia	VADGS	00011
Washington	WADOE	C154
Wisconsin	WIDNR	999037160

Validated by:

- o US Army Corps of Engineers . . . . . Chemical Analysis in Various Matrices

Approvals:

- o Chemical Waste Management . . . . . Waste Characterization Analysis
- o Envirosafe . . . . . Waste Characterization Analysis
- o USDA . . . . . Permit for Importing Soils
- o Florida DEP . . . . . Quality Assurance Plan #930034G
- o Naval Facilities Engineering Service Center . . . . . Chemical Analysis in Various Matrices

REPORT KEY

mg/kg	=	milligram per kilogram (ppm)
Mg/m^3	=	milligram per cubic meter
ug/kg	=	microgram per kilogram (ppb)
mg/L	=	milligram per liter (ppm)
ug/L	=	microgram per liter (ppb)
mg/W	=	milligram per wipe
ug/W	=	microgram per wipe
mg/SMP	=	milligram per sample
ug/SMP	=	microgram per sample (Tedlar Bag)
ug/smp	=	microgram per sample
um/cm	=	microMho per centimeter
pCi/l	=	picocurie per liter
gm/cc	=	grams per cubic centimeter
ppm	=	parts per million
ppb	=	parts per billion
ND	=	Not detected at or above stated detection limit
<	=	less than
>	=	greater than
%	=	percent
BTU/lb	=	British Thermal Units per pound
Deg. C	=	Degrees Celsius
n/a	=	not applicable
Unk	=	unknown
std	=	result is relative to standard pH units
CV	=	Conventionals
IR	=	Infrared Spectrophotometric
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
GRO	=	Gasoline Range Organics
DRO	=	Diesel Range Organics
PCB	=	Polychlorinated Biphenyls (PCBs)
EP TOX	=	Extraction Procedure Toxicity
TCLP	=	Toxicity Characteristic Leaching Procedure
RCRA	=	Resource Conservation and Recovery Act
SOW	=	Statement of Work

Quality Assurance Data

RCRA Total Metals Analysis, (ME50)

Compounds	Blank Results mg/kg	Blank Spike Recov	Unspiked Sample Results mg/kg	Matrix Spike Recov	Relative Percent Diff	Batch Number
Arsenic	ND	84	5.38	88	1	Q2M5858
Barium	ND	90	7.32	92	1	Q2M5858
Cadmium	ND	80	ND	86	2	Q2M5858
Chromium	ND	83	3.54	88	1	Q2M5858
Lead	ND	83	3.78	91	9	Q2M5858
Mercury	ND	92	.059	81	9	Q2G5868
Selenium	ND	87	ND	90	1	Q2M5858
Silver	ND	66	ND	81	6	Q2M5858

APPENDIX D

CHAIN-OF-CUSTODY RECORD(S)

OHM Corporation

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/89

No. 107748

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME	Fort Devens
PROJECT LOCATION	Ayer, MA
PROJ. NO.	16208
PROJECT CONTACT	Mike Quinlan
PROJECT TELEPHONE NO.	(508) 772-2019
CLIENT'S REPRESENTATIVE	Tim Coleman (USACE)
PROJECT MANAGER/SUPERVISOR	Bill Snow

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): Full TCLP (1L); RCRA Char (1x4oz)

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	Full TCLP (1L)	RCRA Char (1x4oz)	REMARKS
1	EX1435-1C	12.15.94	1015	✓		6-pt composite, lt brown sand, slight cobble	2	✓	✓	
2	EX1435-2C	↓	1030	✓		4 pt composite, lt brown sand, some cobble	2	✓	✓	
3										
4										
5										
6										
7										
8										
9										
10										

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1,2	[signature]	Fed Ex Airbill 2989345940	12/15/94	1900
2	1-2	FedX	M. Radabaugh	12/16/94	1021
3					
4					

REMARKS
- 4°C
- Temp blank included
- 3 day TAT

SAMPLER'S SIGNATURE [signature]

LAB COPY

Appendix F
Transportation & Disposal Documentation

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

2-0662
Tracking Number

Material Shipping Record & Log

*For the shipment of contaminated soil, urban fill, and dredge materials **not** subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000*

IMPORTANT: This form is *NOT* to be used for the shipment of remediation wastes subject to management under section 310 CMR 40.0035 of the Massachusetts Contingency Plan nor is it to be used in lieu of a hazardous waste manifest for hazardous waste or recyclable materials subject to the Massachusetts Hazardous Waste Regulations 310 CMR 30.000.

A Location Information

1. Provide the following information on the location where the waste was generated:

AREE 63BE.C(Bldg 1435)
Release name (optional)

off of Antietam Street; northeast portion of Main Post
Street *Location aid*

Fort Devens | MA | 01433
City/Town | *State* | *Zip code*

2. Date/Period of generation:

09/29/94 (From) 10/26/94 (To)

3. U.S. EPA ID number:

MA7210025154

4. 21E release:

☐ yes ☒ no

5. List additional tracking documents associated with this document:

B Generator Information

1. Provide the following generator information

U.S. Army - Fort Devens
Name of organization

James C. Chambers | BRAC Environmental Officer
Contact name | *Title*

AFZD-BEO-Box 1
Street address

Fort Devens | MA | 01433
City/Town | *State* | *Zip code*

(508) 796-3114
Telephone number and extension

C Owner and/or Operator Information

1. If the owner and/or operator *is different from the generator as indicated in Section B*, provide the following information:

Check applicable: ☐ owner ☐ operator

U.S. Army - Fort Devens
Name of organization

James C. Chambers | BRAC Environmental Officer
Contact name | *Title*

AFZD-BEO-Box 1
Street address

Fort Devens | MA | 01433
City/Town | *State* | *Zip code*

(508) 796-3114
Telephone number and extension

Bureau of Waste Prevention

Material Shipping Record & Log

8-0662-AREE 63 BC
Tracking Number

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

D Transporter/Common Carrier Information

1. Provide the following information:

P.J. Keating Company	N/A	N/A
Transporter/Common carrier name	Hazardous waste license number (if applicable)	Licensing state (if applicable)

Mark Nikitas	
Contact person	Title

998 Reservoir Road		
Street		
Lunenberg	MA	01462
City/Town	State	Zip code

(508) 582-9931
Telephone number and extension

E Receiving Facility Information

1. Provide the following information on the receiving facility:

U.S. Army - Fort Devens - Building 202
Operator/Facility name

James C. Chambers	BRAC Environmental Officer
Contact person	Title

AFZD-BEO-Box 1	Fort Devens, MA	01433
Street	State	Zip code

(508) 796-3114
Telephone number and extension

2. Type of facility:

- ☐ asphalt batch/cold mix
- ☐ asphalt batch/hot Mix
- ☐ landfill/disposal
- ☐ landfill/daily cover
- ☐ thermal processing
- ☐ landfill/structural fill
- ☒ other: Temporary Storage Facility

3. Permit number: N/A

F Description of Material

Check all that apply:

1. a. ☒ soil ☐ dredge material ☐ fill

   b. Description:

   c. Classification: ☐ MIT ☐ USAEC ☐ USDA ☐ ASEE

2. ☒ Other:

   Modified Burmeister
   describe

3. Type of contamination:

   a. ☐ gasoline ☐ diesel fuel ☒ #2 oil ☐ #4 oil ☐ #6 oil ☐ waste oil ☐ kerosene ☐ jet fuel

   b. ☐ Debris:

   ☐ demolition ☐ vegetative ☐ inorganic

   c. ☐ Other:

   describe

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

2-0662-AREE63BC
Tracking Number

Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

F Description of Material (cont.)

4. Constituents of concern (check all that apply):

☒ As ☐ Cd ☒ Cr ☒ Pb ☐ Hg ☐ Ni ☐ PCBs
☐ HVOCs ☐ PATH ☐ VOCs ☒ PAHs ☐ BNAs
☒ TPH ☒ Other:

Ethylbenzene, Xylene, Barium
describe

5. Analyses performed (check all that apply):

☒ As ☒ Cd ☒ Cr ☒ Pb ☒ Hg ☒ Ni ☒ PCBs
☐ HVOCs ☐ PATH ☒ VOCs ☒ PAHs ☐ BNAs
☒ TPH ☒ TCLP (inorganic) ☒ TCLP (organic)
☒ Other:

Pesticides, RCRA Characteristics
describe

6. Screening performed

None
Type

Instrument Used

Constituents

7. Estimated volume of materials:

144 cubic yards
Cubic Yards

216.5 tons
Tons

Other

8. Contaminant source (check one/specify):

☐ transportation accident ☒ ust ☐ other:

former 1000 gallon, No 2 fuel oil tank
describe

9. Indicate which waste characterization support documentation is attached:

☐ site history information
☐ sampling and analytical methods/procedure
☒ laboratory data ☐ field screening data

If supporting documentation is not appended, provide an attachment stating the date and in connection with what document such information was previously submitted to the facility.

G Qualified Environmental Professional Opinion

T.S. Alving & Associates
Name of organization

Todd Alving — Licensed Site Professional
Name of professional — Title

(508) 435-3679
Telephone number and extension

"I have personally examined and am familiar with the information contained on and submitted with this form. Based on this information, it is my opinion that the testing and assessment actions undertaken were adequate to characterize the waste, and that the facility or location can accept wastes with the characteristics described in this submittal. I am aware that significant penalties, including, but not limited to, possible fines and imprisonment, may result if I willfully submit information which I know to be false, inaccurate, or materially incomplete."

Signature

10-20-95
Date

4026
License number

Seal

TODD S. ALVING No. 4026 REGISTERED LICENSED SITE PROFESSIONAL COMMONWEALTH OF MASSACHUSETTS

Bureau of Waste Prevention

2-0662-AKEE63BC
Tracking Number

Material Shipping Record & Log

*For the shipment of contaminated soil, urban fill, and dredge materials **not** subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000*

H Certification of Generator

"I certify under penalties of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information contained herein is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information."

James C Chambers
Signature

1/24/96
Date

Name (print)

I Acknowledgment of Receipt by Receiving Facility

U.S. Army - Fort Devens - Bldg 202
Receiving Facility

James C. Chambers
Representative (print)

BRAC Environmental Officer
Title

James C Chambers 1/24/96
Signature Date

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Material Shipping Record & Log

2-0662-AJEE63BC
Tracking Number

*For the shipment of contaminated soil, urban fill, and dredge materials **not** subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000*

1435

J Load Information

Note: Make additional copies of this page as necessary.

LOAD #: 501

Signature of transporter

B202 Soil Storage Area (cell H)
Receiving facility

10-27-95
Date received

1335
Time received

10-27-95
Date of shipment

MA 12363
Time of shipment

MA 27020
Truck/Tractor registration

48,270 lbs / 24.14 tons
Trailer registration

Load size (cubic yards/tons)

LOAD #: 502

Signature of transporter

B202 Soil Storage Area (cell H)
Receiving facility

10.27.95
Date received

1337
Time received

10.27.95
Date of shipment

MA 22685
Time of shipment

MA 47429
Truck/Tractor registration

48840 lbs / 24.42 tons
Trailer registration

Load size (cubic yards/tons)

LOAD #: 504

Signature of transporter

B202 Soil Storage Area (cell H)
Receiving facility

10.27.95
Date received

1343
Time received

10-27-95
Date of shipment

NH 42528P
Time of shipment

NH 7208 JT
Truck/Tractor registration

44,740 lbs / 22.37 Tons
Trailer registration

Load size (cubic yards/tons)

LOAD #: 505

Signature of transporter

DAN
Receiving facility

B202 Soil Storage Area (cell H)
Date received

10.27.95
Time received

1345
Date of shipment

10.27.95
Time of shipment

MA B44604
Truck/Tractor registration

MA 21421
Trailer registration

45960 lbs / 22.37 tons
Load size (cubic yards/tons)

K Log Sheet Volume Information

187810 lbs / 93.91 tons
Total volume this page (cubic yards/tons)

Page 1 of 3

Total carried forward (cubic yards/tons)

187810 lbs / 93.91 tons
Total carried forward and this page (cubic yards/tons)

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Material Shipping Record & Log

Tracking Number: 20662-AREE63BC 1435

*For the shipment of contaminated soil, urban fill, and dredge materials **not** subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000*

J Load Information

Note: Make additional copies of this page as necessary.

LOAD #: 506

Signature of transporter: [signature]
Receiving facility: B 202 Soil Storage Area (cell A)
Date received: 10.27.95
Time received: 1356
Date of shipment: 10.27.95
Time of shipment:
Truck/Tractor registration: MA 22685
Trailer registration: MA 47499
Load size (cubic yards/tons): 48,540 lbs / 24.27 tons

LOAD #: 508

Signature of transporter: [signature]
Receiving facility: B 202 Soil Storage Area (cell A)
Date received: 10.27.95
Time received: 1403
Date of shipment: 10.27.95
Time of shipment:
Truck/Tractor registration: MA 12363
Trailer registration: MA 27020
Load size (cubic yards/tons): 44,910 lbs / 22.46 tons

LOAD #: 509

Signature of transporter: [signature]
Receiving facility: B 202 Soil Storage Area (cell A)
Date received: 10.27.95
Time received: 1412
Date of shipment: 10.27.95
Time of shipment:
Truck/Tractor registration: NH 42522 AP
Trailer registration: NH 7208 JT
Load size (cubic yards/tons): 42,140 lbs / 21.07 tons

LOAD #: 510

Signature of transporter: DAN
Receiving facility: B 202 Soil Storage Area (cell A)
Date received: 10.27.95
Time received: 1414
Date of shipment: 10.27.95
Time of shipment:
Truck/Tractor registration: MA B44609
Trailer registration: MA 21421
Load size (cubic yards/tons): 40,440 lbs / 20.22 tons

K Log Sheet Volume Information

176,030 lbs / 88.02 tons
Total volume this page (cubic yards/tons)

Page 2 of 3

187,810 lbs / 93.91 tons
Total carried forward (cubic yards/tons)

363,840 / 181.93 tons
Total carried forward and this page (cubic yards/tons)

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

2-0662-ARCE63BC
Tracking Number

Material Shipping Record & Log

*For the shipment of contaminated soil, urban fill, and dredge materials **not** subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000* 1435

Note: Make additional copies of this page as necessary.

J Load Information

LOAD #: 512

X [signature]
Signature of transporter

B.202 Soil Storage Area, Cell A
Receiving facility

10-30-95
Date received

0900
Time received

10-30-95
Date of shipment

Time of shipment

MA 22685
Truck/Tractor registration

MA 47499
Trailer registration

52,700 lbs | 26.35
Load size (cubic yards/tons)

LOAD #: 513

X [signature]
Signature of transporter

B.202 Soil Storage Area, Cell A
Receiving facility

10-20-95
Date received

0917
Time received

10-20-95
Date of shipment

Time of shipment

MA 32588
Truck/Tractor registration

MA 27020
Trailer registration

16,470 lbs. | 8.23 tons
Load size (cubic yards/tons)

LOAD #: _____

Signature of transporter

Receiving facility

Date received

Time received

Date of shipment

Time of shipment

Truck/Tractor registration

Trailer registration

Load size (cubic yards/tons)

LOAD #: _____

Signature of transporter

Receiving facility

Date received

Time received

Date of shipment

Time of shipment

Truck/Tractor registration

Trailer registration

Load size (cubic yards/tons)

K Log Sheet Volume Information

69,170 lbs | 34.58 tons
Total volume this page (cubic yards/tons)

363,840 lbs / 181.93 Tons
Total carried forward (cubic yards/tons)

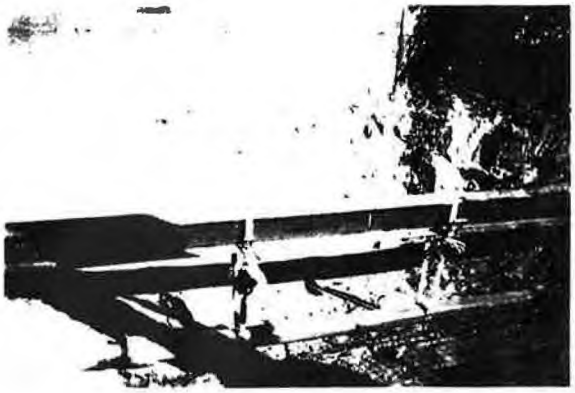
433,010 lbs / 216.51 tons
Total carried forward and this page (cubic yards/tons)

Page 3 of 3

Appendix G
Site Photographs

AREE 63BC

Preparation of soil storage cell



I-beam used to support water line

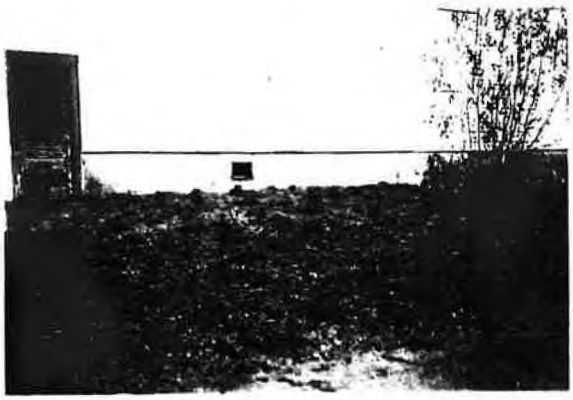
Later stages of excavation

Flagged sample locations

AREE 63BC

Site security

Backfilling operations



Site restoration - seed & mulch

Responses to MADEP Comments
AREE 63BC Draft Final Closure Report
Various Sites - Fort Devens, MA

Comment: MADEP anticipates that AREE 63BC and all the related documentation will be added to the AREE 63 SSE Report. Therefore, the final Closure Report for the AREE 63BC Removal Action should reference the final AREE 63 SSE as the source for the compilation of all site information.

Response: This will be addressed in the No Further Action Decision Document (NFADD).

Comment: Documentation of the transportation and disposal of contaminated soil must be submitted with the final Closure Report.

Response: Transportation and disposal documentation will be submitted as an appendix to the Final Closure Report.

Comment: MADEP requires the laboratory analytical data sheets for review prior to considering a no further action decision on this site.

Response: Analytical reports will be provided as appendices to the Final Closure Report.